



**University of
New Hampshire**

UNDERGRADUATE ACADEMIC CATALOG

2018–2019

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UNDERGRADUATE

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There are various grievance procedures to provide for the resolution of complaints under this policy. See the UNH Discrimination and Discriminatory Harassment Policy (<http://www.usnh.edu/olpm/UNH/V.Pers/B.htm>) and Grievance and Complaint Procedures (<http://www.unh.edu/vpsas/handbook/grievance-and-complaint-procedures>) in *UNH Student Rights, Rules, and Responsibilities*. Further information may be obtained at the Affirmative Action and Equity Office or via e-mail affirmaction.equity@unh.edu.

About the Catalog

The University provides information pertaining to the Family Educational Rights and Privacy Act of 1974 (the "Buckley Amendment") in the annual student handbook. Information is also available from the office of the Senior Vice Provost for Student Life and Dean of Students. The annual student publication, *Student Rights, Rules, and Responsibilities* (<https://www.unh.edu/student-life>), also contains University regulations and policies regarding student conduct.

The University will supply information about the employment of its graduates who have graduated from our degree and/or certificate programs. This information may be obtained upon request from the University's office of Career and Professional Success and is available by university, college, or school to current and prospective students. Information on employment outcomes depends on student self-reporting. The University does not guarantee employment to its graduates. Chances for employment are enhanced if students have begun career planning early in their degree programs.

Program descriptions may vary from the actual content or requirements because of advancements in the discipline or the active nature of academic planning and decision making. Accordingly, the University reserves the right to make whatever changes are deemed necessary in schedules, course content, requirements, academic programs (including their termination), calendar, tuition and fees, services, or any other aspect of the University's operations, giving whatever notice thereof is reasonable under the circumstances. Therefore, the provisions of this catalog are not an irrevocable contract between the students and the University. The University is also not responsible for failure to provide or for delay in providing expected services and/or facilities when

such failure arises from causes beyond the reasonable control of the University.

All aforementioned publications are available in alternate formats upon request.

Academic Calendar 2018/2019

Fall Semester

Classes Begin	August 27
Labor Day, University holiday	September 3
Mid-Semester Break - no classes	October 8
Classes follow Monday schedule	October 9
Mid-Semester	October 12
Election Day - no exams scheduled	November 6
Veteran's Day, University holiday	November 12
No classes; offices open	November 21
Thanksgiving holiday	November 22-23
Classes resume	November 26
Last day of classes	December 10
Reading day, final exams begin at 6:00 p.m.	December 11
Final Exams end	December 18

January Term

Online classes & trips begin	December 27
New Year's Day, University holiday	January 1
On Campus classes begin	January 2
Last day of class	January 18

Spring Semester

Classes Begin	January 22
Mid-semester	March 8
Spring recess	March 11-15
Classes resume	March 18
Last day of classes	May 6

Curtailed Operation	May 7
Make up Day or Reading Day	
Reading Day	May 8
Final exams begin	May 9
Final exams end	May 15
Senior Day	May 17
Commencement	May 18

Summer Session

Summer Session May 20 - August 9

General Information

The University

UNH offers 200 degree programs across 11 schools and colleges to 15,000 undergraduate and graduate students. There are thousands of courses to choose from, and 83 percent of them enroll no more than 50 students, meaning experiential learning and thoughtful classroom discussions reign. What's more, with an 18:1 student-to-faculty ratio, UNH students have direct access to award-winning (Pulitzer, Guggenheim, MacArthur "Genius") faculty.

The core academic experience for every UNH student is the Discovery program. It starts with an Inquiry course (analysis, writing, questioning), expands into an exploration across disciplines and ends with a senior capstone experience. The goal is to help each student become the kind of person the world most needs. And it's working: Seventy-three percent of job-seeking grads from the UNH Class of 2017 were employed within six months of graduation. Plus, a Gallup study found that UNH graduates thrive in their professional and personal lives to a greater degree than their peers from other large public universities, and they're employed at a rate much higher than the national average.

UNH students and faculty have been collaborating to make the world a better place for more than 150 years, and not just in the classroom — from the uncharted ocean depths to edge of our solar system to the earth we call home, our research transforms lives and delivers solutions to global problems. Powered by more than \$100 million in competitive external support, UNH is in the top 20 percent of universities nationwide for research and funding. Because of this, undergraduates in every academic discipline enjoy uniquely broad access to research experiences and can even get funding to pursue them through the university's Hamel Center for Undergraduate Research. Many boost their CVs by conducting independent inquiries, an experience that gives them a leg up on graduate school and employment applications.

We know that students who graduate with hands-on, real-world experience are more likely to have successful careers, so in addition to all the hands-on classroom learning and research, UNH offers 500+ study abroad programs, a dedicated career and internship center and a dedicated fellowships office, all of which help students find opportunities that bolster their academic and career goals. Our entrepreneurship center helps aspiring business owners make their dreams reality.

Ready to dive in? We'll supply the world-class academics, the outstanding faculty and an atmosphere of invention. You bring the burning desire to bend your mind on pressing problems. We can't wait to meet you.

More information

Highest sustainability ranking in U.S., safest college town, and other rankings (<https://www.unh.edu/main/facts-figures>)

Why UNH is the sweet spot of the East (<https://www.youtube.com/watch?v=ooz7LdiUQkc>)

Why New Hampshire students choose UNH (<https://www.youtube.com/watch?v=QmvFRc6NpRE>)

Research (<https://www.unh.edu/main/research>)

Visit campus (<https://admissions.unh.edu/visit-campus>)

Virtual tour (<https://www.unh.edu/#virtualtour>)

Mission

UNH offers a broad array of undergraduate, graduate, professional, and research programs. Nearly 90 percent of the full-time faculty hold doctoral or terminal degrees, and many have earned national and international reputations.

The University of New Hampshire has a threefold mission of teaching, research, and public service.

Teaching. All undergraduate programs of instruction at the University are built on a specialized program of general education known as Discovery. The objectives of the Discovery Program carry through the undergraduate subject major as students refine and apply their skills and discover the relationships among fields of study. At every level, students enjoy close contact with individual faculty members who are dedicated to research and scholarship; this is an advantage for students because active scholars and researchers teach by sharing their own learning.

Research. The activity of research embraces all the arts and sciences at the University: it is an integral part of both undergraduate and graduate programs. In doctoral study and in many master's programs, thesis research is a primary mode of learning. As a land-, sea-, and space-grant institution, the University of New Hampshire has a particular obligation to conduct applied research in the areas of agriculture, marine sciences, and engineering, and to disseminate the findings to the state and nation.

Public Service. The University fulfills its special responsibility for the welfare of the state through UNH Cooperative Extension, and through research and consultation on particular needs of New Hampshire citizens. The University is dedicated to collaborative learning inside and outside the classroom.

University System of New Hampshire Trustees and Administrative Officers

<https://www.usnh.edu/trustees>

The University System of New Hampshire is governed by a 29-member Board of Trustees comprising the Governor of the State, the President of the Senate, the Speaker of the House, 10 members appointed by the Governor and Executive Council, 7 alumni-elected members, 2 student-elected members, the Commissioner of Education, the Commissioner of Agriculture, the presidents of the University System's four colleges and

universities, and the Chancellor. The Chancellor is the chief executive officer of the University System.

Accreditation

The University of New Hampshire is accredited by the New England Commission of Higher Education (formerly the Commission on Institutions of Higher Education of the New England Association of Schools and Colleges, Inc.).

Accreditation of an institution of higher education by the Commission indicates that it meets or exceeds criteria for the assessment of institutional quality periodically applied through a peer review process. An accredited college or university is one which has available the necessary resources to achieve its stated purposes through appropriate educational programs, is substantially doing so, and gives reasonable evidence that it will continue to do so in the foreseeable future. Institutional integrity is also addressed through accreditation.

Accreditation by the Commission is not partial but applies to the institution as a whole. As such, it is not a guarantee of every course or program offered, or the competence of individual graduates. Rather, it provides reasonable assurance about the quality of opportunities available to students who attend the institution.

Inquiries regarding the accreditation status by the Commission should be directed to the administrative staff of the institution. Individuals may also contact:

New England Commission of Higher Education
3 Burlington Woods Drive, Suite 100, Burlington, MA 01803-4514
(781) 425 7785
E-Mail: info@neche.org

Specialized programs of study are also accredited by various professional organizations.

Veterans and their eligible dependents may apply for educational benefits before the start of each semester. For information, contact the UNH veterans coordinator at UNH.Veterans@unh.edu or by phone at (603) 862-0643.

The University supports the efforts of secondary school officials and governing bodies to have their schools achieve regional accredited status to provide reliable assurance of the quality of the educational preparation of their applicants for admission.

Admission

UNH welcomes campus visitors. Campus tours are led by student admissions representatives who provide a general overview of academic programs and campus life opportunities. Professional staff members are available to provide information about the criteria used by the admissions committee in reviewing candidates and to address specific concerns. For further information or to schedule a campus and/or group information session, visit the Admissions website at <http://admissions.unh.edu/visit-campus>. Registration is required. Complete information and instructions regarding the application process to UNH are found at <http://admissions.unh.edu/apply>.

Admission Criteria

Admission to a bachelor's degree program is based upon successful completion of a strong secondary school program of college preparatory

coursework. Primary consideration is given to the academic record, as demonstrated by the quality of the candidate's secondary school course selections and achievement; recommendation; and the results of the SAT and/or ACT exam. Consideration is also given to character, initiative, leadership, and special talents.

Candidates must, at a minimum, present at least four years of English, three years of mathematics (algebra I, geometry, and algebra II), three years of laboratory science, three years of social science, and two years of study in a single foreign language. Three years of a single foreign language are preferred. Recommended mathematics preparation includes the equivalent of algebra I, geometry, algebra II, and trigonometry/advanced math.

Students who plan to specialize in engineering, biological/physical science, mathematics, or forestry should present at least four years of mathematics including trigonometry, as well as laboratory coursework in chemistry and/or physics. Students pursuing business-related studies also should have completed four years of mathematics including trigonometry. For students planning to major in health-related disciplines, four years of math, as well as laboratory courses in biology and chemistry, are strongly recommended. Students interested in nursing must complete high school chemistry.

Applicants may indicate a prospective major on the application for admission. An undecided applicant may apply for admission into a bachelor's program as an "undeclared" student to any one of the University's five college divisions in Durham or at UNH Manchester. For information concerning bachelor and associate degree programs offered through UNH Manchester, visit <http://manchester.unh.edu>; for information concerning the associate degree programs at the Thompson School of Applied Science, visit <https://colsa.unh.edu/tsas>.

Many University students request a change in major during their undergraduate years, and most are approved. Some majors are more restrictive than others and require the completion of specific coursework and an additional application. These changes are considered after a student has been at the University for at least one semester and has permission from the appropriate college dean and department chairperson.

Admission Test Requirements

All candidates for admission to bachelor's degree programs are required to submit the results of the SAT or ACT exam. Scores must be submitted electronically to UNH by the testing agency. SAT subject tests are not required, but a foreign language subject test may satisfy the foreign language requirement of the bachelor of arts degree. Required scores vary by test.

International students whose primary language is not English must submit the results of a Test of English as a Foreign Language (TOEFL). The recommended minimum TOEFL score is 213 (computer version) or 550 (paper version) or 80 (Internet version). UNH also accepts the International English Language Testing System (IELTS) English Language proficiency examination in lieu of TOEFL; the minimum acceptable proficiency grade is 6.5.

Music Candidates

Candidates applying for programs in the Department of Music must make arrangements with the department chairperson for an audition by calling (603) 862-2404. Details regarding audition requirements may be

obtained from the department, or may be found on the Department of Music website at <http://cola.unh.edu/music>.

Admission Deadlines

The Admissions Office welcomes high school students who seek fall semester first-year admission to apply any time after the start of the senior year and before the February 1 regular decision deadline. Admission notifications are provided on a continuous basis through April 15.

Accepted candidates are required to confirm their intention to enroll with the payment of an enrollment fee by May 1. An additional deposit to reserve on-campus housing is also required by May 1.

The review of first-year candidates begins as soon as a complete application (including official grade reports through the first marking period of senior year and a confirmed course schedule, the results of the SAT or ACT, and a letter of recommendation) is on hand. To apply as an early action applicant, candidates must submit an admission application and supporting documents by November 15. In some cases, the admission committee will request senior mid-year grade reports in order to make a final admission decision. Students accepted to UNH through the early action program are not obligated to enroll at UNH.

All offers of admission are considered conditional and are subject to the verification of satisfactory senior year achievement when final high school transcripts are reviewed by the admission committee.

Deferred Admission

The University considers applicants for deferred admission, which enables students to reserve a space at the University while taking time off from school for work or travel. With few exceptions, UNH will not approve deferral requests in which the student will be taking college coursework elsewhere. Requests for deferrals must be put in writing and sent to the Admissions Office (admissions@unh.edu). The University may not be able to offer deferred admission in certain program areas.

Advanced Standing

The University recognizes outstanding secondary school work by means of advanced placement and credit for those who have taken enriched or accelerated courses before entering college. Applicants qualify for such credit by successfully completing coursework for college credit and satisfactory achievement on University-approved placement examinations, including the College Board Advanced Placement (AP) Tests, International Baccalaureate (IB) Higher Level Examination Test Results, or through the College Level Examination Program (CLEP). Students should have official results sent directly to the Office of Admissions.

The University accepts AP Tests in every subject area, with credit and course equivalency based on the score achieved. Visit <https://admissions.unh.edu/accepted/first-year-students/advanced-placement-credit> for further information.

The University awards 8 semester credits for each IB Higher Level Examination Test Result of 5, 6, or 7. The University recognizes up to 32 semester credits of CLEP General Examination tests, which may be applied as elective credit only. Scores must be 500 or better in the humanities, natural sciences, and social sciences-history exams. The minimum score for mathematics is 500 and for the English exam with essay, 500. Subject exams, when applicable, may be used to satisfy either

departmental or general education requirements. UNH does not accept all CLEP subject exams.

Maximum credit accepted toward a bachelor's degree for all credit by exam and advanced placement testing is 64 semester hours.

Associate Degree Candidacy

The University accepts candidates who have demonstrated ability and motivation for learning through academic achievement, work experience, and/or military service for associate in applied science degree programs.

Students may be considered for admission to associate in applied science degree programs offered by the University's Thompson School of Applied Science in Durham as well as associate in arts or science degrees at the Manchester campus. Candidates applying as high school seniors must submit the application, secondary school record, and results of the SAT or ACT. Students granted first-year admission to the Thompson School are eligible to live in a University residence hall.

Eligibility for Degree Candidacy

Applicants may be candidates for any undergraduate degree offered by the University. However, applicants having a bachelor of arts (B.A.) degree will not be admitted into a program of study that awards the same degree (e.g., B.A. History and B.A. Zoology). Applicants can earn more than one bachelor of science (B.S.) degree, provided that each degree is in a different field. Applicants may also be admitted into a program awarding a different degree (e.g., B.A. History and B.S. Biology; or B.A. History and A.A.S. Applied Animal Science).

Readmission

An undergraduate who withdraws, does not register for UNH coursework in a given semester, or is suspended or dismissed from the University thereby terminates degree candidacy and must apply for readmission by the following deadlines: fall semester, June 1; spring semester, November 1. Readmission applications are processed in the Office of Admissions; however, decisions regarding readmission are made in consultation with the Division of Student and Academic Services and the dean's office of the University college division to which the student is applying.

Before seeking readmission, students on academic suspension must remain away from school for at least one semester. Suspended students should include a statement about their readiness to resume University work with their application.

Only under extraordinary circumstances will students be readmitted after dismissal for academic reasons. Applications submitted by dismissed students are reviewed by the University's Academic Standards and Advising Committee.

It may not be possible for readmission applicants to enroll in programs with established enrollment limitations.

Transfer Students

UNH encourages applications from transfer students. Admission consideration includes review of course selection, academic achievement, and the extent to which that selection addresses the University's general education requirements. Transfer credit is awarded for completed courses taken at an institution that is fully accredited by one of the regional accrediting associations with a grade of C or better, provided those courses are comparable to courses offered at UNH. Each

course must carry at least 3 semester credits and receive a letter grade to qualify for general education consideration.

The application deadline for fall semester admission is April 1; October 15 is the application deadline for spring semester. Some programs have enrollment limitations. Students enrolled in one of the University's associate degree programs who desire admission to a bachelor's degree program at UNH apply as transfer students through the Office of Admissions.

Transfer students may contact the Department of Housing at (603) 862-2120 to determine the availability of on-campus housing, or the Office of Commuter Services for assistance with off-campus housing. In most situations, on-campus housing is not guaranteed to transfer students.

New England Regional Student Program

The University participates in the New England Regional Student Program, in which each state college and university in New England offers certain undergraduate majors to students from other New England states. Under this program, admitted students pay the UNH in-state tuition plus an additional percentage. Students must indicate on the application the specific major for which they are applying. Information about the curricula may be obtained from:

The New England Board of Higher Education
45 Temple Place
Boston, MA 02111
www.nebhe.org (<http://www.nebhe.org>), or (617) 357-9620.

Visit <http://admissions.unh.edu/tuitionfees/new-england-regional-student-program/> for available UNH majors through this program.

Full-Time Special Student Status

UNH offers a special student classification for persons who wish to participate in University coursework on a full-time basis without entering a degree program. In evaluating requests for special full-time status, the Office of Admissions generally applies the same criteria used in the review of applicants for admission to degree candidacy. Full-time special students have full access to academic support services but are not eligible for University-based financial aid. Students must maintain satisfactory achievement to continue with University coursework. Full-time special (non-degree) students register for coursework through the Registrar's Office.

Resident Status

All students attending any division of UNH in any capacity shall be charged tuition at a rate to be determined by their primary, legal domicile. Those domiciled within the state of New Hampshire pay the in-state rate. Those domiciled elsewhere pay the out-of-state rate.

Students are classified as residents or nonresidents for tuition purposes at the time of admission to the University. The decisions, made by the Office of Admissions, are based upon information furnished in students' applications and any other relevant information.

All enrolling students living in New Hampshire are required to submit a notarized statement to the effect that they, if financially independent, or their parents, if financially dependent, have been legally domiciled in New Hampshire continuously for a period of at least twelve months immediately prior to registering for the term for which the student is claiming in-state status. Students admitted from states other than

New Hampshire or from foreign countries are considered nonresident throughout their attendance at the University unless they have acquired bona fide domicile in New Hampshire.

If students maintain residency apart from that of their parents, they must clearly establish that they are financially independent and that their residence in New Hampshire is for some purpose other than the temporary one of obtaining an education at the University. To qualify for in-state status, students must have been legally domiciled in New Hampshire continuously for a period of at least twelve months prior to registering for the term for which in-state status is claimed.

The burden of proof in all cases is upon the applicant. The University reserves the right to make the final decision concerning resident status for tuition purposes.

A copy of the rules governing residency may be obtained from the Office of Admissions and on the following website: <https://www.unh.edu/policy/bot/iv-financial-policies/e-classification-students-tuition-purposes-residency-rules>

Campus Life, Programs and Services for Students

The University offers programs and services to help every student get the most out of their college experience.

Advising Services

Every UNH student is assigned an academic advisor, who provides help in choosing courses and planning a program of study. Each college within the University also has an advising office. Other sources of help, for academic or personal problems, are described below.

Career and Professional Success (CaPS)

With an uncommon commitment to personal and professional development, Career and Professional Success (CaPS) empowers all UNH students to proactively build the knowledge and skills they need to adapt and succeed in an ever-changing future. We are coaches, connectors, and champions for students and alumni in the Wildcat community. In partnership with faculty, staff, employers, and our global alumni network, we orchestrate opportunities for students to build personal and career awareness, build a personal brand, build professional experiences, and build professional relationships, equipping all with the tools to thrive throughout their lives.

For more information about programs, services and opportunities, call (603) 862-2070, visit www.unh.edu/career (<http://www.unh.edu/career>), or follow UNH Career and Professional Success on all major social media platforms.

Internships

Career and Professional Success supports students in locating pre-professional internships in settings ranging from traditional business and research facilities, to more uniquely tailored environments that reflect academic and career interests. Students who wish to engage in career-oriented work experiences for university credit should consult with an appropriate faculty sponsor in their department regarding established programs and the possibility of receiving academic credit. Many academic departments list internship opportunities and programs on the department website.

Additional paid and unpaid internship postings can be found through UNH's job and internship board, Handshake, at unh.edu/career/handshake.

For more information on internships at UNH, call (603) 862-2070 and/or visit www.unh.edu/career (<http://www.unh.edu/career>).

Center for Academic Resources (CFAR)

The Center for Academic Resources (CFAR) offers a comprehensive range of academic-related services to undergraduate students. Students work on an individual basis or in small group seminars to improve their academic performance and enhance their educational experience. CFAR offers individualized academic peer mentoring in learning strategies such as time management, test-taking, organization, note-taking, and reading; course information; clarification of academic goals; personal advising; and referrals.

As part of the University's commitment to improving access and student success, CFAR hosts a national TRIO/Student Support Services (SSS) program, partially funded by the US Department of Education*. Student Support Services is for students whose parents do not have a college education, students with a high financial need, and students with disabilities. intended for students whose parents do not have a college education, students with a high financial need, and students with disabilities.

For more information call (603) 862-3698, e-mail cfar.sss@unh.edu or visit <http://www.unh.edu/cfar>

**UNH TRIO SSS is funded by the US Department of Education and the University of New Hampshire. In 2017-18 federal funding totals \$336,998. The University of New Hampshire contributes an additional \$85,673.22 in matching funds. The project is funded to serve 200 students in 2017-18.*

Honor Societies

The University of New Hampshire has a long and strong/valued tradition of recognizing outstanding student academic achievement through election to a variety of honor societies. Some of these national societies recognize performance in any academic field while others are limited to specific disciplines.

Honor societies are most prevalent in colleges and universities. Based on varying criteria of high academic achievement and leadership, students are invited to join most commonly in their junior or senior year. Although initiated into the campus chapter, students become members of the national society for life. For more information visit <https://www.unh.edu/honors-program/national-honor-societies>.

Discipline Society Name and Sash/Stole/Cord Color UNH Contact

Athletics

Chi Alpha Sigma, Black and Gold Cord, Joanne Maldari, joanne.maldari@unh.edu (joanne.maldari@unh.edu)

Band

Kappa Kappa Psi, Blue and White Cord, Casey Goodwin, casey.goodwin@unh.edu

Biological Sciences

Phi Sigma, Yellow, Green and White Cord, Estelle Hrabak, estelle.hrabak@unh.edu

Business

Beta Gamma Sigma, Gold and Blue Cord, Ashlyn True, ashlyn.true@unh.edu (eeleanne.solorzano@unh.edu)

Campus-Wide

Golden Key, Blue and Gold Sash, Marianne Fortescue and Sylvia Foster, marianne.fortescue@unh.edu
sylvia.foster@unh.edu (sylvia.foster@unh.edu)

Classics

Eta Sigma Phi, Gold and Purple Cord, Dr. Richard Clairmont and Dr. R. Scott Smith, richard.clairmont@unh.edu, scott.smith@unh.edu

Communications

Lambda Pi Eta, Red, White and Gold Cord, Dr. Nora Draper, nora.draper@unh.edu

Computer Science

Upsilon Pi Epsilon, Maroon and White Cord Dr. Radim Bartos, rbartos@cs.unh.edu

Economics

Omicron Delta Epsilon, Gold and Blue Cord Dr. Marc Herold, marc.herold@unh.edu

Engineering

Tau Beta Pi, Orange and White Cord Dr. Michael Carter, mike.carter@unh.edu, Dr. Erin Bell, erin.bell@unh.edu, Dr. Barry Fussell, barry.fussell@unh.edu

Engineering

UNH Society of Women Engineers, Green and Yellow Stole, Dr. May-Win Thein, may-win.thein@unh.edu

English

Sigma Tau Delta, Cardinal and Black Cord, Carla Cannizzaro, carla.c@unh.edu

Fraternity/Sorority

Order of Omega, Gold and Ivory, MaryAnne Lustgraaf, maryanne.lustgraaf@unh.edu

Health Pre-Profession

Alpha Epsilon Delta, Purple and Red Cord, Dr. Mary K. Lockwood, mkk1@unh.edu

History

Phi Alpha Theta, Red and Blue Cord, Dr. Cathy Frierson, cathy.frierson@unh.edu

Hospitality and Tourism

Eta Sigma Delta, Yellow, Dr. Dan Innis, dan.innis@unh.edu

Justice Studies

Alpha Phi Sigma, Blue and Gold, Dr. Ellen Cohn, ellen.cohn@unh.edu

Liberal Arts

Phi Beta Kappa, Pink and Blue Cord, Dr. Susan Siggelakis, susan.siggelakis@unh.edu

Mathematics

Pi Mu Epsilon, Gold, Purple and Lilac Cord, Ellen O'Keefe, emo@cisunix.unh.edu

Natural Resources

Xi Sigma Pi, Green and White Cord, Dr. Mark Ducey, mark.ducey@unh.edu

Nursing

Sigma Theta Tau, Orchid and White, Dr. Joyce Cappiello, joyce.cappiello@unh.edu

Political Science

Pi Sigma Alpha, Red, White and Black Cord, Dr. Susan Siggelakis, susan.siggelakis@unh.edu

Psychology

Psi Chi, Platinum and Dark Blue, Dr. Carolyn Mebert, cjm@cisunix.unh.edu

Social Work

Phi Alpha, Gold Cord, Gretchen Bean, gretchen.bean@unh.edu

Sociology

Alpha Kappa Delta, Teal Cord, Dr. Thomas Safford, tom.safford@unh.edu

International Students and Scholars

The Office of International Students and Scholars (OISS) provides services to international students (<http://www.unh.edu/global/international-students>), faculty, staff and exchange scholars (<http://www.unh.edu/global/faculty-scholars>) covering a broad spectrum, which begin before the international visitor arrives on campus and often continue past the completion of their program. These include: Preparation of eligibility documents for visa issuance along with pre-arrival instructions and information; Preparation of applications to U.S. immigration offices to secure appropriate work authorization for international faculty and staff; In-depth orientation programs for new students and scholars, covering a variety of issues such as immigration rights and responsibilities, adjusting to life in another culture, working in the U.S., adapting to the U.S. educational system, area attractions and services and much more; A variety of workshops and seminars such as immigration and employment workshops and career orientation seminars.

All international students are encouraged to maintain contact with the OISS and are required by law to report changes of address, academic program, or source of educational funds.

OISS also serves as a liaison between international students, faculty and staff and various other UNH offices and departments. For more information visit www.unh.edu/global (<http://www.unh.edu/global>) or call (603) 862-1288.

Military & Veteran Services

The mission of Military and Veteran Services is to provide the highest quality service and support to Student Veterans, National Guard and Reserve members and their families who may attend UNH as their dependents, as outlined in the [Principles of Excellence](#) and [The Eight Keys of Success](#) to insure attainment/achievement of their goals at UNH.

Military and Veteran Services (MVS) is the primary support (benefit, academic, personal or social) office for any military connected student. We are also the first line resource within the university community for information about educational benefits offered to support all military connected students.

We also play a central role on campus in educating and raising awareness within the university community and beyond with all issues related to the success of each of the military connected students at UNH.

We subscribe to and follow PL 113-146 Section 702, The Veterans Access, Choice and Accountability ACT of 2014. A summary of this act can be found here <https://www.va.gov/opa/choiceact/documents/Choice-Act-Summary.pdf>.

Veterans will have priority registration beginning in the Fall of 2018. This means that Veteran students register during the initial registration period of their class.

For more information call (603) 862-0643, visit www.unh.edu/veterans (<http://www.unh.edu/veterans>), or email UNH.Veterans@unh.edu

Psychological and Counseling Services

Psychological and Counseling Services (PACS) is the primary mental health facility on campus. We are fully funded by student fees. Our confidential services are designed to help students who are enrolled in full-time study to achieve their personal and academic goals. PACS utilizes a brief, solution-focused counseling model, which may include individual and group therapy, workshops, consultation with a psychiatrist, or counseling during a crisis. Students needing longer term service are offered referrals to other university and community agencies.

We also aim to serve the community while being part of the community. As community members with specialized training in working with the university population, we are knowledgeable about the special needs of students, faculty, staff. A large part of our community work focuses on prevention; we believe that increased awareness of healthy ways to cope with stress can help the UNH community and its individual members achieve their professional and personal goals.

All information about a student's visits to PACS is confidential and cannot be released without the written permission of the student. The University of New Hampshire Psychological and Counseling Services has been accredited by the International Association of Counseling Services since 1978.

For more information, call (603) 862-2090 or visit <http://www.unh.edu/pacs>.

Student Accessibility Services

Student Accessibility Services (SAS) is committed to establishing a community that ensures full participation for students, and providing assistance that will facilitate independence and academic progress. The office is responsible for determining and ensuring academic and housing accommodations. In addition, we are a source of information and referral; a resource and collaborative partner for the campus community; and a point of support and advocacy regarding access issues in general.

Self-identifying with SAS is the first step in both gathering useful information—what SAS offers and what other resources exist—and establishing accommodations. You will need to provide documentation, make an appointment to review/discuss it, and identify appropriate accommodations. Creating a faculty accommodation letter is part of that process. Please see the Documentation Guidelines for direction on what to provide. If you are unsure, submit/bring whatever you may have so we can review and evaluate it.

There is no deadline to make contact, complete an intake, or provide documentation. The process of identifying and determining accommodations is an ongoing conversation. Students should provide additional documentation and/or talk with SAS as concerns and needs arise, or as the condition of the disability changes.

For more information call (603) 862-2607 (voice), 711 (TTY) or 800-735-2964 (Relay NH); (603) 862-4043 (fax); e-mail SAS.office@unh.edu ([SAS.office@unh.edu?subject=SAS webpage inquiry](mailto:SAS.office@unh.edu?subject=SAS%20webpage%20inquiry)); or visit <http://www.unh.edu/studentaccessibility>. Student Accessibility Services is located in Smith Hall, Room 201.

General Information for Students with Disabilities

Students seeking academic accommodations, services, and accessibility should contact Student Accessibility Services (SAS): voice (603) 862-2607; TTY Users: 7-1-1 or 800-735-2964 (Relay NH); SAS.office@unh.edu ([SAS.office@unh.edu?subject=SAS webpage inquiry](mailto:SAS.office@unh.edu?subject=SAS%20webpage%20inquiry));

Most major buildings have ramps and many have elevators and adapted restroom facilities. Contact SAS, (603) 862-2607, or Affirmative Action, (603) 862-2930, with questions about building facilities.

Students with disabilities may use state-issued accessible parking permits in visitor lots and at metered parking (free). State permits are available through a student's home state (Department of Motor Vehicles [DMV]). Please note: on-campus parking in restricted lots ("permit required") requires BOTH the state-issued accessible permit and a UNH campus permit. Questions about temporary accessible parking should be directed to Parking Services at (603) 862-1010.

For information about dietary restrictions and needs as an accommodation, visit <http://www.unh.edu/dining/nutrition>.

Students with disabilities who need accessible UNH housing should contact SAS early to allow for identification of appropriate accommodation(s) and notification from SAS to Housing. Wildcat Access Van is a demand-response system that operates within the service area of the Wildcat Transit routes. All of the fixed route buses are lift-equipped. For information on this service or for the special arrangements possible during periods of inclement weather, contact SAS, (603) 862-2607.

All B.A. candidates must fulfill the University's foreign language requirement by the end of their sophomore year. A student with a documented disability may petition the foreign language board for course substitutions on the basis of that disability. Contact SAS to learn about the process.

No otherwise qualified individual may be excluded from or denied access to any program, course of study, or any other offering of the University solely on the basis of a disability. Concerns regarding the institution's compliance with the Americans with Disabilities Amendments Act (ADAA) of 2008, or Section 504 of the Rehabilitation Act of 1973 should be addressed to the ADA/504 Compliance Officer in the Affirmative Action Office at (603) 862-2930 (Voice/TTY).

University Advising Center

The University Advising Center provides academic advising to undeclared students in the College of Liberal Arts. The center's professional staff provides assistance to students in clarifying their interests and skills as they relate to developing a program of study at the University and declaring a major, offering opportunities to explore career possibilities.

The center is also the campus resource for all students seeking admission to medical and related health profession schools and law school. The center is the primary academic advising resource for non-degree students and assists all students in identifying and connecting with other resources across campus.

For more information call (603) 862-2064 or visit www.unh.edu/uac. (<http://www.unh.edu/uac>)

University Writing Programs

The University Writing Programs (UWPs) were created to promote, support and assess writing at the University of New Hampshire. The UWPs are housed in Academic Affairs and report to the Senior Vice Provost for Academic Affairs. The UWPs are contained in a single unit that includes responsibility for the Writing Committee, Writing Across the Curriculum (WAC), the Connors Writing Center (CWC), and the Online Writing Lab (OWL). The curricular component of WAC, consisting of the writing-intensive (WI) courses, is situated within academic departments.

We work with academic units, departments, allied programs, individual faculty, and students to advance the culture of writing at UNH. This approach values and encourages writing as an "activity and subject of study,"¹ not only in writing intensive (WI) classes but wherever writing occurs. Through frequent guided practice, UNH students become accustomed to negotiating the writing process, are more self aware and able to transfer positive writing habits, and can adjust to differing genre conventions. We offer a wide array of services and resources to support students and faculty with their writing-based endeavors in the curriculum.

For more information call (603) 862-3272 or visit www.unh.edu/writing (<http://www.unh.edu/writing>).

Connors Writing Center

The Connors Writing Center offers free, one-on-one writing conferences to members of the UNH community: students, faculty and staff. We work with writers from all disciplines on many different kinds of academic writing. Our 50 minute conferences are conducted by trained writing assistants, who are UNH undergraduate and graduate students.

We work with writers on all types of writing, from analysis essays to lab reports, conference proposals to dissertations. Our conferences are not limited to one specific type of writing or a single academic field—we collaborate with writers from across the university on a large range of academic writing.

Typically, the writers who visit are working on projects for courses. But we also see writers who are working on personal projects, statements of purpose and personal statements for graduate school, and so on.

For more information about resources and services available call (603) 862-3272 or visit www.unh.edu/writing (<http://www.unh.edu/writing>).

Cross Campus Registration

Students at the University of New Hampshire and the University of New Hampshire at Manchester may take courses on a space available basis at either campus. Students from either campus should consult with their advisor regarding which courses are appropriate for registration. Please note: students will need special approval to register for cross-campus courses which have campus, college or major restrictions or require special permission. Students can view a full listing of courses at each campus, including restrictions online at courses.unh.edu (<https://courses.unh.edu>).

Fees and Expenses

The expected cost for 2018 - 2019 at the University will average about \$30,000 for residents of New Hampshire and about \$45,000 for nonresidents. See the UNH Business Services website (<http://>

www.unh.edu/business-services/tuitfees) for the most up-to-date listing of rates.

UNH bills are sent electronically only. Bills are posted to student Webcat (<https://my.unh.edu/task/durham/webcat-task>) accounts. Students are notified through UNH assigned e-mail addresses when new bills are posted.

Tuition

Students are permitted to enroll for more than 20 credits only with the approval of their college or school dean. Persons carrying more than 20 credits will be billed a per-credit fee for each credit above 20 credits, whether or not a student has obtained the dean's approval. Courses taken for audit are charged at the same rates as for-credit registrations. No refund will be made after the additional charges have been applied if a student subsequently drops a course, bringing the credits to 20 or fewer. Undergraduates registering for fewer than 12 credits pay the per-credit hour charge, plus a registration fee of \$20 per semester. Undergraduates registered for fewer than 12 credits are charged 50 percent of the usual mandatory fees. Students registered for fewer than 5 credits pay the technology fee but are not charged for the other mandatory fees. The minimum charge for any recorded course is the per-credit charge of 1 credit hour.

Tuition differential charges apply to some majors. Students in the College of Engineering and Physical Sciences (CEPS), including engineering and computer science, and the Peter T. Paul College of Business and Economics (PAUL) will be charged a tuition differential. The differential is the same rate for both N.H. residents and nonresident students. CEPS and PAUL students who register for fewer than 12 credits pay a differential per-credit hour. Music majors are charged an applied music fee of \$450 each semester. Thompson School students pay curriculum fees to cover special costs in their programs (see the Thompson School section).

All admitted students must pay an enrollment fee. The fee is \$350 for residents and nonresidents. If a student decides not to attend the University, these payments may be refunded on a prorated basis until August 15, according to the guidelines set by the Office of Admissions.

Tuition and mandatory fee charges will be refunded to students withdrawing or dropping courses by the second Friday of the semester; one-half after the second Friday and until the fifth Friday; and none thereafter (see the University Calendar). Students receiving federal financial aid will have their return of unearned aid calculated in accordance with the U.S. Department of Education regulations in effect at the time of their withdrawal. For more information concerning withdrawal, call Business Services, (603) 862-2230. A degree candidate who withdraws from UNH and subsequently enrolls as a special student within the following year will be billed for tuition and fees on the same basis as degree candidates. Students with outstanding financial obligations to the University must clear their accounts before their registration will be confirmed.

Fees

Expected mandatory fees for 2018 - 2019 include a Memorial Union fee for the use and administration of the student union; a recreational fee for support of recreational facilities; a student activity fee for support of the undergraduate newspaper, yearbook, student government, student radio station, and other student organizations; a technology fee; a student athletic fee to provide support for athletic programs; a health and counseling fee to provide general health care through University Health &

Wellness; a career and professional success fee; and a transportation fee to provide student transportation services.

There are no waivers of these fees. The services and facilities are available to all—the extent to which each student uses them cannot be the factor by which assessment is determined. Students who withdraw or drop to part-time after classes begin are eligible for refund of fees at the same rate as tuition refunds listed previously.

As a condition of enrollment, all full-time UNH students will be required to carry health insurance. Students may elect coverage under the University's student health benefits plan, or may waive the requirement by providing proof of adequate coverage through another plan. International students with F1 or J1 visas are required to purchase the UNH-sponsored coverage. There are no exceptions to this policy.

Mandatory Fees Include

Recreation Fee

- Use of indoor pool at the field house
- Use of athletic facilities at the Whittemore Center, which includes:
 - Aerobics
 - Saunas
 - Locker rooms
- With an additional fee:
 - CPR/first aid course
 - Ballroom dancing
 - Lifeguard instruction

Health & Wellness Fee

For information, see Health & Wellness (p. 20).

Memorial Union Fee

For information, see Memorial Union (<http://www.unhmub.com>).

Athletic Fee

- Admittance to all home games of organized sports at UNH
- Financial support for athletes and athletic teams

Activity Fee

Support for the following organizations:

- The undergraduate newspaper
- Yearbook
- Student government
- Student radio station
- Movies at reduced rates

For more information, check the "Get Involved" guide available at the Memorial Union Building.

Career and Professional Success

Helps prepare students for successful lives after graduation.

- internships
- career advising and resources
- assessments
- employer relations
- interview preparation
- mentoring

Technology Fee

Support for the following:

- Student computing clusters
- Walk-in Help Desk services
- Technology-enhanced classroom infrastructure
- Academic technology liaisons
- Technology-enhanced learning

Transportation Fee

Student transportation services:

- Campus Connector
- Wildcat Transit
- Safe Rides
- Amtrak Quik Ticket trip
- Non-emergency rides

Room and Board

New first-year students accepting a space on campus must include a \$200 housing deposit with their housing application. For returning students, no deposit is required; instead, a cancellation fee will apply if the housing agreement is cancelled. Written notification of cancellation of the room application or assignment received by Housing before June 1 will result in a \$250 cancellation fee applied to the student's account. Written notification of cancellation received by Housing between June 2 and July 1 will result in a \$375 cancellation fee applied to the student's account. Written notification of cancellation received by Housing between July 2 and August 15 will result in a \$500 cancellation fee applied to the student's account. Written notification of cancellation received by Housing between August 15 and before Friday of the first week of fall semester class will result in a charge of one-fourth of the full semester's housing fee.

If by Friday of the first week of fall class the student fails to occupy the assigned room or cancels the agreement by mutual consent, or if for disciplinary or nonrenewal actions the agreement is canceled, the student will receive a 75 percent refund of the semester's housing fee. Cancellation after the first Friday of fall classes and before 30 days after registration will result in a 50 percent refund of the semester's housing fee. Cancellation 30 days after registration will result in no refund of the housing fee. Students who check in or move in to a hall or apartment, move out, and do not withdraw from the University are charged the full housing fee. If the agreement is canceled, any refund of the housing deposit will first be applied against any unpaid University charges.

Refunds of meal plans will be granted only with approval or upon withdrawal from the University. If a refund is approved for an Unlimited Access meal plan, the refund will be prorated by the number of weeks and partial weeks the student attended classes or used the meal plan. Block meal plans will be prorated by the number of meals consumed and charged at the highest prevailing meal rate. Unspent dining dollars will be refunded.

Rebates

Any amount owed to the University will be deducted from any rebate due to a student.

Deposits and Course Fees

Refundable deposits may be required to cover locker keys or loss or breakage in certain departments. A semester charge will be made for individual lessons in music, as noted in the description of applied music courses. (Non-music majors taking music courses or sections will be charged an applied music fee). A charge will be made for riding lessons and SCUBA, as noted in the sections on animal sciences and physical education. Some courses carry special fees to cover the costs of special equipment, field trips, etc.; these are noted in the course descriptions.

Students will be charged a computer-use fee for courses requiring computer access and/or common access accounts. For certain courses, there are also lab fees.

Other Expenses

Books and classroom supplies cost approximately \$800 to \$1,000 annually. These may be purchased at the University Bookstore.

Personal expenses vary considerably with individual students and include clothing, laundry, recreation, incidentals, and travel.

Payment

All bills for tuition, fees, room and board, and other semester charges are due in full on the payment due date for each semester. A late fee may be assessed to student accounts not paid in full by the payment due date. Student accounts not paid in full within 30 days after the payment due date may be assessed additional late fees, default charges, interest and/or collection costs, and the student may be subject to deregistration from classes.

Parents and students who wish to make periodic payments for tuition, fees, room and board, and other semester charges should contact UNH Business Services well in advance of the semester payment due date for information on approved payment plans.

Undergraduate bills are sent electronically through posting to students' Webcat (<https://my.unh.edu/task/durham/webcat-task>) accounts. Tuition bills are posted twice a year, in mid-July for the fall semester and in mid-November for the spring semester. Monthly statements are also posted as needed. E-mails are sent to students' UNH-assigned e-mail addresses notifying students when new bills have been posted. Students may set up Parent Portal accounts to allow parents or others to access their student accounts.

Through the online system, students can view a history of electronic bills and payments and access a real-time view of their accounts. Payment may be made online, or the bill may be printed and mailed with payment. Credit card transactions will be charged a nonrefundable 2.75 percent service fee.

Financial Aid

The University Financial Aid Office assists students who are unable to meet educational expenses entirely from their own family resources. Aid is available in the form of grants and scholarships, loans, and part-time employment. The financial aid website gives program information, application procedures, and deadlines.

In many communities, scholarships and loans are available locally. School principals and guidance counselors have information about these sources of assistance, which are available to both high school seniors and adult students.

Before applicants may be considered for assistance by the University, they must submit the Free Application for Federal Student Aid (FAFSA). Applicants will find this at <https://fafsa.gov>.

The financial aid application deadline for aid awarded by the University is March 1. This is the date by which your fully completed FAFSA must be received by the federal processor.

The importance of meeting this deadline cannot be overstated. While there are some types of aid (e.g., Pell Grants and Direct Loans) for which you may apply after this deadline, it is likely that you will receive substantially less total aid if your application is late. For the past several years, applicants applying after the deadline did not receive any aid awarded by UNH (SEOG, tuition grant, or work study).

It is the University's position that the student applicant is accountable for the accuracy and timely submission of the FAFSA. We realize that in most cases a student's parent(s) also participates in completing the form. However, it is the student who is ultimately responsible for monitoring the application process. Students should not wait until being admitted to the University before applying for financial aid.

In order to be considered for need-based assistance, students must submit a FAFSA each year.

Note: There is reference on the FAFSA to a "deadline" of June 30. Do not be misled by this date. It is not the financial aid deadline at UNH or most other colleges.

Grants and Scholarships

Admitted undergraduate degree candidates who will attend UNH on a full- or part-time basis may be considered for tuition grants and University scholarships. The basic consideration is financial need, although some scholarships are awarded on the basis of scholastic attainment, participation in extracurricular activities, or meeting specific requirements of a donor.

The University participates in the federally sponsored Federal Supplemental Educational Opportunity Grant Program, which is designed to assist needy students who are admitted degree candidates.

Federal Pell Grant Program

Students may apply directly to the federal government for a Pell Grant using the FAFSA.

Loan Programs

Matriculated students enrolled on a full- or part-time basis who have completed the financial aid process will be reviewed for the federal government's Direct Student Loan Program.

Part-Time Employment

The Federal Work-Study Program, both academic year and summer, assists students who, as determined by the Financial Aid Office, need financial assistance for their educational expenses. Admitted undergraduate and graduate degree candidates attending at least half time are eligible for consideration.

Students who do not qualify for the Work-Study Program may find part-time employment on or near campus.

ROTC Scholarships

Reserve Officer Training Corps scholarships are offered on a competitive basis by both the Army and the Air Force. Entering freshmen may compete for four-year scholarships during the last year of high school. A variety of scholarships are also available to students already attending the University.

Scholarships pay up to full tuition, all mandatory fees, and for required textbooks. In addition, all scholarship recipients receive a tax-free monthly subsistence allowance. Finally, students with a four-year or three-year ROTC scholarship compete for a room and board grant for the entire time they are on the scholarship.

For more information, contact the Admission Officer: Army ROTC at (603) 862-7075, or Air Force ROTC at (603) 862-1480.

Health Services

The University has a nationally accredited (aaahc.org (<http://www.aaahc.org>)) health and wellness program.

Health and Counseling Fee

All UNH students who take five or more credit hours/semester are required to pay the UNH health and counseling fees. These fees allow students to access services at Health & Wellness and/or Psychological and Counseling Services on campus, and cover many services at no or reduced cost. When combined with a student's health insurance coverage, the health and counseling fees provide for a complete health care package. A student's health insurance is never billed for services covered by the UNH health and counseling fee.

Health Insurance

UNH requires health insurance as a condition of enrollment for full-time degree students at its Durham, Manchester, and Concord campuses. Students who already have health insurance are able to waive coverage under the University-sponsored plan, if their insurance plan meets or exceeds the established UNH waiver criteria, by completing a waiver prior to the deadline. International students with F-1 and J-1 visas are required to purchase the UNH Student Health Benefits Plan.

Health Record Requirement

Undergraduate students who have been formally accepted for bachelor's or associate's degree candidacy are required to have health information on file with UNH Health & Wellness. The three requirements are:

1. a physical assessment,
2. immunization form, and
3. a health history form

to be completed and submitted by the student online. This information is listed on the Health & Wellness website at www.unh.edu/health (<http://www.unh.edu/health>)

Documentation of proof of immunity to MMR (measles, mumps, and rubella) is required (UNH Academic Policy 02.14) and is typically shown on the immunization form. Students must meet one of the following criteria for proof of immunity: received two vaccinations at least one month apart after 12 months of age; a titer (blood) test demonstrating immunity to measles, mumps, and rubella; health provider documentation of past history of measles, mumps, and rubella; or born before 1957. Students requesting a religious exemption from measles vaccinations

must complete the UNH Health & Wellness Request for Exemption and submit appropriate documentation. Students from countries where TB is endemic are required to either provide documentation of being tested within six months prior to enrollment, or provide documentation of treatment for either latent or active TB, or a negative chest radiograph if the test is positive. It is the responsibility of students to provide the documentation before attending any classes. Any student failing to complete these requirements may be prevented from registering for future classes.

Medical Services

UNH Health & Wellness provides comprehensive, student-focused, primary medical care through a team approach. The clinical staff consists of board-certified physicians, nurse practitioners, physician assistant, nurses, and medical assistants who are committed to prevention and holistic care. Primary medical care is provided for a large variety of common concerns. Examples include respiratory illnesses such as asthma, all kinds of infections, injuries, dermatologic issues, digestive disorders, and mental health. Sexual reproductive health services include annual examinations, family planning/contraceptive services, cervical cancer (Pap smears) screening/prevention, testing and treatment for sexually transmitted infections, pregnancy testing and counseling, limited sexual assault services, and more. Health resource nurses provide chronic illness support, and assist with problems arising from hospitalization, and health leaves and return to campus. Other services include allergy/immunization services and travel health consultation. Students may speak by telephone with a health resource nurse for advice at any time, including when UNH Health & Wellness is closed. Clinical support services include laboratory, radiology, and pharmacy. Not all services are available during the summer or breaks. For more information, visit <http://www.unh.edu/health>

Well-staffed and well-equipped community hospitals are nearby, and emergency ambulance service is available in Durham at all times.

Health Leaves

All undergraduate students seeking assistance with health-related (physical or mental) leaves of absence from the University, or those who will be out for extended periods of time due to health issues, should be in touch with the executive director of UNH Health & Wellness at (603) 862-1098. Health-related leave information is also available on the web at www.unh.edu/health/leave.

Living Well Services

Living Well Services coordinates health promotion activities on campus. Services provided include educational programs/workshops, individual and group support to promote healthy lifestyle choices, alcohol and other drug counseling, tobacco cessation services, nutritional counseling, wellness coaching (ex. stress, sleep, behavior change, etc.), biofeedback, light therapy, massage therapy and a resource library. For more information, visit the UNH Health & Wellness website at www.unh.edu/health/ohep (<http://www.unh.edu/health/ohep>)

Library

The UNH Library supports the educational and research activities of the students, faculty, and staff of the University of New Hampshire as a research-level library. Experienced research assistance along with group and individual instruction support students learning how to efficiently

research and critically evaluate information on the way to becoming effective lifelong learners.

The Library provides access to an extensive collection of electronic resources (e-books, digital collections, an institutional repository, indexes in many subject areas, statistical data sets, and databases supplying full-text periodical and newspaper articles) 24/7 at library.unh.edu (<https://library.unh.edu>). The Library also has approximately 2.7 million print and electronic items and more than 104,000 print and electronic serial subscriptions and is active in digitizing, preserving, and making accessible materials in its collections.

Dimond Library houses collections in the social sciences, humanities, business, health and human services, education, earth sciences and is the regional depository for federal government publications (including maps). Dimond Library is also home to the Connors Writing Center, the Academic Technology Support Center, the Parker Media Lab, and Zeke's Cafe. The UNH Museum and Special Collections and Archives house rare books, manuscripts, and University publications and papers. In addition to the main Dimond Library, there are three branch libraries for physical sciences and engineering that offer customized services for the UNH scientific and engineering communities.

The library's holdings are supplemented by access to the collections of the Boston Library Consortium members as well as libraries across the country through interlibrary loan. The UNH Library shares resources with the campus library at the University of New Hampshire at Manchester and collaborates with the UNH School of Law library.

All library locations offer wireless Internet access, computer workstations, individual study areas, and collaborative group work spaces. Dimond Library offers seating for more than 1,200 in a variety of settings.

For additional information about UNH Library resources, services, and people, please visit library.unh.edu (<https://www.library.unh.edu>).

University Academic Requirements

Degree Requirements

Degree Requirements for Undergraduates

Requirements in this catalog apply to students who enter the University between July 1, 2018 and June 30, 2019. Students who entered the University at an earlier time but who wish to change to the requirements of this catalog must apply to the appropriate office for the change. Students will be held responsible for all work required for graduation and for the scheduling of all necessary courses.

Credit Requirement

To be eligible for graduation from the University of New Hampshire, a student must obtain a passing grade in a minimum of 128 semester hours; for associate degree graduation, 64 semester hours. The student must also meet the curricular, departmental, scholastic, and other requirements that have been sanctioned by the proper authorities.

To be eligible for graduation, all baccalaureate, associate in applied science and associate in art students enrolling for academic year 2018/19 must fulfill four types of University requirements: Writing, Discovery (or General Education for associate degree students), degree, and major.

Minimum Graduation Average

A cumulative grade-point average of 2.0 in University of New Hampshire courses is the minimum acceptable level for undergraduate work in the University and for graduation. In addition, some majors require a grade-point average greater than 2.0 in certain courses or combinations of courses. The Academic Standards and Advising Committee examines the records of students periodically and may place academically deficient or potentially deficient students on warning, or may exclude, suspend, or dismiss those who are academically deficient.

Residence

"Residence" is being enrolled in University of New Hampshire courses after admission to and matriculation in a degree program. Students who are candidates for bachelor's and associate degrees must attain the last one-fourth of their credits toward the degree in residence unless granted permission by the Academic Standards and Advising Committee to transfer part of this work from other accredited institutions

Certification of candidate for graduation

Degrees are awarded three times a year: December, May and September. Candidates for graduation shall be certified as to their college requirements by the several college faculties to the Registrar, who shall recommend them to the president for their appropriate degrees provided they have satisfied all University requirements for graduation.

Modifications tend to occur in major programs during the period of students' undergraduate careers. Students are expected to conform to these changes insofar as they do not represent substantive alterations in their course of study.

Note: Although the University will try to provide sufficient facilities so that students may pursue any major or curriculum for which they meet the requirements, such a privilege cannot be guaranteed, since rapidly increasing enrollment sometimes results in the overcrowding of required specialized courses. On occasion, students may remain in a crowded curriculum if they are willing to take certain courses during the summer session.

Quota of Semester Credits

Students registering for more than 20 credits must receive the approval of the college dean. Additionally, students taking more than 20 credits in a single term will pay a per-credit surcharge.

Baccalaureate and associate in arts undergraduates are assigned class standing on the basis of semester credits of academic work completed with a passing grade, as follows: to be a sophomore, 26 credits; to be a junior, 58 credits; to be a senior, 90 credits.

Grades

Grading and honors policies as stated in this catalog apply to all undergraduate students.

Instructors assign grades as listed below; grade points per credit are indicated in parentheses. For all undergraduate courses, grading standards established by the Academic Senate are that a C indicates competent, acceptable performance and learning; B indicates superior performance and learning; and A indicates excellent performance and learning. These standards apply to all undergraduate courses, instructors,

departments, subjects, and colleges. The University reserves the right to modify grading and honors practices.

- A (4.0) Excellent
- A- (3.67) Intermediate grade
- B+ (3.33) Intermediate grade
- B (3.0) Superior
- B- (2.67) Intermediate grade
- C+ (2.33) Intermediate grade
- C (2.0) Satisfactory, competent
- C- (1.67) Intermediate grade
- D+ (1.33) Intermediate grade
- D (1.0) Marginal grade
- D- (0.67) Intermediate grade
- F (0.0) Failure, academic performance so deficient in quality as to be unacceptable for credit
- AF (0.00) Administrative F (usually indicates student stopped attending without dropping the course); is included in grade-point average
- CR—Credit, given in specific courses having no letter grades, designated credit/fail
- P—Passing grade in a course taken under the student pass/fail grading alternative
- W—Withdrawal, assigned if withdrawal is later than fifth Friday of classes (but not after midsemester); is not included in grade-point average
- WP—Withdrawal, assigned if withdrawal is after mid-semester and if student is passing; is not included in grade-point average
- WF—Withdrawal, assigned if withdrawal is after mid-semester and if student is failing; is included in grade-point average
- AU—Audit, no credit earned
- IC—Grade report notation for student's incomplete coursework
- IA—Indicates "incomplete" in a thesis or continuing course of more than one semester; the grade earned will replace "IA" assigned in previous semesters
- IX—Grade not reported by instructor

Students earning a semester or cumulative grade-point average less than 2.00 are placed on "academic warning."

Pass/Fail

While earning a bachelor's degree, students may choose the pass/fail grading alternative for a maximum of 4 credits per semester up to a total of 16 credits toward the degree.

Pass/fail cannot be used for Discovery requirements, for writing-intensive courses, for courses required by a student's major or second major, for option or minor requirements, for ENGL 401 First-Year Writing, or for repeated courses. In addition, B.A., B.F.A., and B.M. degree candidates may not use pass/fail for courses taken to meet the foreign language requirement, and no Paul College course may be taken on a pass/fail basis by a student majoring in administration, economics, or hospitality management.

The minimum passing grade for credit is a D- (0.67); any grade below this minimum is a fail. All grades will be recorded on the grade roster as A, B, C, D, F, or intermediate grades. The pass/fail marks will be placed on students' transcripts and grade reports by the Registrar's Office. The

course will not be included in the grade-point calculation, but the pass or fail will be recorded, and in the case of a pass, the course credits will be counted toward degree requirements. Associate in arts students, see the University of New Hampshire at Manchester.

Honors

An undergraduate degree student, after completion of at least 12 graded credits in University of New Hampshire courses, is designated as an honor student for a given semester if the student has

1. completed at least 12 graded credits for that semester and earned at least a 3.50 semester grade-point average; or
2. earned at least a 3.50 cumulative grade-point average and at least a 3.50 semester grade-point average regardless of the number of graded credits that semester.

Bachelor's degree candidates who have earned honors for their entire work at the University will be graduated with honors based on the final cumulative grade-point average, provided that a minimum of 64 graded credits have been completed in University of New Hampshire courses. The Latin equivalent of the honors classification will appear on the student's academic record and diploma. The student's honors classification will be noted in the commencement program.

Students graduating in academic year 2015-2016 and subsequent years will be graduated with honors according to the following categories: 3.50 to 3.64 (honors); 3.65 to 3.84 (high honors); and 3.85 to 4.00 (highest honors).

UNH Credit Hour Policy

The University of New Hampshire is in compliance with the federal definition of credit hour. For each credit hour, the University requires, at a minimum, the equivalent of three hours of student academic work each week. Academic work includes, but is not limited to, direct faculty instruction, e-learning, recitation, laboratory work, studio work, field work, performance, internships, and practica. Additional academic activities include, but are not limited to, readings, reflections, essays, reports, inquiry, problem solving, rehearsal, collaborations, theses, and electronic interactions. Student work reflects intended learning outcomes and is verified through evidence of student achievement.

Academic Honesty

Academic honesty is a core value at the University of New Hampshire. The members of its academic community both require and expect one another to conduct themselves with integrity. This means that each member will adhere to the principles and rules of the University and pursue academic work in a straightforward and truthful manner, free from deception or fraud. The academic policy can be found in the annual publication, Student Rights, Rules, and Responsibilities (<https://www.unh.edu/student-life>).

Degrees

Bachelor of Arts

At least 128 credits in courses numbered 200-799, with a cumulative grade-point average of 2.0 for all courses taken at the University in which a grade is given.

Completion of Discovery Program (University core curriculum) requirements (p. 24).

Completion of the University writing requirement (p. 28).

Proficiency in a foreign language. This requirement may be fulfilled by completing the equivalent of a full-year elementary-level course in a language not previously studied, or by completing the equivalent of a semester of a course in a foreign language at the intermediate or higher level, or by earning credit through an approved Advanced Placement or College Board foreign language achievement test (minimum scores vary). The proficiency in a foreign language requirement must be satisfied by the end of the sophomore year. No credit is awarded for elementary year college coursework if the student has had two or more years of that language in high school. It is strongly advised that students check with academic departments to identify department-advised specific foreign language proficiency options.

Note: A student with a documented disability who wishes accommodation on the basis that the disability will prevent him or her from successfully mastering a foreign language requirement, or whose foreign language requirement was waived in high school because of a documented disability, must contact Student Accessibility Services, Smith Hall, (603) 862-2607 (Voice/TDD). An approved major.

An approved major.

For specific major requirements, check individual departmental or program listings.

Bachelor of Fine Arts, Bachelor of Music

Requirements for the B.F.A. degree are outlined in the Department of Art and Art History (p. 38), College of Liberal Arts; for the B.M. degree, go to the Department of Music (p. 95), College of Liberal Arts.

Bachelor of Science

At least 128 credits in courses numbered 200-799, with a cumulative grade-point average of 2.0 for all courses taken at the University in which a grade is given.

Completion of Discovery Program (University core curriculum) requirements (p. 24).

Completion of the University writing requirement (p. 28).

An approved major.

For specific major requirements, check individual departmental or program listings.

Associate in Arts

For degree requirements, see the University of New Hampshire at Manchester (p. 352).

Associate in Applied Science

For degree requirements, see the Thompson School of Applied Science (p. 328).

Dual Degrees

The opportunity to pursue two undergraduate degrees simultaneously enhances and broadens the education of certain students. The program is only for those students who can adequately handle the requirements

for two different degrees and who can reasonably allocate the additional time and effort needed for the program.

Except for specific five-year degree programs, a student may not pursue two different degree levels simultaneously.

Requirements

Students desiring dual degrees must petition the college dean or deans involved for permission. Students must have a minimum 2.5 cumulative grade-point average. Students planning to take one degree in a highly prescribed curriculum should register as freshmen in the appropriate school or college for that curriculum. It is expected that candidates for two degrees will complete 32 credits beyond those required for the first degree. Students can earn more than one bachelor of science (B.S.) degree, provided that each degree is in a different field. Students cannot earn more than one bachelor of arts (B.A.) degree. Transfer students already holding a baccalaureate degree from another accredited institution may pursue an additional baccalaureate degree at the University of New Hampshire provided they fulfill the previously listed requirements. The degree received at the first institution will be accepted by UNH as awarded by that institution.

Supervision

As soon as a student is accepted as a candidate for two degrees, the appropriate dean(s) will appoint supervisors for each of the proposed majors. The supervisors and the student will work out a basic course plan for the two degrees and inform the appropriate dual degree dean(s) of the plan. The supervisors will maintain joint control over the student's academic program. The college offices and the supervisors will receive copies of grade reports and other records for students pursuing two degrees.

Accelerated Masters Eligible Programs - Undergraduate Seniors

Qualified senior students at the University of New Hampshire may be admitted to the Graduate School provided they have followed normal application procedures; they must have been admitted for the semester in which they wish to enroll in courses for graduate credit. A 3.20 cumulative grade-point average is normally required to be considered for admission to the accelerated master's program.

Such seniors are normally admitted prior to the start of their last undergraduate semester, but may be eligible to apply for admission the first semester of their senior year. Seniors who have been admitted under early admission may register for a maximum of 12 credits of graduate-level courses prior to completing their bachelor's degree. Such courses may upon recommendation of the department and approval of the Graduate School count toward both a bachelor's and master's degree.

When seniors admitted to the accelerated master's program have registered for graduate courses, they must maintain a grade-point average of 3.20, complete their undergraduate degree as planned, and pass graduate courses taken for credit with a grade of B- or better. If these conditions are not met, admission is withdrawn.

Not all graduate programs participate; each program's faculty retain discretion regarding whether their program admits students under the accelerated master's program, as well as the maximum number of graduate credits permitted (not exceeding 12; e.g., some programs will accept one course, others two). Applicants are strongly encouraged to meet with the graduate coordinator in the program's faculty to discuss specifics. Dual-credit forms must be completed and approved by the dean

of the Graduate School at the beginning of the semester for which dual credit is sought.

Discovery Program

Discovery Program (Core Curriculum Requirement)

The Discovery Program provides the intellectual framework for students in any major. It represents the faculty's collective belief in what constitutes and contributes to essential knowledge of the world. Together, students and faculty attempt to understand fully and use ethically that knowledge, both in the present and as a reservoir from which to draw in the future. These intellectual skills, knowledge, and ethical grounding will help prepare students to contribute to the creation of a more verdant, healthy, just, and prosperous world.

"He who learns but does not think is lost. He who thinks but does not learn is in great danger." Confucius.

Discovery Program Student Learning Outcomes

After completing the Discovery Program at UNH, students should be able to:

1. Communicate effectively by applying skills in reading, writing, speaking, and listening.
2. Acquire and use information appropriately and effectively to research, organize, and present knowledge.
3. Apply mathematical concepts and/or statistical models to understand phenomena and/or solve problems in multiple contexts.
4. Formulate and evaluate open-ended questions that lead to empirical/researchable investigations of complex problems and issues.
5. Analyze and synthesize ideas and perspectives from diverse traditions from around the world.
6. Analyze and synthesize ideas and perspectives from more than one academic or intellectual discipline.
7. Clarify connections between their academic learning and their own ethical values.
8. Demonstrate the integration of learning they have achieved in their major field of study.
9. Exercise imagination in grappling with complex problems of both the natural and human created worlds, and understand the centrality of imagination to all human endeavors.
10. Make connections among the various branches of human knowledge and endeavor.

Discovery Program Requirements

Discovery Foundation Skills

Inquiry course. This course may fulfill a Discovery category and/or a departmental requirement. It should be taken during a student's first or second year or prior to completion of 57 credits. For students who transfer in with 26 or more credits, the Inquiry requirement is waived automatically.

One course in writing skills. Most students will satisfy the first-year writing requirement with ENGL 401 First-Year Writing. This course should be taken during a student's first year or prior to completion of 32 credits.

One course in quantitative reasoning. This course is normally completed by the end of the first year or 32 credits.

Discovery in the Disciplines

Students must take one course from each Discovery category at the 400-600 levels. Inquiry courses that carry Discovery category designations may be used to satisfy this requirement.

- One course in Biological Science (BS);¹
- One course in Physical Science (PS);¹
- One course in Environment, Technology, and Society (ETS);
- One course in Fine and Performing Arts (FPA);
- One course in Historical Perspectives (HP);
- One course in Humanities (HUMA);
- One course in Social Science (SS); and
- One course in World Cultures (WC) (also may be satisfied by approved study abroad programs).

¹ One of these courses must have a Discovery lab component (DLab).

Discovery and Integrative Understanding

One senior capstone experience, supervised and approved within the major.

The capstone experience is typically completed by senior students within the major and is designed to elicit opportunities for educational reflection and synthesis of knowledge and skills; however, students who have completed 90 credits at the end of their junior year may complete their capstone during the summer prior to their senior year. The capstone may be met with an approved experience (as described below). It is not necessarily a course.

Suggested ways of meeting capstone may include: McNair research theses, Hamel Center Programs (IROP, SURF USA, SURF Abroad, URA, INCO 790 Advanced Research Experience), and senior honors theses. Examples of capstone experiences include courses, projects, independent research, internships, artistic expression, or community and service learning opportunities.

The senior capstone experience must meet one or more of the following criteria:

The capstone synthesizes and applies disciplinary knowledge and skills. The capstone fosters reflection on undergraduate learning and experience. The capstone demonstrates emerging professional competencies. The capstone applies, analyzes, and/or interprets research or data or artistic expression. The capstone explores areas of interest based on the integration of prior learning. The capstone requirement will vary across departments and colleges and may be satisfied through a course, thesis, created work or product, mentored research project, or some form of experiential learning (e.g., fieldwork). The capstone should occur during the student's senior year. Departments designate capstones as appropriate to their respective disciplines following the usual administrative procedures for their college or school. Departments are responsible for certifying that graduating seniors have met the capstone requirement for their majors.

Additional Information

Discovery Program requirements shall not be waived on the basis of special examinations or placement tests, except for the College Board Advanced Placement tests and the College Level Examination Program (CLEP) tests. All students transferring to UNH in academic year 2018-19

will come in under Discovery Program requirements. For students who transfer in with 26 or more credits, the Inquiry requirement is waived automatically.

Note to Faculty: Waiver of requirements in the Discovery Program. Students may petition the Discovery Committee to waive or replace a requirement. The student's petition must be approved by the student's major adviser and forwarded to the dean of the student's college.

The required courses cannot be taken on a pass/fail basis. No single course may be counted in more than one Discovery discipline category. Academic departments may or may not permit Discovery courses to count toward requirements for a major. TSAS courses may not be used for general-education (1984-2009), writing-intensive, or foreign language requirements. TSAS courses that are 400-600 level and Discovery-approved may count for Discovery requirements. All Discovery courses carry 3-4 credits.

The most current list of Discovery courses may be found on the Registrar's Office (<http://www.unh.edu/registrar>) website.

Discovery Foundations Inquiry

All Inquiry courses must contain four individually necessary and collectively sufficient features:

Inspire curiosity: an Inquiry student will compose open-ended questions that lead to further investigation into increasingly focused problems and issues. Develop understanding and perspective: an Inquiry student will explain a central issue or question of the course using at least two unique perspectives. Clarify standards of thinking: an Inquiry student will be able to identify, compare, and evaluate different interpretations (hypotheses, explanations) of a given phenomenon. Create effective communicators: an Inquiry student will present in clearly organized form the results of the investigation into questions or problems the student has posed.

A complete list of Inquiry courses can be found on the Registrar's Office (<http://www.unh.edu/registrar>) homepage.

Writing Skills

Please refer to the University Writing Requirement (<https://catalog.unh.edu/undergraduate/university-academic-requirements/writing>) section for complete information about this Discovery Foundation.

Quantitative Reasoning

Quantitative reasoning refers to the ability to think critically and analytically using abstract formal methods with broad application. Mathematics is the foundation for the physical sciences and, increasingly, for the biological sciences. Its principles and processes illuminate significant aspects of the social sciences as well. In its most precise forms, it enables the design of bridges and the orbiting of satellites. Mathematics discloses invisible truths about the world, makes sense of patterns of which we may or may not be aware, and introduces some order to chaos. In its purest form, it creates its own world of beauty and logic. In its more applied forms, it attempts to make sense of individual and collective human behaviors and complex systems. Many courses listed under this category will help students appreciate the principles of mathematics and gain some skill in its applications to realistic situations, while other courses will introduce kindred subjects

including symbolic logic, information theory, statistics, and computer science.

Discovery in the Disciplines

Biological Science

Biology is a branch of science that investigates the structure and function of living organisms. Scientists investigate ideas and observations that solidify our understanding of the diversity of life from single cells to complex organisms. Biology has deep relations with agriculture, chemistry, psychology, and many other fields of study, and it is the foundation of our knowledge of health and disease. Courses under this category deal with the basic structure and function of organisms, the interaction of organisms with their environment, human health, biotechnology, and the concepts and mechanisms of evolution as a fundamental biological paradigm. All courses will provide some understanding of the methods of scientific inquiry and seek knowledge about the living world.

Environment, Technology, and Society

The exponential growth of the sciences and engineering has bred an equally dramatic growth in technological advances. From the flint arrowhead to the latest communication device or weapon, human beings have been inventing things and transforming their lives, their societies, and their environments as they do. But they seldom foresee all the transformations and consequences their inventions bring about. This category stresses the interplay between at least two of these three realms: environment, technology, and society. Topics might include, but are not limited to, the history of a particular kind of technology (such as transport, fuel, writing, or weaponry), how technological change comes about in general, the scientific and/or social bases for a given technology, its impact for good or ill on human society and the natural environment, the effects of a changing environment on the arts and literature, and/or the ethical questions these topics raise.

Fine and Performing Arts

The arts communicate through the intellect, the emotions, and the body, sometimes all at once, in ways simple and subtle, direct and subliminal, gentle and soul shaking. Understanding and appreciating the arts enriches our lives and preserves our cultural heritage for the future. Through its performances, publications, and exhibits, UNH offers many artistic experiences for students and the larger community, some of which are linked to courses under this category. Such courses, which may be about painting, sculpture, architecture, music, dance, theater, or film, will often include learning through practical experience.

Historical Perspectives

Even though we are faced daily with evidence of change in our social world and technology, we easily forget that how we live, where we live, and what we see around us are transient states of affairs. It is important to be able to look on one's own world with an imaginative grasp of its history and the forces behind that history. Courses under this category will give students the opportunity to learn about major historical developments and how these developments have shaped contemporary life in all its complexity. Through the study of particular periods and places, students will gain both "historical perspective" and some skill at the methods of historical inquiry. Common to all courses in historical analysis is the presumption that the categories of social analysis are themselves historical and historically contingent, and that to understand the past requires entering imaginatively into languages, institutions, and worldviews quite different from those of the present day.

Humanities

The humanities arose in Renaissance universities as an alternative to theology and consisted mainly of Greek and Latin literature, which dealt with any and every aspect of human life; they became central to the liberal arts. Since the nineteenth century, the humanities also have embraced modern literature, the creative arts, philosophy, and history. They focus on questions about meaning, ethics, aesthetics, and the foundations of knowledge; they are as concerned with form as with content. Courses under this category explore major works, ideas, and traditions that have shaped our understandings of the world and our sense of self at different times and places while examining the distinctive methods of humanistic inquiry.

Physical Science

The physical sciences seek to discover the components, structures, properties, and laws of the material world from subatomic particles to the entire universe. Through them, we appreciate both the wondrous complexity of the world and its order. The traditional domains of chemistry, physics, astronomy, cosmology, and Earth sciences are the foundations of knowledge in numberless arenas of human activity, while the intersections between these domains and the biological sciences yield astonishing discoveries about living organisms. All courses will provide some understanding of the methods of scientific inquiry, seek knowledge about the physical universe, and evaluate claims in both technical literature and popular media.

Social Science

The social sciences investigate human beings and their societies from the smallest bands of hunter gatherers to huge nations and global institutions. Everything from marriage and kinship to law and crime, from ceremonial gift giving to mortgage derivatives, from witchcraft to health insurance, from ancient ritual to modern communication, is a subject of a social science. Courses under this category will explore different theories, methods, and data-gathering techniques as they apply to different social issues. They also will examine how individuals create, interact with, and are shaped by social groups and institutions, including those associated with politics, economics, religion, family, the arts, health, and education.

World Cultures

Living in a world of many cultures has created both cooperation and conflict across borders, between and within nations. This category, which includes intermediate language courses and approved study abroad programs, encourages students to become cosmopolitan citizens by gaining knowledge and understanding of cultures other than those of the United States. Students will learn to recognize others' values and, ultimately, accept the many ways in which we all are human. They are thus encouraged to see their own culture with fresh eyes and know the sheer diversity of human outlooks.

Discovery Lab (DLAB)

A course that fulfills the laboratory requirement in the Discovery Program should provide students with hands-on experience that reinforces, supports, and/or augments the material presented in other formats throughout the course. It should teach them how the discipline uncovers and validates knowledge; how phenomena are understood through observation, experimentation, and quantitative analysis; how data are collected and interpreted; and how hypotheses are created, tested, modified, confirmed, or invalidated. These experiences also are likely to provide insights into how scientific theories and models are constructed. A significant portion of specified course time must be devoted to laboratory and laboratory-related activities. For example, a conventional

model for a 4-credit laboratory course consists of three 50-minute (or two 75-minute) weekly lecture periods plus one 80-minute weekly laboratory period. However, courses may include different and/or innovative laboratory experiences provided the total amount of course and laboratory time is comparable.

Discovery Program courses

The complete list of Discovery courses can be found on the Registrar's Office (<http://www.unh.edu/registrar>) website.

Course Descriptions

Credits

The University of New Hampshire is in compliance with the federal definition of a credit hour. For each credit hour, the university requires, at minimum, the equivalent of three hours of student academic work each week. Academic work includes, but is not limited to, direct faculty instruction, e-learning, recitation, laboratory work, studio work, field work, performance, internships and practica. Additional academic activities include, but are not limited to, readings, reflections, essays, reports, inquiry, problem solving, rehearsal, collaborations, theses, and electronic interactions. Student work reflects intended learning outcomes and is verified through evidence of student achievement.

The number of credits listed is the number of semester credits each course number will count toward graduation (except in the case of variable credit courses). Students must register for the number of credits shown or, if the course is variable credit, within the range of credits shown.

"Cr/F" following the course description indicates that no letter grade is given but that the course is graded Credit or Fail.

Course Offerings

The pound sign "#" denotes any course which has not been offered in the past three academic years.

For up-to-date information about when a course is offered; who teaches the course; the number of recitations, lectures, labs, and such, students are referred to each semester's Time and Room Schedule (<https://courses.unh.edu>).

Labs

In courses that are not designated by title as laboratory courses, the notation "Lab" in the course description indicates that laboratory sessions are a part of the course. For example, CHEM 403 General Chemistry I.

Numeric System

The University of New Hampshire's system of numeric designation is as follows:

- 200–299 Courses in Thompson School of Applied Science.
- 300–399 Associate in arts /associate in science courses. Courses may be taken for credit only by associate's degree or nondegree students. Credits may not be applied to baccalaureate degrees.
- 400–499 Introductory courses generally not carrying prerequisites and courses generally falling within University and college requirements.
- 500–599 Intermediate-level courses for undergraduate credit only.

- 600–699 Advanced-level undergraduate courses. Entrance to courses numbered 600 and above normally requires junior standing.
- 700–799 Advanced-level undergraduate courses. Ordinarily not open to freshmen and sophomores.
- 800–999 Courses that carry graduate credit only and therefore are open only to admitted or special graduate students.

Prerequisites and Corequisites

Prerequisites are courses that must be taken before another course. For example, CMN 456 Propaganda and Persuasion is a prerequisite of CMN 505 Analysis of Popular Culture. Each prerequisite for a course is separated from the other prerequisites by a semicolon; e.g., Prereq: CMN 455; CMN 456.

Corequisites are courses that must be taken in the same semester. For example, BMCB 658 General Biochemistry and BMCB 659 General Biochemistry Lab are corequisites.

Majors, Minors, and Options

Majors and interdisciplinary minors are described at the college and department locations in this catalog.

Student-Designed Majors

Under special circumstances, students may design their own majors. This option is offered for highly motivated and self-disciplined students who seek a course of study that is not available through existing programs at the University. It allows students, with the close supervision of faculty members, to cross department and college lines and to create educational experiences on and off campus as part of individual programs of study.

Student-designed majors are administered by a committee of elected faculty that operates through the Office of the Provost and Vice President for Academic Affairs. Students who want to design their own majors are required to give the committee evidence of careful thought and planning in a proposal.

Fall submissions are due by October 15 of the student's junior year. Proposals are only reviewed once a semester. Spring submissions are due by February 25. The committee will convene soon after the deadline to review the proposals. Under no circumstances will the committee consider a senior year proposal.

Proposal guidelines are available in the Office of the Provost and Vice President for Academic Affairs and on the Academic Affairs website, www.unh.edu/academic-affairs/student-designed-major-sdm (<http://www.unh.edu/academic-affairs/student-designed-major-sdm>). Click on "Academic Enrichment."

Second Majors

Bachelor's degree students may choose to fulfill the requirements of two dissimilar major programs, provided they obtain the approval of the second major department and the dean of the college in which the second major is offered, and comply as follows:

If the two majors are offered in different schools or colleges within the University, the admissions requirements of each must be satisfied.

If the two majors have two distinct degrees; e.g., B.A., B.S., or some other designated degree, students must choose which of the two degrees is to be awarded and fulfill all requirements for that degree.

No more than 8 credits used to satisfy requirements for one major may be used as requirements for the other major.

Minors

Bachelor's degree students may earn a minor in any undergraduate discipline designated by the University. A list of minors is available from the advising coordinator in each college or school (or see the program descriptions for each college or school in this catalog). Students must consult with their major adviser and also the minor supervisor. A minor typically consists of 20 credits with C- or better and a 2.0 grade-point average in courses that the minor department approves. Courses taken on a pass/fail basis may not be used for a minor. No more than 8 credits used to satisfy major requirements may be used for the minor. During the student's final term, an application should be made to the dean to have the minor shown on the academic record.

Options

Some degree programs offer a selection of options (e.g., art history and art studio through the Department of Art and Art History). These options allow students to specialize within a discipline. The choice of option is recorded on the student's transcript.

University Writing Requirement

In 1995, the Academic Senate established the Writing Program as an expression of the following fundamental values and goals for writing at UNH: *As the cornerstone of any higher education, academic and disciplinary literacy is the concern of the entire faculty and the whole University curriculum. Understanding that literacy is a long-term development process, the University community is committed to the following goals for student writing and learning:*

- *Students should use writing as an intellectual process to learn material and to discover, construct, and order meaning.*
- *Students should learn to write effectively in various academic and disciplinary genres for professional and lay audiences.*
- *Students should learn to display competence with the generic features and conventions of academic language.*

In order to help realize the above goals, writing intensive (WI) courses were established as well as the University Writing Requirement (UWR).

Writing-Intensive (WI) Courses

WI courses are identified by "Writing Intensive Course" in the "Attributes" section of the course descriptions.

See CEP 795W below for an example:

CEP 795W (01) - Investigations

Credits: 2.0 to 4.0

Term: Fall 2017 - Full Term (08/28/2017 - 12/08/2017)

Class Size: 5

CRN: 12453

Special assignments in readings, investigations, or field problems, or teaching experience. May be repeated. Prereq: permission. Writing intensive.

See instructor for permission then sign up in the dept office before registering through WEBCAT.

Attributes: Writing Intensive Course

Instructors: STAFF

Some courses have both writing-intensive and nonwriting-intensive versions, such as HIST 405 History of Early America and HIST 405W History of Early America. In these cases, only the sections with the "W" in the course number are writing intensive.

A periodically updated master list of WI courses is posted at <http://www.unh.edu/registrar/registration-courses/writing-intensive.html>. Course attributes can change, so students should make sure to consult the course description for real-time information on WI status when they enroll. Not all courses are offered every semester, so for advance course planning students should consult with their advisors or the owning department.

University Writing Requirement (UWR)

All bachelor's degree candidates are required to complete four writing-intensive courses, which must include ENGL 401 First-Year Writing and three additional writing-intensive courses, one of which must be in the student's major, and one of which must be at the 600 level or above.

Frequently Asked Question: "Can the same course satisfy the course-in-the-major requirement and the 600-level or above requirement?"

Answer: Yes, one course can satisfy both of these requirements (see pattern B below), but the course would only count as one of the three WI courses needed. In this case, the student would need to take two other WI courses (in addition to ENGL 401) to satisfy the requirement. Thus, a complete WI sequence would conform to one of the two generic patterns below:

A) Separate Courses for the 600+ Level and in the Major Requirements

1. ENGL 401
2. WI in the Major (any level)
3. WI @600+ level (any)
4. WI (any)

B) The Same Course for the 600+ Level and in the Major Requirements

1. ENGL 401
2. WI in the Major @600+ level
3. WI (any)
4. WI (any)

Note: the numbers in the above examples are for reference and don't reflect a required sequence. A particular major may have more specific requirements that may depart from the above models.

The Rationale for Writing and Learning at UNH acknowledges that the WI course structure provides a minimum framework for writing in the curriculum and that there will be writing in non WI-designated courses.

The Writing Committee's position is that WI Course Attributes are definitive and that only courses bearing the WI Attribute will count for the WI requirement. In short, students are expected to enroll in UNH WI-designated courses to satisfy the WI requirement.

<https://www.unh.edu/writing/>

College of Liberal Arts

Michele Dillon, Interim Dean

Brett M. Gibson, Associate Dean

Reginald A. Wilburn, Associate Dean

Marion Girard Dorsey, Faculty Fellow

It is the purpose of the College of Liberal Arts, as a center of learning and scholarship, to help students achieve an understanding of the heritage of civilization and to educate them in the tradition of the past and realities of the present so they may recognize and act upon their obligations to the future.

The college seeks to meet the educational needs of each student through the development of interests and skills, which, combined with the individual's potential, make possible a richer, more useful life.

Degrees

Bachelor of Arts

These programs primarily provide a broad liberal education along with depth in a major. Requirements for the bachelor of arts degree and information regarding the majors that lead to a bachelor of arts are presented under Degrees (p. 23) and Programs of Study (p. 34).

Bachelor of Fine Arts

This curriculum provides training for students who plan to enter a professional graduate school. Requirements for the bachelor of fine arts degree are outlined under Programs of Study/Art and Art History (p. 40).

Bachelor of Music

This curriculum provides professional training in performance, composition, music education, and music pre-teaching and allows students to develop their talent to a standard equivalent to the one achieved at conservatories of music. Requirements for the bachelor of music degree and information regarding the curriculum are presented in Programs of Study/Music (p. 95). Degrees include Music Education, Pre-Teaching, Performance, and Composition.

Bachelor of Science

This curriculum provides strong preparation for entry into graduate programs in neuroscience, behavior, pharmacology, and medicine. Requirements for the bachelor of science degree and information regarding this major are presented under Degrees (p. 23) and Programs of Study/Neuroscience and Behavior (p. 102).

Combined Programs of Study

In addition to pursuing a single major, students may combine programs of study as follows (See University Academic Requirements (p. 21) for details):

Minors: Students may pursue one or more minors, each typically comprised of 5 courses. Minors are available in nearly every discipline within the College of Liberal Arts.

Cognates: Students may pursue one or more cognates, each typically comprised of 3 courses and intended to develop career-oriented skills. Cognates in the College of Liberal Arts are:

- Technical Writing and Public Speaking (p. 49)
- Intercultural Communication for the Professional World (p. 48)

- Skills and Perspectives for the Digital World (p. 48)
- Digital Writing and Literature (p. 47)

Second majors: Students may choose to fulfill the requirements of two dissimilar major programs.

Dual majors: Students may choose to fulfill the requirements of a dual major, typically comprised of 8 courses. Dual majors are designated programs that must be paired with another major of any discipline. Dual majors in the College of Liberal Arts are:

- Educational Studies
- Humanities
- International Affairs
- Justice Studies

See Special University Programs (p. 326) for information about the Sustainability dual major.

Student-designed majors: Under special circumstances, students may design their own majors.

Dual-degree programs: Students may choose to fulfill the requirements of two separate degrees, such as a B.A. and a B.S.

Interdisciplinary opportunities: See the Interdisciplinary Studies (<http://cola.unh.edu/interdisciplinary-studies>) web page for the complete list of interdisciplinary programs within the College of Liberal Arts.

Proficiency in a Foreign Language

Please see the explanation of this University requirement under Degrees (p. 23): Bachelor of Arts.

Within the College of Liberal Arts, only those students majoring in linguistics, psychology, theatre and dance, or women's studies may use American Sign Language (ASL) to fulfill their foreign language proficiency requirement. English teaching majors who plan to pursue deaf studies may petition the English department to use ASL to fulfill their foreign language proficiency requirement.

Center for Study Abroad

cola.unh.edu/study-abroad (<http://cola.unh.edu/study-abroad>)

The College of Liberal Arts offers a number of managed study abroad programs that are administered by college faculty and the College of Liberal Arts Center for Study Abroad. These programs provide opportunities for liberal arts students as well as students in other colleges to experience and learn about different cultures and, in non-English-speaking countries, to increase proficiency in a foreign language.

Because the college administers these programs, registration, finances, and other logistics are streamlined and simple. Students pay UNH tuition and a single program fee, which covers housing, excursions, and, in some cases, board. Most UNH student fees are waived with the exception of the technology fee, a study abroad administration fee, and an international travel insurance fee. Students are guaranteed a full semester of credits (16) for the semester-long programs, and students are eligible for federal financial aid for the semester-long programs.

Please see the list of eligibility requirements under Study Abroad Programs (p. 318).

The College of Liberal Arts Center for Study Abroad is located in 116 Murkland Hall. To learn more about any of the following programs, visit the Center or contact Jim Parsons, College of Liberal Arts Study Abroad Coordinator, cola.studyabroad@unh.edu or james.parsons@unh.edu, (603) 862-3962.

Semester Programs

Chengdu, China: Spring semester study of Chinese language and culture at Chengdu University. **Faculty Director:** Yige Wang, yige.wang@unh.edu, (603) 862-3565, 104 Huddleston Hall.

London, England: Spring courses in British studies, the arts, humanities, social sciences, business, and a wide range of other subjects at Regent's University, London. **Faculty Director:** Sue Hertz, susan.hertz@unh.edu, 110 Murkland Hall.

Dijon, France: Academic year, spring, or summer study of French language and other liberal arts courses (in French) at the Université de Bourgogne, Dijon. **Faculty Director:** Nadine Bérenguer, nadine.berenguer@unh.edu (claire.malarte-feldman@unh.edu), (603) 862-1690, 210 Murkland Hall.

Legon, Ghana: Spring-term program in a wide range of courses at the University of Ghana, one of West Africa's most prestigious universities. **Faculty Director:** Burt Feintuch, burt.feintuch@unh.edu, (603) 862-4356, 23 Huddleston Hall.

Budapest, Hungary: Fall-term program with justice studies emphasis at Corvinus University. **Faculty Director:** Susan Siggelakis, susan.siggelakis@unh.edu (charles.putnam@unh.edu), (603) 862-1780, 318 Horton.

Budapest, Hungary: Spring-term program focusing on the humanities, and modern Hungarian and Central European history and culture at Corvinus University. **Faculty Director:** Stephen Trzaskoma, s.trzaskoma@unh.edu, (603) 862-3648, 306 Murkland Hall.

Granada, Spain: Spring semester Spanish language immersion program with courses focusing on Spanish language and other disciplines at the Centro de Lenguas Modernas of the University of Granada. **Faculty Director:** Lina Lee, llee@unh.edu, (603) 862-3123, 210H Murkland Hall.

Summer Programs

Athens, Greece: Five-week program focusing on classics, Greek history, and culture. **Faculty Director:** Stephen Trzaskoma, s.trzaskoma@unh.edu, (603) 862-3648, 306 Murkland Hall.

Belize: Four-week summer Archaeological Field School in Belize. **Faculty Director:** Eleanor Harrison-Buck, belize.fieldschool@unh.edu, (603) 862-4742, 311 Huddleston Hall.

Chengdu, China: Three-week summer program in Chinese language study at both the beginner and advanced levels at Chengdu University. **Faculty Director:** Yige Wang, yige.wang@unh.edu, (603) 862-3565, 104 Huddleston Hall.

Costa Rica: Six-week summer program in Spanish language and culture at the Institute of San Joaquin de Flores. **Faculty Director:** Lina Lee, llee@unh.edu, (603) 862-3123, 210H Murkland Hall.

Cambridge, England: Six-week summer program offering courses in history, literature, and humanities at Gonville and Caius College, Cambridge University. **Faculty Director:** Monica Chiu,

monica.chiu@unh.edu (dennis.britton@unh.edu), (603) 862-1313, 122 Hamilton Smith Hall.

Berlin, Germany: Five-week summer immersion program in German language and culture at the BSI Private Language School in central Berlin. **Faculty Director:** Charles Vannette, charles.vannette@unh.edu (mary.rhiel@unh.edu), (603) 862-1690 G10A, Murkland Hall.

Russia: Four-week or eight-week summer program in Russian language, culture, mythology and propaganda in Moscow, St. Petersburg, and on the Trans-Siberian Railway. **Faculty Director:** Arna Bronstein, arna.bronstein@unh.edu, (603) 862-3445, 304 Murkland Hall.

January Term and Short-Term Programs

Belize: Three-week January term course in archaeological survey and mapping in Belize. **Faculty Director:** Eleanor Harrison-Buck, belize.fieldschool@unh.edu, (603) 862-4742, 311 Huddleston Hall.

Cuba: January term course featuring 10 days of travel in Cuba with a focus on Cuban culture and the arts. **Faculty Director:** Lina Lee, lina.lee@unh.edu (lina.lee@unh.edu), (603) 862-3123, 210E Murkland Hall.

London, England: January term course, the London Experience, a ten-day experience of the theatre of London with insights into its politics, society, and culture as reflected in the arts. **Faculty Director:** David Kaye, london.experience@unh.edu, (603) 862-0667, M313 Paul Creative Arts Center.

London, England: Three-week January term course on travel writing with two weeks in London. **Faculty Director:** Susan Hertz, susan.hertz@unh.edu, 210 Murkland Hall.

Rome, Italy: January term course on ancient Roman architecture and society at the Intercollegiate Center for Classical Studies in Rome. **Faculty Director:** R. Scott Smith, scott.smith@unh.edu, (603) 862-2388, 301 Murkland Hall.

Career and Professional Success

cola.unh.edu/career-and-professional-success (<http://cola.unh.edu/career-and-professional-success>)

The College of Liberal Arts is committed to helping students achieve success in their career and professional endeavors. From one-on-one career counseling appointments to internship placements and employer visits to campus, the Career and Professional Success office supports students with the tools and resources to secure meaningful, impactful, and rewarding careers.

The Career and Professional Success office is located at 102 McConnell Hall. The director is Raul Bernal, raul.bernal@unh.edu, (603) 862-1280.

Research Centers and Institutes

Center for the Humanities

cola.unh.edu/center-humanities (<http://cola.unh.edu/center-humanities>)

The Center for the Humanities fosters excellence in the humanities, broadly conceived, at the University of New Hampshire. Center resources and programs support faculty research, encourage reflection and inquiry across the University community and beyond, create interdisciplinary initiatives in many forms, and undertake special projects to raise the visibility of the humanities. To accomplish this, the center endeavors to support the highest quality work by UNH humanities faculty, to build

productive collaboration among faculty, to create singular projects that advance its goals, and to be a center of innovation, planning, and inspiration for the humanities at the University of New Hampshire. By pursuing its goals, the center supports the University's research mission in particular, as well as its academic plan.

The center is the sponsor of the Saul O Sidore Memorial Lectures, the James H. and Claire Short Hayes Chair in the Humanities, and the University of New Hampshire-University of Ghana study-abroad program. The Center for the Humanities is directed by Burt Feintuch, professor of folklore and English. Katie Umans is the center's assistant director.

Crimes Against Children Research Center

www.unh.edu/ccrc (<http://www.unh.edu/ccrc>)

The Crimes Against Children Research Center (CCRC) is concerned with all forms of crimes against children and adolescents, from birth through age 17, both within and outside the family, both known and unknown to law enforcement. These include criminal acts as defined by law, such as sexual assault, abduction, theft, robbery, and aggravated assault against children. But it also includes child abuse in all its forms—physical, sexual, emotional—and child neglect, as well as child-to-child violence, such as peer and sibling assaults and bullying. It also includes indirect victimization, where children witness or are affected by the crime victimization of a family member or friend.

The CCRC, created in 1998, grew out of and expands upon the work of the UNH Family Research Laboratory, which has been devoted to the study of family violence and related topics since 1975. Associated with the center is an internationally recognized group of experts who have published numerous books and articles concerning the incidence and impact of violence against children.

CCRC staff has contributed to many pioneering national crime studies, including National Incidence Study of Missing, Abducted, Runaway, and Thrownaway Children; National Family Violence Survey; National Youth Victimization Prevention Survey; National Survey of Sexual Abuse in Day Care; Developmental Victimization Survey; Youth Internet Safety Surveys; and Multisite Evaluation of Children's Advocacy Centers.

The CCRC is directed by David Finkelhor, who is also the director of the Family Research Laboratory and professor of sociology at the University of New Hampshire. Finkelhor has been researching criminal violence against children since 1978 and is the author and editor of 12 books and more than 100 articles on the subject.

Family Research Laboratory

cola.unh.edu/frl (<http://cola.unh.edu/frl>)

Since 1975, the Family Research Laboratory (FRL) has devoted itself primarily to understanding family violence and the impact of violence in families. As public and professional interest in family violence has grown, so has the need for more reliable knowledge. The FRL seeks to fill that need through comprehensive literature reviews, new theories, and methodologically sound studies. Researchers at the FRL pioneered many of the techniques that have enabled social scientists to estimate directly the scope of family violence. These efforts have brought international recognition to the FRL.

The FRL is unusual among research centers in the field because it addresses all aspects of the family, violence, and abuse. Topics undertaken by the FRL include physical abuse of children, corporal punishment of children, sexual abuse of children, physical abuse of

spouses, dating violence, abuse of the elderly, intra-family homicide, rape and marital rape, violence between siblings, peer victimization of children, pornography, and missing and abducted children. This variety of topics is a result of beliefs that have guided FRL research: that various forms of family problems are interrelated, that conflict is as basic to family life as are love and cooperation, and that much of the conflict and violence in the world outside the family can be traced to roots within the family. This holistic view of family violence has contributed both diversity and richness to the FRL's work.

The FRL's prominence in the field is in part a result of the large number, variety, and scope of its publications. In a span of 10 years, FRL staff members have published more than 45 books and more than 740 articles on family violence.

The FRL is housed in a suite of offices in McConnell Hall. The FRL is directed by David Finkelhor, professor of sociology and director of the Crimes Against Children Research Center.

Justiceworks

cola.unh.edu/justiceworks (<http://cola.unh.edu/justiceworks>)

Justiceworks is a research and development group in justice studies. Founded in 1999 as a collaborative consortium of academics and professionals, Justiceworks offers an array of balanced, non-partisan services addressing issues in crime, safety, security, and the administration of justice.

Justiceworks is co-directed by John T. Kirkpatrick, senior vice provost for student life and dean of students, and Charles Putnam, clinical professor of justice studies.

Prevention Innovations Research Center

cola.unh.edu/prevention-innovations (<http://cola.unh.edu/prevention-innovations>)

Prevention Innovations Research Center: Ending Sexual and Relationship Violence and Stalking is a research center at the University of New Hampshire made up of researchers and practitioners who work collaboratively to develop and evaluate prevention strategies, evidence-based measures to document the problems of sexual and relationship violence and stalking, and comprehensive community tools to effectively address the causes of violence. The Prevention Innovations Research Center aims to assist high schools, postsecondary institutions, the U.S. Military, and federal, state, and local researchers and practitioners to develop, evaluate, and implement model policies, procedures, and programs to end sexual and relationship violence and stalking. The center's faculty and staff are nationally and internationally recognized leaders in the prevention and response fields who design and provide cutting-edge contributions to evidence-based practices in prevention and make significant contributions to scholarship, programming, and policy making in the field. Their research and prevention efforts emphasize the importance of using a community bystander focus while examining the continuum of violence.

Prevention Innovations provides campuses, communities and the U.S. Military with training and technical assistance (TA) to prevent and effectively respond to sexual and relationship violence and stalking. We provide TA through regional trainings, one-on-one consultations and serving as subject matter experts. Our TA work is funded through federal grants, individual consultations and support from the Campus Sexual and Relationship Violence Prevention Consortium. This annual membership program provides support, technical assistance, and training for a cohort

of institutions of higher education from across the United States, building both capacity and knowledge across the cohort to improve the efforts of their individual campuses in prevention and response of sexual and relationship violence and stalking.

The Susan Schechter Domestic and Sexual Violence Social Justice Laboratory (Schechter Lab) is an interdisciplinary research laboratory within the Prevention Innovations Research Center. Undergraduate and graduate students associated with the Schechter Lab earn academic credit for their role as research assistants and work with members of Prevention Innovations Research Center on their research, report writing, and publications. The Sharon B. Murphy Scholarship supports undergraduate and graduate student scholarship in the fields of domestic and sexual violence and stalking for work within the Schechter Lab.

The Prevention Innovations Research Center members are UNH faculty members and practitioners from diverse disciplines and colleges across the UNH landscape, including the College of Liberal Arts, the College of Health and Human Services, and the Law School, who work with graduate and undergraduate students from across the University's colleges and law school. Practitioners are from local and state organizations. The goals of the Prevention Innovations Research Center are to:

1. generate evidence-based knowledge aimed at preventing sexual abuse, relationship violence, and stalking;
2. promote creative and collaborative partnerships between practitioners and researchers; and
3. transform community norms and climates through the dissemination of commercialized products that result from the center's research.

The Survey Center

cola.unh.edu/survey-center (<http://cola.unh.edu/survey-center>)

The UNH Survey Center is a full-scale, non-partisan academic survey research center, committed to providing university researchers, government and business leaders, and private organizations with reliable information about public attitudes concerning important policy matters. It is nationally known for its public opinion and political polling for CNN, Fox News, and WMUR-TV.

The UNH Survey Center has conducted survey research projects at the University of New Hampshire since 1986: state, regional, and national general population surveys based on probability sampling; surveys that target specific populations; surveys that utilize complex stratified sampling techniques; and panel studies. The Survey Center conducts telephone, mail, and web surveys, as well as focus groups and other qualitative research projects.

The UNH Survey Center is located at 9 Madbury Road, Suite 401 and features a 41-station Computer-Assisted Telephone Interviewing (CATI) system. The Survey Center is directed by Andrew E. Smith, who is also associate professor of practice in political science. Students interested in employment as interviewers can contact Martha Belanger at martha.belanger@unh.edu.

Related Research Center

Carsey School of Public Policy

carsey.unh.edu (<http://carsey.unh.edu>)

The Carsey School of Public Policy at the University of New Hampshire is a nationally acclaimed resource for research, leadership development, and engaged scholarship relevant to public policy. The school's activities

address the most pressing challenges of the twenty-first century, striving for innovative, responsive, and equitable solutions at all levels of government and in the for-profit and nonprofit sectors. Faculty and students throughout the College of Liberal Arts serve as staff, fellows, researchers, and assistants in the school.

Academic and Cultural Centers and Institutes

Confucius Institute at UNH

cola.unh.edu/confucius (<http://cola.unh.edu/confucius>)

The Confucius Institute at UNH (CI-UNH) is a partnership between the University of New Hampshire and Chengdu University in China that engages the life of the University with the larger community, both locally and globally. The institute offers a full curriculum in Chinese language and culture as well as three study abroad programs in China. It also provides opportunities for cultural learning and exchange for regional schools—primary through post-secondary. At a time when China is the third largest trading partner for New Hampshire, CI-UNH can provide unique opportunities for business and industry in the state. CI-UNH is co-directed by Yige Wang of the UNH Department of Languages, Literatures, and Cultures; and Jie Du, the director of international cooperation and exchange at Hanban in China.

ESL Institute

cola.unh.edu/esl-institute (<http://cola.unh.edu/esl-institute>)

The ESL Institute at the University of New Hampshire has been involved in teaching international students English since 1976. The Institute provides high-quality instruction in English as a second language (ESL) and orientation in U.S. culture to international students who are non-native speakers of English. ESL courses are offered at the elementary level, the intermediate level, and the advanced level. Students at these levels receive intensive English instruction for four and a half hours per day, four days per week, in the areas of reading, writing, listening, and speaking, as well as pronunciation and contextualized grammar instruction. For students who have a TOEFL score of 60 or above (Internet-based) or 500 or above (institutional paper-based or ITP, administered by the ESL Institute), the ESL Institute provides "bridge" courses where students can simultaneously enroll in one to two UNH academic classes while continuing to study English intensively from four to ten hours per week. At these "bridge" levels, students have the opportunity to "try out" academic courses in a supportive environment. In addition to its focus on ESL instruction for international students, the Institute aspires to serve as a resource for international education to the faculty, staff, and students of UNH. For more information: cola.unh.edu/esl-institute (<http://cola.unh.edu/esl-institute>).

Museum of Art

cola.unh.edu/moa (<http://cola.unh.edu/moa>)

The Museum of Art serves as the New Hampshire Seacoast's premier public art museum and, for more than 50 years, has remained a vital resource for the visual arts, serving the University, local, and regional communities. Visitors and members gather to enjoy a wide variety of changing exhibitions, as well as annual exhibitions featuring UNH studio faculty and student work. Exhibitions of outdoor sculpture by regional artists are shown regularly in the Mills Courtyard. Accompanying programs include gallery talks, lectures, concerts, family programs, and

special events. The museum's summer Art Camp provides K-12 students with quality hands-on visual arts and instruction.

The museum's diverse permanent collection includes more than 1,800 works of art, from prehistoric to contemporary. The works are exhibited in the galleries and the Collection Study Area on a regular basis and are also used by faculty, students, and scholars for teaching, research, and interdisciplinary study.

Located in the Paul Creative Arts Center, the museum is open to students, faculty, museum members, and the general public free of charge. For more information, call (603) 862-3712 or visit cola.unh.edu/moa (<http://cola.unh.edu/moa>).

<https://cola.unh.edu/>

Departments

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- Classics, Humanities & Italian Studies (<http://catalog.unh.edu/undergraduate/liberal-arts/programs-study/classics-humanities-italian-studies>)
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Programs of Study

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Africana and African American Studies (AFAM)

Programs

- Africana and African American Studies Minor (p. 34)

Africana and African American Studies Minor

<https://cola.unh.edu/interdisciplinary-studies/program/minor/africana-african-american-studies>

Description

The Africana and African American studies minor provides students with an interdisciplinary approach to central issues in African, African Diaspora, Caribbean, and African American history, literature, and culture. The minor permits students to concentrate in one of these areas or to combine courses from among the many offerings to create a distinctive program.

The Africana and African American studies minor encompasses the multidisciplinary and comparative study of African history and culture, and the study of the African Diaspora throughout the world, from Europe to Asia as well as to North and South America. The program recognizes the global and transnational dimensions of contemporary African Diasporic experiences in the United States, the Caribbean, and Latin American nations. It thus offers a wide variety of courses that are taught across several disciplines in the University. Students are

strongly encouraged to select courses reflecting the breadth of offerings in the minor across the University of New Hampshire's undergraduate curriculum.

The program presents strong offerings in Africana studies because an understanding of Africa is central to the study of the African Diaspora. The program also features many courses in African American Studies because many aspects of African American history and culture have been central to the development of the United States, highlighting both the nation's problems and its promise, and affecting virtually all areas of academic study through the years, from the humanities and social sciences to the physical sciences. Students are encouraged to take courses from a variety of departments and disciplines. The minor therefore is designed to serve the needs of all students, regardless of their ethnic or cultural background, complementing their work in their major fields of study while serving also as a focused corrective to traditionally marginalized approaches to Africana, African Diasporic, Caribbean, and African American experiences.

Africana and African American studies consists of five 4-credit courses, including one course from a list of introductory courses related to the student's choice of concentration and four other approved offerings. Students must take at least one course at the 600 or 700 level. The required introductory course provides students with a general understanding of the broad and diverse spectrum of Africana and African American subjects. Electives enable students to develop their understanding in more focused courses (listed below) in various fields of study. There is an opportunity to earn credits toward the minor through a study abroad experience in Ghana in West Africa. (Contact the Center for the Humanities for details.) There is also an independent study option under the AFAM 795 Independent Study designation, which allows a student to work closely with a faculty member on a research project and/or internship relevant to any aspect of Africana and African American Studies. Students must earn a C- or better in each course, and maintain a 2.0 grade-point average in courses taken for the minor. Electives may include special topics courses as approved by the program, a senior seminar, internship, or study abroad credits.

Students interested in minoring in Africana and African American studies should contact:

Funso Afolayan
funso.afolayan@unh.edu
408 Horton Hall
(603) 862-3026

Requirements

Code	Title	Credits
Introductory Courses		
Select one of the following:		4
ANTH/INCO 450	Introduction to Race, Culture, and Power	
ANTH 500	Peoples and Cultures of the World (Only topic D) Sub-Saharan Africa)	
ENGL 517	Introduction to African American Literature and Culture	
ENGL #609	Ethnicity in America: The African American Experience in the 20th Century	
HIST 505	African American History	

or HIST 506 African American History

HIST 587	History of Africa from the Earliest Times to 1870	
HIST 588	History of Modern Africa: 1870 to the Present	
HIST 444D	Slavery and Society in Pre-Colonial Africa	
Elective Courses		
Select four elective courses ¹		16
Total Credits		20

¹ Electives are approved for the minor and announced each semester on the Africana and African American studies website. Courses that are partly devoted to the concerns of Africana and African American studies may count for the minor, if the instructor will allow the student to focus a significant amount of coursework on this field of study. Approval by both the minor coordinator and the course instructor is required for such courses.

Pre-approved Electives

Code	Title	Credits
ANTH 500	Peoples and Cultures of the World (Only topic B) South America)	4
ANTH 500	Peoples and Cultures of the World (Only topic D) Sub-Saharan Africa)	4
ANTH #627	Urbanization in Africa	4
EDUC 797	Special Topics in Education (Teaching Race)	4
ENGL 581 & 581H	Introduction to Postcolonial Literatures in English and Honors/Introduction to Postcolonial Literatures in English	8
ENGL #609	Ethnicity in America: The African American Experience in the 20th Century	4
ENGL 681	Introduction to African Literatures in English	4
FREN #526	Introduction to Francophone Cultures	4
FREN 676	Topics in Francophone Culture	4
HDFS 757	Race, Class, Gender, and Families	4
HIST 444D	Slavery and Society in Pre-Colonial Africa	4
HIST 497	Explorations in Historical Perspectives	4
HIST 587	History of Africa from the Earliest Times to 1870	4
HIST 588	History of Modern Africa: 1870 to the Present	4
HIST #589	Islam in Africa	4
HIST 600	Explorations (only topic Race, Gender, Science, and African-American Experience)	4
HIST 611	Civil War Era	4
HIST #625	Southern History and Literature since the Civil War	4
HIST 684	History of Southern Africa since 1652	4
MUSI 460	Jazz Band	1
PSYC 791	Advanced Topics (only topic Psychology of Race)	4
SOC 745	Race, Ethnicity, and Inequality	4
WS 401	Introduction to Women's Studies	4
WS 595	Special Topics	4

American Studies

Programs

- American Studies Minor (p. 36)

American Studies Minor

<https://cola.unh.edu/interdisciplinary-studies/program/minor/american-studies>

Description

American studies is the interdisciplinary examination of American life and culture at regional, national, and international scales. It integrates perspectives from a wide variety of disciplines, including history, English, communications, political science, geography, sociology, and the arts.

At UNH, the American studies minor is an individualized program of study that allows each student to choose from a broad range of courses offered by several different departments that best match their interests and needs. It is intended to encourage students with particular interests in the United States to develop those interests and learn more about the country from a variety of perspectives.

Requirements

To earn a minor in American studies, students must complete five courses approved to satisfy minor requirements. At least one of those courses must concentrate on issues of race, gender, or ethnicity. No more than three courses may be at the 400 or 500 level, and no more than two courses may be taken in the same department. Students must earn a C-minus or better for a course to count toward minor requirements and must maintain a 2.0 grade point average in all courses taken for the minor.

Courses

A list of courses that can be used to satisfy minor requirements is posted on the program website in advance of the course registration period for each semester. The list of courses is different every semester and includes courses offered by multiple departments. Below is a partial list of approved courses taught in recent semesters (see the program website for complete lists):

Code	Title	Credits
AMST #444B	New Orleans: Place, Meaning, and Context	4
AMST #444E	Fly Fishing and the American Experience	4
AMST #604	Landscape and American Culture	4
ANTH 697	Special Topics	4
ARTS 693	American Art	4
CMN 505	Analysis of Popular Culture	4
CMN 607	Persuasion in American Politics	4
CMN 757	Public Address and the American Experience	4
EDUC 717	Growing up Male in America	4
ENGL 444G	Ethnic America: Readings in African American, Asian American, Native American and Latino/a Literature	4
ENGL #515	American Literature I Conquest and Nation: First Contact to the Civil War	4
ENGL 517	Introduction to African American Literature and Culture	4
ENGL 738	Topics in Asian American Studies	4
ENGL 739	American Indian Literature	4

GEOG #514	Geography of the United States and Canada	4
HIST 405	History of Early America	4
HIST 406	History of the Modern United States	4
HIST 410	Historic Survey of American Civilization	4
HIST 506	African American History	4
HIST 600	Explorations	4
HIST 603	European Conquest of North America	4
HIST 611	Civil War Era	4
HIST #613	American Ways of War	4
HIST 618	American Environmental History	4
HIST 622	History of American Thought	4
HIST 620	Foreign Relations of the United States	4
ITAL 444A	Italians Come to America: Representing Emigration and Immigration on Both Sides of the Atlantic	4
KIN 561	History of American Sport and Physical Culture	4
MUSI 405	Survey of Music in America	4
NR 701	Ecological Sustainability and Values	4
POLT 402	American Politics and Government	4
POLT 403	United States in World Affairs	4
POLT 500	American Public Policy	4
POLT 508	Supreme Court and the Constitution	4
POLT 523	American Political Thought	4
PSYC 775	Madness in America	4
RMP 511	Issues of Wilderness and Nature in American Society	4
THDA 450	History of Musical Theatre in America	4
WS 405	Gender, Power and Privilege	4

Anthropology (ANTH)

Anthropology is a field of visionaries, makers and collaborators, taking a critical, creative and holistic approach to the study of humankind. We teach hands-on courses in archaeology and socio-cultural, applied, biological and forensic anthropology, reflecting our faculty members' research in the Americas, Europe, Africa, and Central and Southeast Asia. Through coursework, fieldwork and study-abroad experiences, you'll gain life-long learning skills that prepare you for success in cross-cultural understanding and communication, working for diverse organizations and tackling complex social issues in today's global world. Our students are employed in a range of areas such as public health, business, international development, museums and education.

<https://cola.unh.edu/anthropology>

Programs

- Anthropology Major (B.A.) (p. 37)
- Anthropology Minor (p. 37)

Faculty

<https://cola.unh.edu/anthropology/faculty-staff-directory>

Anthropology Major (B.A.)

<https://cola.unh.edu/anthropology/program/ba/anthropology-major>

Description

Anthropology asks the question: What does it mean to be human? We answer this fundamental query with a global perspective on the human condition as students explore both the similarity and diversity of human experience. Through courses that cover a wide range of societies throughout the world, we investigate the human condition, past and present. Introductory courses provide an overview of the fields of anthropology: social and cultural anthropology, archeology, physical anthropology, and linguistics. More advanced courses provide the opportunity for students to pursue intensive study of particular topics in cross-cultural perspective. The department emphasizes critical thinking and writing skills and encourages close faculty/student contact in seminar courses and at the upper level. Students, in consultation with their academic adviser, have the opportunity to take courses in other departments that complement specific foci in anthropology.

At this time of increasing globalization, anthropology provides students with a broad overview of diverse peoples and cultures. Majors are therefore well prepared to live in a rapidly changing world. The major both prepares students for graduate-level studies and serves as a foundation for a wide range of careers. With backgrounds in anthropology, our students become teachers, social workers, public policy experts, forensic investigators, health practitioners, primatologists, international business executives, and community and economic development specialists, as well as pursuing various other careers.

To declare a major in anthropology, students must have completed at least one introductory level anthropology course at the 400 or 500 level with a grade of C or better.

Requirements

Majors must complete a minimum of 40 credits in anthropology with grades of C or better and in accordance with the following requirements:

Code	Title	Credits
Required Courses		
Select one of the following:		4
ANTH 411	Global Perspectives on the Human Condition: An Introduction to Anthropology	
ANTH 412	Broken Pots and Buried Cities: Adventures in Archaeology	
ANTH 415	The Human Story: Evolution, Fossils and DNA	
ANTH 500 or ANTH 501	Peoples and Cultures of the World World Archaeological Cultures	4
ANTH 511	Core Concepts in Anthropology	4
ANTH 513 or ANTH 514	Ethnographic Methods Method and Theory in Archaeology	4
ANTH 611	History of Anthropological Theory	4
One additional course numbered 500 or above		4
Three additional courses numbered 600 or above		12

Complete capstone requirement	4
Total Credits	40

(Note: While 8 credits, ANTH 699 Senior Thesis; ANTH 699H Honors Senior Thesis; and ANTH 675 Archaeol Field School Belize, count only as one ANTH 600-level course requirement.)

The Discovery Program capstone requirement may be fulfilled by completing one 700-level course (seminar format). Seminar courses include:

Code	Title	Credits
ANTH 705	Topics in Mesoamerican Anthropology	4
ANTH #730	Anthropological Thinking on Education	4
ANTH #740	Teaching Race	4
ANTH 750	Islam and Gender: Gendered Lives of Muslims	4
ANTH 785	The Anthropology of Dreams and Dreaming	4
ANTH 797	Advanced Topics	4

Other courses, internships, or experiences may be substituted with the permission of the student's adviser and anthropology department chair.

The required minimum overall GPA in major coursework is 2.0.

Anthropology majors may use one major-required course to satisfy one Discovery category requirement. Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement. American Sign Language may not be applied toward the foreign language requirement.

Honors-in-major and senior thesis options are available.

Students who declare a major in anthropology are expected to make steady progress toward fulfillment of major requirements. Normally, this means taking at least one anthropology course per semester until all of the requirements have been met. A student who has fulfilled most of the major requirements may request an exception to this policy from his or her adviser.

Students wishing to major in anthropology should consult with the anthropology chairperson.

Anthropology Minor

<https://cola.unh.edu/anthropology/program/minor/anthropology>

Description

Anthropology asks the question: What does it mean to be human? Anthropologists, as scholars, collaborators, public figures, and activists, take a critical, creative and holistic approach to the study of humankind. In our relatively small program in the College of Liberal Arts, students have the opportunity to take hands-on courses in archaeology and socio-cultural, applied, medical, biological and forensic anthropology, reflecting our faculty members' academic and applied research in the Americas, Europe, Africa, and Central and Southeast Asia.

Through coursework, fieldwork and study-abroad experiences, students gain life-long learning skills that prepare them for success in cross-

cultural understanding and communication, as well as the ability to think comparatively about diversity and inequality on a local and global level.

A Minor in Anthropology provides many opportunities for cross-disciplinary collaboration, as students are encouraged to apply anthropological methods, perspectives, and theories to the world around them, and to their other areas of study. Upon graduation, our majors and minors work for a diverse set of organizations, and are employed in a range of areas such as public health, business, law, international development, non-profit organizations, museums, and education.

You do not need to declare a minor; however, it might be wise to meet with a faculty member from the Anthropology Department to discuss your minor plan.

At the beginning of your final semester of study, you should complete a certification of completion of minor form (<http://www.unh.edu/registrar/forms/minorform.pdf>), obtain the necessary signatures, and submit it to your Dean's Office.

Contact

Department of Anthropology

Requirements

A minor consists of five 4-credit courses (20 credits) in Anthropology, at least one of which must be numbered above 600, with a C or better in each course.

Art and Art History (ARTS)

The courses offered by the Department of Art and Art History provide an opportunity, within the liberal arts framework, for students to acquire a thorough knowledge of the basic means of visual expression, to study intensively the history of art, or to prepare themselves for a career in art teaching. In addition, these courses offer foundation experience for students who are interested in art but are majoring in other departments in the University. The Department of Art and Art History offers programs leading to a bachelor of arts degree in the arts with options in studio art, studio art/art education, or art history and a bachelor of fine arts degree in studio art. Certification for art teaching in the public schools is offered in cooperation with the Department of Education (see Education, under Programs of Study).

The University reserves the right to retain selections from a student's work for a period of not more than two years.

Double Option in The Arts

Students may earn a B.A. degree in the arts with both a studio art option and an art history option provided the requirements for each option are met. No more than 8 credits used for one option may be used for the second option. These 8 credits will be in Introductory Drawing and Introduction to Art History.

Minors in the Department of Art and Art History

Students must receive a minimum grade of C- in all required courses. For art majors, only two courses from the art and art history major requirements can be applied toward the minor.

A maximum of two courses (8 credits) may be transferred from another accredited institution, provided UNH has accepted them as transfer credits. Transfer courses must be a minimum of three credits. Students with transfer courses that are accepted with less than four semester credits must still meet the credit requirement for completion of the minor.

<https://cola.unh.edu/art-and-art-history>

Programs

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Faculty

<https://cola.unh.edu/art-art-history/faculty-staff-directory>

The Arts Major: Art History Option (B.A.)

<https://cola.unh.edu/art-art-history/program/ba/arts-major-art-history-option>

Description

The art history curriculum provides a comprehensive, in-depth study of Western art from the ancient world to the present as well as some exposure to non-Western cultures and artistic traditions. All courses in the program teach basic skills of interpretation and critical analysis within the framework of broad cultural perspectives that connect the visual arts to larger historical developments. They also teach good writing and research skills. In addition, art history majors typically branch out into other fields, such as history, literature, and foreign languages. By the time they graduate, most majors are well equipped to pursue such traditional careers in the field as museum and gallery work, teaching, publishing, or librarianship. But because art historical education is so broad, it also prepares students for a variety of other, more flexible options, such as law, business, or architecture.

Requirements

Students must complete a minimum of 10 courses (40 credits). The following courses are required:

Code	Title	Credits
ARTS 480	Introduction to Art History	4
ARTS 532	Introductory Drawing	4
ARTS 795	Art Historians and Their Styles	4
ARTS 799	Seminar in Art History	4

Select six 600- or 700-level art history courses:	24
Select one each from Pre-Renaissance, Renaissance/Baroque, and Modern areas	
Select three in any area	
Total Credits	40

These courses must be completed with a minimum grade of C-. Art history students receive preferential placement in ARTS 532 Introductory Drawing. Students contemplating graduate school should learn German, and, if possible, either French, Italian, or another language relevant to their areas of interest.

The Discovery Program capstone requirement may be fulfilled by completing ARTS 795 Art Historians and Their Styles.

The required minimum overall GPA in major coursework is 2.0.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

Art history majors may use one major-required course to satisfy one Discovery category requirement.

The Arts Major: Studio Art Option (B.A.)

<https://cola.unh.edu/art-art-history/program/ba/arts-major-studio-art-option>

Description

The B.A. in Art - Studio Art option provides a strong fine arts education and solid foundation that prepares students for a life in the arts, whether it be as a professional or commercial artist, a teacher, an architect, a designer, or a museum director. We offer courses in painting, drawing, photography (both digital and wet lab techniques), printmaking, sculpture (all media: steel, aluminum, bronze casting, clay, and wood), furniture design and fabrication, ceramics, and design. A degree in Studio Art provides a foundation for diverse professional achievement.

Requirements

Students selecting to work toward a bachelor of arts degree in studio art must complete a minimum of 14 courses (56 credits), with a minimum grade of C in each course. The following courses are required:

Code	Title	Credits
ARTS 480	Introduction to Art History	4
or ARTS 574	Introduction to Architectural History	
ARTS 532	Introductory Drawing	4
ARTS 546	Painting Design I: Perceptual Painting and Color Theory	4
ARTS 567	Introductory Sculpture	4
ARTS 632	Intermediate Drawing	4
or ARTS 633	Life Drawing	
ARTS 501	Introductory Ceramics	4
or ARTS 525	Introductory Woodworking	

Select one of the following:	4
ARTS 536	Introduction Printmaking: Intaglio
ARTS #537	Introduction to Printmaking: Lithography
ARTS 551	Introduction to Darkroom Photography
ARTS 552	Introductory Digital Photography
ARTS 596	Special Topics in Studio Art (Intro Graphic Design)
Select three additional courses in a studio concentration at 600 level or above (one must be an advanced 700-level course or the third workshop of the same medium)	12
Select two additional studio electives (ARTS 598, may be used)	8
Select two 600-level or above art history courses	8
Total Credits	56

While these courses represent the minimum departmental requirements for the studio art option, students may wish to plan a program involving greater depth in one or several of the studio areas.

The Discovery Program capstone requirement may be fulfilled by completing a 600 level or above course in the studio concentration. The student will work with the course's instructor to complete a mutually agreed upon capstone project associated with the course's medium.

The required minimum overall GPA in major coursework is 2.0.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

Studio art majors may use one major-required course to satisfy one Discovery category requirement.

The Arts Major: Studio Art/Art Education Option (B.A.)

<https://cola.unh.edu/art-art-history/program/ba/arts-major-studio-art-art-education-option>

Description

The program in art education is organized into a five-year, teacher-education sequence. This curriculum is designed to prepare teachers of art in the public schools. The satisfactory completion of the B.A. studio art curriculum for art education students and required education courses, in conjunction with the fifth-year internship, will satisfy the initial certification requirements for teachers of art in the public schools of New Hampshire and in most other states. These requirements may change by the time students apply for certification and the students are required to fulfill the then-current requirements. Art education students may take accredited crafts courses at other institutions as art electives.

A portfolio is required for acceptance to the studio art/art education option.

Requirements

Students selecting to work toward a bachelor of arts degree in studio art/art education must complete a minimum of 14 courses (56 credits), with a minimum grade of C in each course. The following courses are required:

Code	Title	Credits
ARTS 480	Introduction to Art History	4
or ARTS 574	Introduction to Architectural History	
ARTS 501	Introductory Ceramics	4
ARTS 532	Introductory Drawing	4
ARTS 546	Painting Design I: Perceptual Painting and Color Theory	4
ARTS 552	Introductory Digital Photography	4
ARTS 567	Introductory Sculpture	4
ARTS 632	Intermediate Drawing	4
or ARTS 633	Life Drawing	
Select one of the following:		4
ARTS 525	Introductory Woodworking	
ARTS 536	Introduction Printmaking: Intaglio	
ARTS #537	Introduction to Printmaking: Lithography	
ARTS 596	Special Topics in Studio Art (Intro Graphic Design)	
Select three additional courses in a studio concentration at the 600 level or above (one must be an advanced 700-level course or third workshop of the same medium)		12
Select one additional studio or art history elective		4
Select two 600-level art history courses; if ARTS 574 is not taken, at least one 600-level must have depth of content that addresses 20th-21st century art		8
Total Credits		56

The following three courses are also required for certification:

Code	Title	Credits
EDUC 500	Exploring Teaching	4
ARTS 791	Art Education (Elementary)	4
ARTS 792	Art Education (Secondary)	4
Total Credits		12

The Discovery Program capstone requirement may be fulfilled by completing a 600-level or above course in the studio concentration. The student will work with the course's instructor to complete a mutually agreed upon capstone project associated with the course's medium.

The required minimum overall GPA in major coursework is 2.0.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

Studio art/art education majors may use one major-required course to satisfy one Discovery category requirement.

Fine Arts Major (B.F.A.)

<https://cola.unh.edu/art-art-history/program/bfa/fine-arts>

Description

Incoming first-year and transfer applicants wishing to enter the bachelor of fine arts (B.F.A.) degree program must first apply for, and be admitted to, the bachelor of arts (B.A.) in The Arts: Studio Art option. Students may submit a BFA portfolio **after** they begin their studies at UNH, as early as

the spring semester of their first year. A full faculty review is held each spring semester.

The B.F.A. curriculum provides advanced training for students who plan to enter professional graduate school or pursue careers as professional artists.

Requirements

Students selecting to work toward a B.F.A. degree must complete a minimum of 17 courses and 72 credits, with a minimum grade of C in each course. The following courses are required:

Code	Title	Credits
ARTS 480	Introduction to Art History	4
or ARTS 574	Introduction to Architectural History	
ARTS 532	Introductory Drawing	4
ARTS 546	Painting Design I: Perceptual Painting and Color Theory	4
ARTS 567	Introductory Sculpture	4
ARTS 598	An Artist's Life	4
ARTS 632	Intermediate Drawing	4
or ARTS 633	Life Drawing	
ARTS 798	Seminar/Senior Thesis	8
ARTS 501	Introductory Ceramics	4
or ARTS 525	Introductory Woodworking	
Select one of the following:		4
ARTS 551	Introduction to Darkroom Photography	
ARTS 552	Introductory Digital Photography	
ARTS 536	Introduction Printmaking: Intaglio	
ARTS #537	Introduction to Printmaking: Lithography	
ARTS 596	Special Topics in Studio Art (Intro Graphic Design)	
Select four courses in one of the major program areas of the department (two must be at the advanced 700-level or the third and fourth workshops of the same medium)		16
Select two additional art electives (studio or art history); 2D should take at least one 3D elective and 3D should take at least one 2D elective		8
Select two additional 600-level or above art history courses		8
Total Credits		72

The possible areas of concentration within the department are painting, sculpture, ceramics, drawing, printmaking, photography, and furniture design. Proposals for individualized programs are accepted only by permission of the departmental chairperson, the major adviser, and the departmental bachelor of fine arts committee. Candidates applying for the bachelor of fine arts program are required to submit a portfolio to the B.F.A. committee, which meets each spring semester.

The Discovery Program capstone requirement may be fulfilled by completing ARTS 798 Seminar/Senior Thesis.

The required minimum overall GPA in major coursework is 2.0.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program.

Fine arts majors may use one major-required course to satisfy one Discovery category requirement.

Architectural Studies Minor

<https://cola.unh.edu/art-art-history/program/minor/architectural-studies>

Description

The minor in architectural studies provides students with an interdisciplinary introduction to the history, theory, and methods of architecture and its symbolism. The program allows students who are interested in this field to receive programmatic recognition of their work. It is designed to assist those who are contemplating enrollment at a school of architecture; are particularly interested in architectural history; want to supplement their technical majors (e.g., civil engineering) with strong academic minors; or plan to pursue careers in preservation, education, community service, and public relations.

For more information, contact the minor coordinators: Ivo van der Graaff, ivo.vandergraaff@unh.edu, art and art history, or Raymond Cook, ray.cook@unh.edu, civil engineering.

Requirements

Five courses (18-20 credits), which consist of the following:

Code	Title	Credits
ARTS 532	Introductory Drawing	4
ARTS 574	Introduction to Architectural History	4
Select one of the following:		4
ARTS 455	Architectural Design Studio	
ARTS 525	Introductory Woodworking	
ARTS 567	Introductory Sculpture	
Select two electives from the list below chosen in consultation with the minor coordinators:		6-8
ARTS 596	Special Topics in Studio Art (Intro Graphic Design)	
ARTS 600	Internship (only topic C - Architecture)	
ARTS 625	Wood/Furniture Design Workshop	
ARTS #654	17th and 18th Century American Architecture	
ARTS #655	Nineteenth-Century Architecture: The Architecture of Empire	
ARTS #656	Twentieth-Century Architecture: Modern and Contemporary	
ARTS 674	Greek Art and Architecture	
ARTS 675	Roman Art and Architecture	
ARTS 678	Romanesque and Gothic Art	
ARTS 796	Independent Study in the Visual Arts (only topic G: Architectural Design)	
CEE 444	Housing - Everyone Needs a Place to Live	
CEE 795	Independent Study	
CEE 700	Building Information Modeling	
CEE 703	Residential Construction	
CEE 719	Green Building Design	
CLAS 510	Building Rome (a J-term course)	

TECH 564 Fundamentals of CAD (Computer Aided Design)

Total Credits

18-20

Art Minor

<https://cola.unh.edu/art-art-history/program/minor/art>

Description

The art minor is an appropriate option for students who do not want to take the specific requirements for the art history or studio art minors, but who are still interested in taking art history and/or studio classes.

Requirements

The minor in art consists of five courses (20 credits) chosen from the offerings of the department, two of which must be at the 500-level or above. Courses can be all studio art, all art history, or a combination of both.

Art History Minor

<https://cola.unh.edu/art-art-history/program/minor/art-history>

Description

The art history minor offers those majoring in other fields (including studio art) the chance to gain a serious knowledge of aspects of the history and meanings of Western art from antiquity to the modern world. Particularly for those working in history and the humanities, a minor in art history will provide new interdisciplinary perspectives on their major fields.

Requirements

The minor consists of five courses (20 credits).

Code	Title	Credits
ARTS 480	Introduction to Art History	4
or ARTS 574	Introduction to Architectural History	
Select four additional art history courses at the 600 level or above		16
Total Credits		20

Design Studies Minor

<https://cola.unh.edu/art-art-history/program/minor/design-studies>

Description

Situated within the studio arts program, the interdisciplinary minor in design studies brings together the formal and conceptual principles of design in the visual expressions of the fine arts (painting, sculpture, photography, etc.), the commercial arts (graphic design, illustration, etc.), the industrial arts (engineering), and the performing arts (stage, costume, and lighting design).

Course options in communication, marketing, English, and art history offer the opportunity to contextualize the principles and products of design in a broader historical, sociological, and cultural context.

Course requirements and options within the design studies minor enable students to develop a common skill set of literacy and fluency in a range of design software programs (Photoshop, InDesign, Light Box, Fuse, etc.), the utility of which has become increasingly more essential to a range of fields of study and vocations.

Requirements

Five courses (20 credits) are required.

Code	Title	Credits
Applied/Studio Practice		
ARTS 401	Principles of Design	4
Select two of the following:		8
ARTS 455	Architectural Design Studio	
ARTS 501	Introductory Ceramics	
ARTS 525	Introductory Woodworking	
ARTS 532	Introductory Drawing	
ARTS 536	Introduction Printmaking: Intaglio	
ARTS #537	Introduction to Printmaking: Lithography	
ARTS 546	Painting Design I: Perceptual Painting and Color Theory	
ARTS 551	Introduction to Darkroom Photography	
ARTS 567	Introductory Sculpture	
THDA 460	Elements of Design	
THDA 546	Costume Design for the Theatre	
THDA 547	Stage Properties	
THDA 548	Stage Lighting Design and Execution	
Technical Practice		
Select one of the following:		4
ARTS 552	Introductory Digital Photography	
CEE 700	Building Information Modeling	
CMN 596	Special Topics in Media Studies (Multi-media Communication)	
ENGL 712	Multimedia Storytelling	
IT 403	Introduction to Internet Technologies	
IT 502	Intermediate Web Design	
TECH 564	Fundamentals of CAD	
Historical/Theoretical Context		
Select one of the following:		4
ARTS 480	Introduction to Art History	
ARTS 500		
ARTS 574	Introduction to Architectural History	
CMN 650	Critical Perspectives on Film	
CMN 697	Seminar in Rhetorical Study (Rhetoric of the Photograph)	
CMN 756	Rhetorics of Display	
CMN 772	Seminar in Media Theory	
ENGL 533	Introduction to Film Studies	
ENGL 616A	Studies in Film/Genre	
ENGL 616B	Studies in Film/Authorship	

ENGL 616C	Studies in Film/Culture and Ideology	
ENGL 616D	Studies in Film/Narrative and Style	
MKTG 598	Topics in Marketing (Understanding Your Customer or Digital Marketing Communications)	
Total Credits		20

Students must receive a **minimum grade of C** in all required courses.

A maximum of two courses (8 credits) may be transferred from another accredited institution, provided UNH has accepted them as transfer credits. Transfer courses must be a minimum of 3 credits. Students with 3 credit transfers must make up the credit shortage.

Only two courses from the student's area/department of concentration may be used to meet requirements towards a minor in design studies.

Studio Arts Minor

<https://cola.unh.edu/art-art-history/program/minor/studio-arts>

Description

The studio arts minor is for students who are interested in continuing on to the intermediate and advanced levels in a variety of mediums.

Requirements

The minor in studio arts consists of five courses (20 credits) with a distribution that includes

Code	Title	Credits
ARTS 532	Introductory Drawing	4
Select two studio courses from the 600 level or above		8
Select two additional studio courses chosen from the offerings of the department		8
Total Credits		20

Asian Studies

Programs

- Asian Studies Minor (p. 42)

Asian Studies Minor

<https://cola.unh.edu/interdisciplinary-studies/program/minor/asian-studies>

Description

The aim of the interdisciplinary Asian studies minor program is to foster teaching and learning as well as research in all areas of Asia. The minor offers opportunities to develop proficiency in Asian languages and to study the histories, politics, literatures, cultures and religions of East Asia (China, Japan, Korea and others) and South Asia (India, Pakistan, Sri Lanka, Bhutan and others). Courses offered provide students the chance to explore a wide range of contemporary subjects such as foreign policy, language use, education, environment, the Asian-American experience,

ethnic and religious conflict, literary and cultural production, and cross-border movements of industry and ideas.

For further information, please contact Lawrence C. Reardon, associate professor of political science, chris.reardon@unh.edu, (603) 862-1858.

Requirements

To complete the minor in Asian Studies, students are required to take five courses (20 credits) or their equivalent, and no more than three can be counted from any one of the following disciplines:

- Anthropology (ANTH)
- Asian American or South Asian Literature (ENGL)
- Geography (GEOG)
- History (HIST)
- Languages, Literatures, and Cultures (either CHIN or JPN)
- Philosophy (PHIL)
- Political Science (POLT)

The following are a list of courses that count toward the minor. Please note additional courses may also count. Visit the program website for the most up-to-date information.

Code	Title	Credits
ANTH 500	Peoples and Cultures of the World (only topic D) Asia	4
ANTH 501	World Archaeological Cultures (only topic F) Asia	4
ARTS 697	Topics in Asian Art	4
CHIN 400	Conversational Chinese	4
CHIN 401	Elementary Chinese I	4
CHIN 402	Elementary Chinese II	4
CHIN 425	Introduction to Chinese Culture	4
CHIN 503	Intermediate Chinese I	4
CHIN 504	Intermediate Chinese II	4
CHIN 521	What does it Mean to be Modern? Lenses of Modern Chinese Literature and Film	4
CHIN 632	Advanced Chinese Conversation and Composition II	4
CHIN 795	Independent Study	1-4
ENGL 581	Introduction to Postcolonial Literatures in English	4
ENGL 616C	Studies in Film/Culture and Ideology	4
ENGL 738	Topics in Asian American Studies	4
ENGL 750	Special Studies in American Literature	4
ENGL 777	Postcolonial Novel	4
HDFS 444	We Don't All Play the Violin: Stories and Stereotypes of Asians in America	4
HDFS 773	International Perspectives on Children and Families	4
GEOG 530	Geography of China	4
HIST 425	Foreign Cultures	4
HIST 444G	Voices from Modern China	4
HIST 579	History of China in Modern Times	4
HIST 580	History of Japan in Modern Times	4
HIST #681	Society and Culture in 20th-Century China	4
HIST 797	Colloquium (American Century in Asia)	4

HIST 797	Colloquium (Chinese-Western Encounters)	4
JPN 401	Elementary Japanese I	4
JPN 402	Elementary Japanese II	4
JPN 425	Introduction to Japanese Culture and Civilization	4
JPN 503	Intermediate Japanese I	4
JPN 504	Intermediate Japanese II	4
JPN 631	Advanced Japanese I	4
JPN 795	Independent Study	1-4
JPN 796	Independent Study	1-4
PHIL 520	Introduction to Eastern Philosophy	4
POLT 403H	Honors/United States in World Affairs	4
POLT 545	People and Politics in Asia	4
POLT 546	Wealth and Politics in Asia	4
POLT 556	Politics in China	4
POLT 566	Asian Challenge to Global Order	4
POLT 569	The Rise of China	4
POLT 797E	Seminar in International Politics (US/China Decision Making)	4

Chinese (CHIN)

Programs

- Chinese Minor (p. 43)

Chinese Minor

<https://cola.unh.edu/languages-literatures-cultures/program/minor/chinese>

Description

The minor in Chinese language provides students with linguistic skills and cross-cultural competence that will complement their studies, no matter their major. The minor prepares students for future academic or professional opportunities in which proficiency in Chinese is required or preferred.

Students who have studied Chinese at UNH have gone on to use Chinese in a variety of paths. One example is Teach in China, a program offered through the Council of International Education Exchange. New Hampshire has extensive business ties with China, which is ranked third among New Hampshire's top export partners.

Contact Avary Thorne, avary.thorne@unh.edu, (603) 862-4005.

Requirements

20 credits which consist of the following:

Code	Title	Credits
CHIN 503	Intermediate Chinese I	4
CHIN 504	Intermediate Chinese II	4
CHIN 631	Advanced Chinese Conversation and Composition I	4

CHIN 632	Advanced Chinese Conversation and Composition II	4
Choose one of the following or another Chinese culture or literature course approved by the faculty:		4
CHIN 425	Introduction to Chinese Culture	
CHIN 521	What does it Mean to be Modern? Lenses of Modern Chinese Literature and Film	
Total Credits		20

Cinema Studies

Programs

- Cinema Studies Minor (p. 44)

Cinema Studies Minor

<https://cola.unh.edu/interdisciplinary-studies/program/minor/cinema-studies>

Description

The minor in cinema studies offers a variety of opportunities to study a predominant contemporary form of narrative, aesthetic, and social discourse: the moving image. Film is the primary medium of study for the minor, but the cinematic practices of video and television also may be included as potential areas of interest. Courses consist of interdisciplinary approaches to the analysis of cinema, covering works from the early cinema to the present, from the U.S. and other nations. Students learn the aesthetics, history, technology, economics, and theory of cinema, while also acquiring the language for analyzing its forms and practices. The minor allows for organized and meaningful study of the moving image from a wide range of scholarly interests and approaches that complement the increasingly significant place of cinema in many major disciplines and other programs. Students enrolled in the cinema studies minor will become articulate and critical spectators in the larger cultural contexts of film and media studies.

Cinema studies students are required to take five courses. Students must earn at least a C- in each course and maintain a 2.0 grade-point average in courses taken for the minor. "Double counting" of minor course credits with major course credits will be left to the discretion of existing major departments, with the exception that no more than eight credits, if approved, will "double count."

Interested students should contact the cinema minor coordinator, Matt Konzett, Department of English, matthias.konzett@unh.edu, (603) 862-0261.

Requirements

Code	Title	Credits
Introductory Course		
ENGL 533	Introduction to Film Studies	4
History and Theory of Film		
LLC 540 or ENGL 618	Film History Film Theory	4
Advanced and/or Focused Courses		

Select two of the following:		8
CMN 650	Critical Perspectives on Film	
ENGL 616A	Studies in Film/Genre	
ENGL 616B	Studies in Film/Authorship	
ENGL 616C	Studies in Film/Culture and Ideology	
ENGL 616D	Studies in Film/Narrative and Style	
ENGL 733	Special Studies in Film	
GERM 524	German Cinema	
ITAL 525	Italian Cinema	

Elective Courses

Select one elective course ¹	4
Total Credits	20

¹ Electives are drawn from an approved list of courses for the minor, which is compiled and announced every semester. Students also may choose from the advanced and/or focused courses. Elective courses have a significant cinema studies component and may have another disciplinary focus as well. Contributing departments and/or programs include: American studies, anthropology, arts, communication, English, French, geography, German, history, humanities, Italian, music, philosophy, political science, psychology, Russian, sociology, Spanish, theatre and dance, and women's studies. Students should check with the cinema minor coordinator each semester for approval of the elective.

Classics (CLAS)

Classics encompasses the interdisciplinary study of the Greeks and Romans, as well as the ways in which the ancient world's influence extends to the Medieval Period, the Renaissance, and the modern world. Studying classics, therefore, is to investigate several thousand years of material through the study of languages, literature, history, politics, law, archaeology, art, mythology and folklore, gender and sexuality, religious studies, philosophy and more—all with methods derived from a variety of humanistic and social science perspectives. This breadth provides an excellent liberal arts education that prepares students for a variety of careers, as well as for further study. Classics majors from UNH have gone on to law school, medical school, and graduate school in classics and many related disciplines and have taken up careers in teaching, government service, the military, and business.

Classics majors have many opportunities at UNH to pursue their own interests in the ancient world while completing their requirements. Along with Greek and Latin, the Classics program offers Hittite and Sanskrit, the ancient languages of Anatolia and India. Students are encouraged to take courses offered outside the department that relate to the field of classics, such as those in ancient history, archaeology, ancient philosophy, classical art, modern languages, linguistics, and English literature. Some of these courses can even count for major requirements; a current list of approved courses is available from any departmental adviser. Study abroad is another way that many majors broaden their studies. Students have frequently spent semesters at many study abroad sites, including the Intercollegiate Center for the Classical Studies in Rome. (UNH is part of the consortium of Universities that supports this program.) The Department of Classics, Humanities, and Italian Studies regularly runs its own popular January Term course in Rome and manages study abroad programs in Ascoli Piceno, Italy; and Budapest, Hungary, that may be appropriate for classics majors, depending on their interests.

The program offers three different options for the classics major. In brief, the differences are:

- The Classical Languages and Literatures (CLL) option allows for the most in-depth study of the ancient languages and requires knowledge of both Ancient Greek and Latin. It thus provides the strongest preparation for students considering graduate study in classics or related areas, and can also be an appropriate choice (with careful planning) for those thinking about teaching Latin in secondary schools. At the same time, it is designed for any student who desires a solid liberal arts education.
- The Ancient Mediterranean Civilizations (AMC) option balances language study with the opportunity for students to select from a wide range of courses covering many aspects of the Greek and Roman worlds, as well as the neighboring peoples in Europe, North Africa, and the Near East. The flexibility of this option makes it especially attractive for students who wish to double major in another subject. It is generally not suitable, however, for those who wish to pursue related graduate study or a career in teaching Latin. AMC majors can, however, supplement the requirements with additional coursework to keep these options open.
- The Latin and Latin Teaching (LLT) option is designed to provide a good foundational liberal arts education centered on Latin and the Roman world, but it also includes specific elements that make it particularly appropriate for students who are considering careers teaching Latin in secondary schools after graduation. This option does not lead directly to state certification, which can be pursued during a fifth year of study in the Department of Education.

<https://cola.unh.edu/classics-humanities-italian-studies>

Programs

- Classics Major: Ancient Mediterranean Civilizations Option (B.A.) (p. 45)
- Classics Major: Classical Languages & Literatures Option (B.A.) (p. 46)
- Classics Major: Latin & Latin Teaching Option (B.A.) (p. 46)
- Classics Minor (p. 47)
- Greek Minor (p. 47)
- Latin Minor (p. 47)

Faculty

<https://cola.unh.edu/classics-humanities-italian-studies/faculty-staff-directory>

Classics Major: Ancient Mediterranean Civilizations Option (B.A.)

<https://cola.unh.edu/classics-humanities-italian-studies/program/ba/classics-major-ancient-mediterranean-civilizations-option>

Description

The Ancient Mediterranean Civilizations (AMC) option balances language study with the opportunity for students to select from a wide range of courses covering many aspects of the Greek and Roman worlds, as well as the neighboring peoples in Europe, North Africa, and the Near East. The flexibility of this option makes it especially attractive for students who wish to double major in another subject. It is generally not suitable, however, for those who wish to pursue related graduate study or a career in teaching Latin. AMC majors can, however, supplement the requirements with additional coursework to keep these options open.

Requirements

To complete the AMC option of the classics major, a student must complete 10 courses (40 credits), distributed as follows:

Code	Title	Credits
Language Proficiency		
Demonstrate proficiency by taking at least 8 credits in GREK or LATN at the 503 level or above		8
Other Courses		
Select at least 32 additional credits in CLAS, GREK, or LATN courses, including: ¹		32
CLAS 405	Introduction to Greek Civilization	
	or CLAS 406 Introduction to Roman Civilization	
At least 8 credits from courses at the 600 level or above		
Capstone Experience		
Select an approved capstone experience of the following:		
Senior thesis		
Honors thesis		
CLAS capstone course approved by the advisor at the 600 or 700 level		
At least 4 credits in 700-level LATN or GREK courses		
Approved internship		
Approved semester study abroad focused on the classical world		
Total Credits		40

¹ No more than 8 credits may come from CLAS courses at the 400 level, with up to an additional 8 credits from LATN and GREK courses at the 400 level. There are also courses taught outside of the program that are approved substitutes for CLAS courses, and the department will accept up to 8 credits from such courses. An up-to-date list of these courses is available from departmental advisers and additional exceptions are allowed with the written approval of the adviser.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

Classics majors may use two major-required courses to satisfy two Discovery category requirements.

The required minimum overall GPA in major coursework is 2.0.

Classics Major: Classical Languages & Literatures Option (B.A.)

<https://cola.unh.edu/classics-humanities-italian-studies/program/ba/classics-major-classical-languages-literatures-option>

Description

The Classical Languages and Literatures (CLL) option allows for the most in-depth study of the ancient languages and requires knowledge of both Ancient Greek and Latin. It thus provides the strongest preparation for students considering graduate study in classics or related areas, and can also be an appropriate choice (with careful planning) for those thinking about teaching Latin in secondary schools. At the same time, it is designed for any student who desires a solid liberal arts education.

Requirements

To complete the CLL option of the classics major, a student must complete 10 courses (40 credits), distributed as follows:

Code	Title	Credits
Language Courses ¹		
Select at least 12 credits at the 503 level or above ²		12-24
Including:		
Select at least one class at the 700 level in the primary language (GREK or LATN)		
Select at least one class at the 504 level or above in the secondary language (LATN or GREK)		
Non-Language Courses		
Select at least 16 credits in CLAS courses. As many as 28 credits may be counted toward this option. ³		16-28
Capstone		
Select an approved capstone experience of the following:		
Senior thesis		
Honors thesis		
CLAS capstone course at the 600 or 700 level		
At least 8 credits in 700-level LATN or GREK courses		
Approved internship		
Approved semester study abroad focused on the classical world		
Total Credits		40

¹ No credits from language courses at the 400 level may be counted toward this option.

² Students may count as many as 24 toward the CLL major option.

³ No more than 4 credits may come from courses at the 400 level. There are also courses taught outside of the program that are approved substitutes for CLAS courses, and the department will accept up to 8 credits from such courses. An up-to-date list of these courses is available from departmental advisers and additional exceptions are allowed with the written approval of the adviser.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

Classics majors may use two major-required courses to satisfy two Discovery category requirements.

The required minimum overall GPA in major coursework is 2.0.

Classics Major: Latin & Latin Teaching Option (B.A.)

<https://cola.unh.edu/classics-humanities-italian-studies/program/ba/classics-major-latin-latin-teaching-option>

Description

The Latin and Latin Teaching (LLT) option is designed to provide a good foundational liberal arts education centered on Latin and the Roman world, but it also includes specific elements that make it particularly appropriate for students who are considering careers teaching Latin in secondary schools after graduation. This option does not lead directly to state certification, which can be pursued during a fifth year of study in the Department of Education.

Requirements

To complete the LLT option of the classics major, a student must complete 10 courses (40 credits), distributed as follows:

Code	Title	Credits
Latin Language Courses		
Select at least 20 credits of LATN courses at the 504 level or above ¹		20-24
Other Courses		
CLAS 401	Classical Mythology	4
CLAS 406	Introduction to Roman Civilization	4
Select 4-8 credits of electives ²		4-8
Select one of the following:		4
CLAS 601	Classical Myth II: The Power and Persistence of Myth	
CLAS 604	Golden Age of Rome	
Capstone Experience		
Select an approved capstone experience of the following:		
Senior thesis		
Honors thesis		
CLAS capstone course at the 600 or 700 level		
At least 12 credits in 700-level LATN courses		
Approved external internship		
CLAS 694	Supervised Practicum (4-credit internal Latin teaching internship)	
Approved semester study abroad focused on the classical world		
Total Credits		36-44

¹ At least 4 credits must come from LATN 631 Latin Prose Composition and at least 4 credits must come at the 700 level.

² An up-to-date list of these courses is always available from department advisers, and these advisers can also approve exceptions in writing. (At present, the following CLAS courses do not count: CLAS #402 Hellenic and Roman Institutions, CLAS 405 Introduction to Greek Civilization, CLAS 411 Elementary Hittite I–CLAS 412 Elementary Hittite II–CLAS 413, CLAS #414 Elementary Sanskrit II, CLAS #506 Introduction to Comparative and Historical Linguistics, CLAS 525 Greek and Latin Origins of Medical Terms, CLAS 595 Topics/CLAS 596 Topics, CLAS 694 Supervised Practicum.) Besides CLAS 401 Classical Mythology and CLAS 406 Introduction to Roman Civilization, no other 400-level courses may count. No Greek language courses are required for the LLT option, but students are encouraged to complete at least the introductory sequence (401–402).

There are also courses taught outside of the program that are approved substitutes for CLAS courses, and the department will accept up to 8 credits from such courses. An up-to-date list of these courses is available from departmental advisers and additional exceptions are allowed with the written approval of the adviser.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

Classics majors may use two major-required courses to satisfy two Discovery category requirements.

The required minimum overall GPA in major coursework is 2.0.

Please note that the LLT option does not by itself meet New Hampshire state certification requirements. Those who intend to pursue this certification should enroll in EDUC 500 Exploring Teaching as early as possible and then apply early in the fall of their year of graduation for a fifth year of internship and study through UNH's Department of Education. Students are also encouraged strongly to consider taking some EDUC electives during their period of undergraduate study.

Classics Minor

<https://cola.unh.edu/classics-humanities-italian-studies/program/minor/classics>

Description

The coordinator is Scott Smith, Murkland Hall; Department of Classics, Humanities, and Italian Studies; (603) 862-2388; e-mail scott.smith@unh.edu.

Requirements

A minor in classics consists of five courses (20 credits) in classics, Greek, and/or Latin.

Greek Minor

<https://cola.unh.edu/classics-humanities-italian-studies/program/minor/greek>

Description

The coordinator is Scott Smith; Murkland Hall; Classics, Humanities, and Italian Studies; (603) 862-2388; e-mail scott.smith@unh.edu. (scott.smith@unh.edu)

Requirements

A minor in Greek consists of five courses (20 credits) in Greek.

Latin Minor

<https://cola.unh.edu/classics-humanities-italian-studies/program/minor/latin>

Description

The coordinator is Scott Smith, Murkland Hall; Department of Classics, Humanities, and Italian Studies; (603) 862-2388; e-mail scott.smith@unh.edu.

Requirements

A minor in Latin consists of five courses (20 credits) in Latin.

Cognates

- Digital Writing and Literature Cognate (p. 47)
- Intercultural Communication for the Professional World Cognate (p. 48)
- Skills and Perspectives for the Digital World Cognate (p. 48)
- Technical Writing and Public Speaking Cognate (p. 49)

Digital Writing and Literature Cognate

<https://cola.unh.edu/english/program/cognate/digital-writing-literature>

Description

Many jobs nowadays require not only solid reading and writing skills; but also the ability to deploy and adapt these skills in a variety of electronic, professional, public and semi-public platforms. This cognate builds students' ability to comprehend and interpret difficult texts (including complex instructions); to edit, proofread and frame their work for different audiences and contexts; and to navigate rudimentary markup (code) and varied electronic interfaces with confidence and independence.

In consultation with a program advisor, students may choose to pursue a "track": e.g., courses like ENGL 623 and ENGL 712 may serve as a "creative" track for students interested in honing their digital storytelling and audio skills; while ENGL 693 and ENGL 739 may offer students a way in to cultural heritage management or nonprofit careers. Alternatively, students already focused on a particular course of study (e.g., journalism) may wish to learn how digital tools work in parallel fields (thus taking

ENGL 631 to enhance their digital reporting skills while also taking ENGL 739 to learn how to edit Wikipedia).

Contact the English Department with questions at (603) 862-1313.

Requirements

Code	Title	Credits
ENGL 501 or ENGL 502	Introduction to Creative Nonfiction Professional and Technical Writing	4
Choose any two from the following:		8
ENGL 602	Advanced Professional and Technical Writing	
ENGL 620	English Major Internship (Digital Archiving and Editing)	
ENGL 623	Creative Nonfiction (see advisor for help in identifying appropriate section)	
ENGL 631	Introduction to Digital Reporting	
ENGL 693	Special Topics in Literature (Topic N, Introduction to Digital Humanities)	
ENGL 712	Multimedia Storytelling	
ENGL 739	American Indian Literature	
ENGL 789	Special Topics in English Teaching (Teaching English in the 21st Century)	
Total Credits		12

Credit toward the cognate will only be given for courses passed with C- or better, and a 2.00 grade-point average must be maintained in courses for the cognate. Courses taken on the pass/fail basis may not be used for the cognate.

Intercultural Communication for the Professional World Cognate

<https://cola.unh.edu/languages-literatures-cultures/program/cognate/intercultural-communication-professional-world>

Description

This cognate is designed to provide students with the means to develop a global perspective, intermediate communication skills, and an understanding of the dynamics of intercultural communication. Research has linked study abroad experience with students' future employability, and "intercultural/global competence" in particular is a skill valued by employers in a wide range of fields. This cognate provides students a means to attain these valuable, marketable skills, as well as a means to demonstrate this to potential employers.

Contact the Department of Languages, Literatures and Cultures with questions at (603) 862-3121.

Requirements

Code	Title	Credits
Professional Culture ¹		
Choose one of the following:		4
LLC 535A	Professional Culture in European Union -- Case Study: Germany	

LLC 535B	Professional Culture in Latin America - Case Study: Mexico and Brazil
LLC 535C	Professional Culture in Asia -- Case Study: China and Japan

Language Skills

Choose any modern language course numbered 503 or above (503, 631, 632) consistent with the region covered in the professional culture course above and the study abroad experience below

Study Abroad Experience

Choose any program in country for 5 weeks or longer that involves coursework in the target or host language/language other than English²

Total Credits 12

- ¹ Taught in English, fulfills WC Discovery, no prior knowledge assumed
- ² Students can petition for an alternate experience, such as The Washington Center Program, as long as the internship placement involves foreign language use. Preferably, this will relate to the same region covered in the professional culture course and the language skills course, but that is not required.

Credit toward the cognate will only be given for courses passed with C- or better, and a 2.00 grade-point average must be maintained in courses for the cognate. Courses taken on the pass/fail basis may not be used for the cognate.

Skills and Perspectives for the Digital World Cognate

<https://cola.unh.edu/interdisciplinary-studies/program/cognate/skills-perspectives-digital-world>

Description

Engage with and reflect on the technology associated with the digital world. This cognate provides a foundation for the development of technical and critical skills aligned with one of the 21st century's defining areas: information technology. A recent statement by General Electric's CEO asserts that if you join the company today, as opposed to 20 years ago, you're going to learn to code even though you may be in sales, finance or operations. This cognate gives students and future employees a fundamental introduction into technologies that are necessary for high functioning in today's world, both in the workplace and beyond.

Contact the College of Liberal Arts Dean's Office, (603) 862-2062, or the Computer Science Department, (603) 862-3778, with questions.

Requirements

Code	Title	Credits
IT 403	Introduction to Internet Technologies	4
Choose one of the following:		4
CS 405	Introduction to Applications Programming	
CS 410	Introduction to Scientific Programming	
CS 414	From Problems to Algorithms to Programs	
Choose one of the following:		4
ANTH #508	Anthropology of Internet	

WS 444D	Cyborgs, Avatars, and Feminists: Gender in the Virtual World
CS 408	Living in a Networked World: The Good, the Bad, and the Ugly
ENGL 415E	Literature and Cyberculture
Total Credits	
12	

Credit toward the cognate will only be given for courses passed with C- or better, and a 2.00 grade-point average must be maintained in courses for the cognate. Courses taken on the pass/fail basis may not be used for the cognate.

Technical Writing and Public Speaking Cognate

<https://cola.unh.edu/english/program/cognate/technical-writing-public-speaking>

Description

The cognate in technical writing and public speaking (TWPS) offers students intensive instruction in oral and written communication as important means of addressing technical, professional, or practical problems whose solutions require others' cooperation. Students learn practical precepts for analyzing those "communication situations" and for making informed, strategic decisions when composing oral and written responses in response to them. Students also undergo extensive practice creating standard and, thus, widely applicable forms of spoken and written communication. All students acquire a foundation in effective expression by taking introductory courses in public speaking and in professional and technical writing. Students then build upon that foundation and complete the cognate with one advanced course in either public speaking or professional and technical writing. This cognate is attractive to students who recognize that effective expression is valued in nearly any field of endeavor they are likely to pursue in their post-graduate lives.

Please contact the Liberal Arts Dean's Office for additional information, (603) 862-2062, 110 Murkland Hall.

Requirements

Code	Title	Credits
Introductory Courses		
CMN 500	Public Speaking	4
ENGL 502	Professional and Technical Writing	4
Advanced Course		
Choose one of the following:		
CMN 600 or ENGL 602	Public Speaking as a Civic Art Advanced Professional and Technical Writing	4
Total Credits		12

Credit toward the cognate will only be given for courses passed with C- or better, and a 2.00 grade-point average must be maintained in courses for the cognate. Courses taken on the pass/fail basis may not be used for the cognate.

Communication (CMN)

The Department of Communication emphasizes a range of studies in human communication, including rhetoric, media, and interpersonal communication. Students are taught to analyze verbal, nonverbal, and mediated messages from a variety of perspectives including historical, critical, interpretive, and empirical approaches. Students explore connections and interrelationships among the people, environments, and messages that comprise the social world.

The communication major prepares students well for a wide variety of careers in business and industry, public relations and advertising, personnel, government, education, media, and social services. Students expecting "vocational education," however, will be disappointed. We do not train students to do specific communication tasks, such as how to run a camera or how to construct a magazine advertisement. Rather, we help students to develop their understanding of how communication works the way it does, such as why certain production techniques influence people's interpretations of televised messages or how a particular advertising theme reflects and reinforces the values of a society. Students grapple with such "how" and "why" questions as they study instances of public address in political campaigns, social movements, governmental pronouncements, news reports, and community dialogues. Students also tackle the how's and why's of interpersonal communication between friends, family members, work colleagues, acquaintances, and strangers.

The department is committed to providing a strong liberal arts orientation that helps students develop their abilities to think—to describe, analyze, critique, explore, integrate, synthesize, and create ideas. The department's faculty members believe that these are the skills and abilities that will be the most useful resources in students' professional, civic, and personal lives after leaving UNH. The program trains students to understand, adapt to, and participate in social change. These educational efforts lead to the kind of fundamental understanding that identifies the communication professional and also provides a firm foundation for advanced, graduate study in communication and related fields.

The department's faculty members have a strong national and international reputation for their research and publications. In addition, the department is recognized on campus for its commitment to teaching. About half of the department's tenure-track faculty members have won awards for teaching excellence. The faculty is also very active in university, community, and professional service.

The department offers a business applications option for communication majors who want to augment the liberal arts focus of their major with professional training in such areas as marketing, advertising, and organizational behavior.

The department offers a media practices option for communication majors who want to augment their major with training in media production and applied media communication through courses at UNH-Manchester Communication Arts Department.

The department also offers internships, which are designed to integrate classroom study and supervised practical experience in a work setting. Internship credits do not count toward completion of the communication major, but they do contribute to the total number of credits needed for graduation.

<https://cola.unh.edu/communication>

Programs

- Communication Major (B.A.) (p. 50)
- Communication Major: Business Applications Option (B.A.) (p. 51)
- Communication Major: Media Practices Option (B.A.) (p. 52)
- Communication Minor (p. 53)

Faculty

<https://cola.unh.edu/communication/faculty-staff-directory>

Communication Major (B.A.)

<https://cola.unh.edu/communication/program/ba/communication-major>

Description

The purpose of the communication major is to prepare students to engage more knowingly with the communicative patterns, problems, and practices that they will encounter in their personal, professional, and civic lives. This purpose requires that students learn to move beyond commonplace and conventional understandings of "communication" and acquire sophisticated perspectives—workable orientations—for describing, analyzing, reflecting upon, and engaging with those patterns, problems, and practices. Accordingly, the major not only acquaints students with a variety of empirical, critical, historical, theoretical, and pragmatic perspectives on communication phenomena, but encourages them to formulate workable orientations of their own for engaging with communication issues and questions. Students who graduate with a communication major are prepared to become thoughtful and proficient "communication decision-makers" during their postgraduate lives.

Students wishing to declare communication as a major should contact the department's academic adviser, Andrew Sharp (andrew.sharp@unh.edu), for application information and requirements.

Requirements

Majors must complete ten courses (40 credits) with a 2.0 overall average in the major. The distribution of required courses for the major is as follows:

Code	Title	Credits
Complete the following three introductory courses: ¹		
CMN 455	Introduction to Media Studies	4
CMN 456	Propaganda and Persuasion	4
CMN 457	Introduction to Language and Social Interaction	4
Select three 500-level communication analysis courses ²		12
Select four upper-division courses ³		16
Total Credits		40

- Majors must earn a grade of C or better in each introductory course.
- Students must complete the 400-level prerequisite before taking a 500-level course.
 - At least two of the three 500-level courses must have different 400-level prerequisites.
 - Majors must earn a grade of C- or better in all three analysis courses.
 - CMN 500 Public Speaking, CMN 599 Internship, and CMN 575 Research Practicum cannot be used to fulfill an analysis course requirement.
- Students are eligible to take upper-division courses after successfully completing at least two of the 500-level analysis courses, each with a different 400-level prerequisite.
 - Students are encouraged to focus at least three of their upper-division courses on one of **six thematic concentrations listed below**.
 - At least one of the student's four upper-division courses must be at the 700 level.
 - Majors must earn a grade of C- or better in all upper-division courses.
 - Up to four credits of CMN 795 can be used towards the major, but can only fulfill the capstone requirement with department approval.
 - CMN 799 (Honors Thesis) and CMN 796 (Comm-Entary) cannot be used to fulfill the advanced-level requirement.

Thematic Concentrations

1. Histories and Traditions in Communication

Students who pursue this concentration examine the history of thought about communication and its practices with attention to its applicability in the contemporary world. Select from:

Code	Title	Credits
CMN 607	Persuasion in American Politics	4
CMN 615	Public Opinion and Mass Communication	4
CMN 627	Great Speakers and Speeches	4
CMN 630	Psychology of Communication	4
CMN 696	Seminar in Media Studies (topics: Crit Appr Media, Hist Surv Media)	4
CMN 697	Seminar in Rhetorical Study (topics: Rhet Crit Media, Controv Reas Law)	4
CMN #732	Communication Theory	4
CMN 757	Public Address and the American Experience	4
CMN 772	Seminar in Media Theory	4

2. Political Communication and Public Space

Courses in this concentration invite critical and historical inquiry into the forms and expressions of public opinion, political advocacy, and social or political reformation, maintenance, and change. Select from:

Code	Title	Credits
CMN 607	Persuasion in American Politics	4
CMN 615	Public Opinion and Mass Communication	4
CMN 627	Great Speakers and Speeches	4
CMN 634	Media and Politics	4
CMN 696	Seminar in Media Studies (topic: Media Effects)	4
CMN 697	Seminar in Rhetorical Study (topics: Spec, Scand; Gend & Pub Cult; Rhet Crit Media; Controv Reason Law)	4
CMN 737	Principles of Rhetorical Crit	4
CMN 756	Rhetorics of Display	4

CMN 757	Public Address and the American Experience	4
CMN 758	Media Analysis and Criticism	4

3. Communication, Community and Everyday Life

Courses in this concentration explore our taken-for-granted ways of being in the world and how they emerge from our routine communicative interactions with each other. Select from:

Code	Title	Credits
CMN 600	Public Speaking as a Civic Art	4
CMN 602	Theories of Interpersonal Communication	4
CMN 630	Psychology of Communication	4
CMN 696	Seminar in Media Studies (topics: Yth Cult; New Media & Soc; Media & Consumer Cult; Kids, Corps & Media)	4
CMN 697	Seminar in Rhetorical Study (topics: Rhet Photo, Rhet Crit Med)	4
CMN 698	Seminar Interpersonal Studies (topics: Opens Everyday, Comm & Body, Children's Comm)	4
CMN 730	Family Communication	4
CMN #732	Communication Theory	4
CMN 737	Principles of Rhetorical Crit	4
CMN 742	Dialogue and Teamwork	4
CMN 756	Rhetorics of Display	4
CMN 760	Mediation	4
CMN #765	Police Talk	4
CMN 772	Seminar in Media Theory	4

4. Culture and Identities

Courses in this concentration offer a critical examination of the cultural and communicative practices that shape our sense of ourselves, our pasts, and our relationships with others. Select from:

Code	Title	Credits
CMN 602	Theories of Interpersonal Communication	4
CMN 630	Psychology of Communication	4
CMN 680	Perspectives on Culture and Communication	4
CMN 696	Seminar in Media Studies (topics: Hist Surv Media; Yth Cult; New Media & Soc; Media & Consumer Cult; Crit Appr New Media; Gend & Sex Media; Kids, Corps, & Media)	4
CMN 697	Seminar in Rhetorical Study (topics: Spec, Scand; Gend & Pub Cult)	4
CMN 698	Seminar Interpersonal Studies (topics: Children's Comm, Comm & Body, Open Everyday)	4
CMN 730	Family Communication	4
CMN #732	Communication Theory	4
CMN 742	Dialogue and Teamwork	4
CMN 760	Mediation	4
CMN #765	Police Talk	4
CMN 772	Seminar in Media Theory	4

5. Citizenship and Advocacy

Courses in this concentration explore the language practices, interpersonal understandings, oratorical skills, and writing strategies

that enable people to formulate their identities as citizens and to engage discussions directed toward public and political advocacy. Select from:

Code	Title	Credits
CMN 600	Public Speaking as a Civic Art	4
CMN 607	Persuasion in American Politics	4
CMN 615	Public Opinion and Mass Communication	4
CMN 627	Great Speakers and Speeches	4
CMN 634	Media and Politics	4
CMN 697	Seminar in Rhetorical Study (topics: Gender & Pub Cult, Controv Reason Law)	4
CMN 742	Dialogue and Teamwork	4
CMN 757	Public Address and the American Experience	4
CMN 758	Media Analysis and Criticism	4
CMN 760	Mediation	4

6. Visual Communication

Courses in this concentration demonstrate how iconography, symbolism, and representations in art, photography, motion pictures, television and digitalized forms of communication have worked to create meaning. Select from:

Code	Title	Credits
CMN 650	Critical Perspectives on Film	4
CMN 696	Seminar in Media Studies (topics: Yth Cult; Kids, Corps, & Media)	4
CMN 697	Seminar in Rhetorical Study (topics: Spec, Scand; Rhet of Photo)	4
CMN 756	Rhetorics of Display	4
CMN 758	Media Analysis and Criticism	4

A maximum of 8 credits of independent study (CMN 795 Independent Study) may be counted toward the major. CMN 799H Honors Thesis and CMN 796 Comm-Entary Journal cannot be used to fulfill an advanced course requirement. The Discovery Program Capstone requirement may be fulfilled by completing any 700-level communication course except CMN 796 Comm-Entary Journal. CMN 795 Independent Study can only fulfill the capstone requirement with department approval and can be repeated for a maximum of 8 credits.

Transfer students must complete 20 credits of their communication coursework at UNH to complete the major satisfactorily. Exchange students may transfer no more than 10 approved credits from another institution to be applied toward completion of the communication major at UNH.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

Major department courses may not be used to satisfy Discovery category requirements except in the case of a second or dual major.

Communication Major: Business Applications Option (B.A.)

<https://cola.unh.edu/communication/program/ba/communication-major-business-applications-option>

Description

The Department of Communication in collaboration with the Department of Marketing and the Department of Management in the Peter T. Paul College of Business and Economics offers a business applications option for communication students. The objective of the business applications option is to offer a select group of communication students the opportunity to augment the liberal arts focus of their major with professional training in such areas as marketing, advertising, and organizational behavior. Qualified students who meet all requirements will graduate¹ with a B.A. degree in Communication: Business Applications, an achievement which will be recorded on their official transcripts.

Minimum Requirements for Option Eligibility

1. Declared communication major.
2. Completion of CMN 455, CMN 456, and CMN 457 with a C or better.
3. Completion of at least one CMN 500-level course with a C- or better.
4. Maintain minimum in-major GPA of 2.5.
 - Student enrollment in the Business Applications Option will be contingent upon **space availability**.
 - Overall, total enrollment should **not exceed twenty students** in any given academic year.

¹ Students admitted to the option must earn a minimum 2.5 cumulative grade point average in major courses at graduation or they will, by default, graduate with a BA in Communication without the special option designation on their diplomas.

Requirements

Major Courses

Completion of all Communication major requirements.

Option Courses and Internship

Code	Title	Credits
ADMN 400	Introduction to Business	4
Choose two:		8
MKTG 550	Survey of Marketing	
MGT 580	Introduction to Organizational Behavior	
MGT 598	Topics (Leadership)	
MKTG 598	Topics in Marketing (Promotion and Advertising, Retail and Retail Management)	
CMN 599	Internship ¹	4
Total Credits		16

¹ Students undergo a business applications internship experience that **must be completed in one semester**. (Prerequisites: CMN 455, CMN 456, CMN 457)

Communication Major: Media Practices Option (B.A.)

<https://cola.unh.edu/communication/program/ba/communication-major-media-practices-option>

Description

The Department of Communication in collaboration with the Communication Arts Department at the UNH Manchester campus offers the media practices option. This option is designed for qualified students who want to augment their Communication major at Durham with training in media production and applied media communication through courses in the Communication Arts Department at the Manchester Campus.¹ Qualified students who meet all requirements will graduate with a BA degree in Communication with a Media Practices Option, an achievement which will be recorded on their official transcripts.

Minimum Requirements for Option Eligibility

1. Declared Communication Major.
2. Completion of CMN 455, CMN 456, and CMN 457 with a C or better.
3. Maintain minimum in-major GPA of 2.5.

¹ Students are responsible for their own travel arrangements between Durham and Manchester campuses.

Requirements

Major Courses

Completion of all Communication major requirements.

Option Courses

Code	Title	Credits
Completion of two media practices courses (8 credits) in the Department of Communication Arts at Manchester campus from among the following: ¹		8
CA 500	Media Writing	
CA 502	Image and Sound	
CA 512	Screenwriting	
CA 514	Fundamentals of Video Production	
CA 515	Advanced Video Production	
CA 517	Fundamentals of Audio Prod	
CA 520	Special Topics in Applied Communication	
CA #525	Media Programming	

Internship

Code	Title	Credits
Based on work experience at a site directly relevant to applied media practices or production for a minimum of 4 academic credits completed in one semester. Junior standing is required. ²		4
CMN 599	Internship	

¹ Students may arrange to take Media Practices (CA) courses at any time during the course of their academic programs after they have satisfactorily completed the three 400-level introductory courses. Thus, students may take the 500-level CA courses before, concurrently with, or after completion of CMN 500-level courses and/or CMN 600-level courses.

² Visit our Internships webpage (<https://cola.unh.edu/communication/internships>) for procedures on how to arrange internships.

Communication Minor

<https://cola.unh.edu/communication/program/minor/communication>

Description

The contact for the communication minor is the department's academic adviser, Andrew Sharp (andrew.sharp@unh.edu).

Requirements

The communication minor consists of five courses (20 credits).

Code	Title	Credits
Select a minimum of two of the following 400-level introductory courses:		8
CMN 455	Introduction to Media Studies	
CMN 456	Propaganda and Persuasion	
CMN 457	Introduction to Language and Social Interaction	
Select a minimum of two 500-level analysis courses		8
Select a minimum of one advanced 600-level or 700-level course		4
Total Credits		20

Students who pursue a communication minor must complete five courses within the minor with a C or better at the 400 level and with a C- or better at the 500, 600, and 700 levels, and maintain a minimum grade-point average of 2.0. The two 500-level analysis courses each must have a different 400-level prerequisite and be taken before enrolling in an advanced level course. No more than two transfer courses from other institutions can be applied to the minor and all transfers are contingent upon departmental approval. No more than 4 credits of independent study can count toward the minor. No pass/fail or credit/fail courses can count toward the minor. CMN 500 Public Speaking, cannot be used to fulfill a minor requirement.

Education (EDUC)

Basic Programs

At the undergraduate level, students have the opportunity to begin taking courses in teacher preparation programs, which will lead at the graduate level to teacher licensing in elementary and secondary education, early childhood education, early childhood special needs, and special education. They also may wait to prepare to teach solely at the graduate level.

Students majoring in music, mathematics, pre-K-3rd grade, and physical education have the option of participating in a five-year program leading to licensure and a graduate degree. Or they may choose the four-year option in those majors, which leads to licensure at the undergraduate

level. Students interested in the four-year option in these areas should contact the departments for information.

Elementary teaching and most secondary areas require completion of a minimum of a one-year graduate program, which leads to a master's degree and teacher licensure. Most students who plan to teach in elementary and secondary schools apply to the graduate school to complete a five-year program. In the five-year program, students begin preparation for teaching at the undergraduate level with a semester of field experience (EDUC 500 Exploring Teaching) and professional coursework in education. Students complete a baccalaureate degree outside of education and move into a fifth year of study and a full-year internship leading to the M.Ed. or M.A.T. degree and licensure in teaching.¹

There also are opportunities for study or certification at the graduate level in administration, elementary and secondary teaching, early childhood and special education. The department encourages students interested in graduate study or in relevant undergraduate courses to meet with these graduate program coordinators in the Department of Education.

Students at the undergraduate level who are interested in special education or early childhood education can begin to complete prerequisite coursework for the graduate program leading to certification in special education (K-12) or early childhood education. For students seeking the M.Ed. in special education or early childhood education without certification in general education, it is not necessary to complete EDUC 500 Exploring Teaching. For coursework that can be taken at the undergraduate level, students should see program advisers in the Department of Education.

¹ Students in the five-year program may combine their program for teacher licensure with a master's program in their major field department.

Accelerated Master's Program

UNH undergraduate seniors with a minimum of a 3.2 cumulative grade-point average at the end of the first semester of their senior year and undergraduate juniors with a minimum of a 3.2 cumulative grade point average at the end of the second semester of their junior year can apply for "early admission" to the Graduate School (November for seniors, February for juniors). Such candidates may register for a maximum of 12 credits of dual-credit coursework (undergraduate/graduate level course work, e.g., 700/800) prior to completing their bachelor's degree. A student must be admitted to the Graduate School before the start of the semester in which the course(s) will be taken in order to receive graduate credit. Once accepted, a student must maintain the minimum 3.2 cumulative grade point average until their undergraduate degree is awarded. A student would apply for early admission on the regular Graduate School application available at www.gradschool.unh.edu (<http://www.gradschool.unh.edu>).

Program Philosophy and Mission Unit Mission Statement

The following conceptual framework guides all of the programs that prepare professionals in education at the University of New Hampshire:

The professional education unit at the University of New Hampshire seeks to prepare practitioners who will become leaders in their own practice settings and within their profession, applying knowledge to improve education for all students and enrich the lives of clients.

Immersion in subject matter, research, theory, and field-based experience provides a base for our graduates to make well-reasoned judgments in complex situations, render informed decisions, model exemplary practice, and take initiative for planned change.

Students learn to establish caring environments that celebrate individual differences and backgrounds while fostering cooperation and educational improvement. We stress reflective critical inquiry as a mode of study and community-building as a means for promoting change. We value and support both our students' local practice and their broader leadership within the profession.

Mission of Programs in Teacher Education

The following mission statement gives direction to the basic and advanced programs in teacher education:

We seek to prepare beginning teachers who demonstrate excellence in classroom practice and who will become educational leaders. Our graduates will possess the knowledge, skills, and dispositions required for outstanding classroom practice and eventual leadership within the local school community and the larger education community.

Undergraduate Work toward Teacher Certification in Elementary and Secondary Education

Step I. Enroll in Exploring Teaching: Education 500

Students are encouraged to take EDUC 500 Exploring Teaching, as a sophomore, but completion during junior or senior year also can leave enough time for other education course requirements.

Step II. Professional Coursework in Education at the Undergraduate Level

Education 500 is a prerequisite to further work in the teacher education program. An undergraduate receives a co-adviser in the Department of Education (usually the Exploring Teaching instructor). Along with the major adviser, this co-adviser works with the student to plan the undergraduate portion of the five-year teacher education program.

Students majoring in music, mathematics, pre-K-3rd grade, or physical education at the undergraduate level must take four credits in each of the areas. Students who intend to pursue the five-year program leading to licensure and a graduate degree are encouraged to take the courses listed below as an undergraduate, although each course is also offered at the graduate level.

Code	Title	Credits
EDUC 700	Educational Structure and Change	4
EDUC 701	Human Development and Learning: Educational Psychology	4
EDUC 705	Contemporary Educational Perspectives	4
EDUC 751A or EDUC 751B	Educating Exceptional Learners: Elementary Educating Exceptional Learners: Secondary	4
4 credits of required methods course(s)		4
Total Credits		20

EDUC 707 Teaching Reading through the Content Areas is required for some secondary subject licensure areas (arts, life sciences, chemistry, earth science, middle school science, physics, and social studies).

Elementary education students are required to have four methods

courses: one each in the teaching of reading, mathematics, science, and social studies. Those who do not intend to use this coursework for initial licensing may enroll with instructor permission. All 700-level education courses at UNH are restricted to students with junior or senior standing. These courses may also be taken at the graduate 800 level.

Any course taken in the Department of Education that will be used to fulfill a teacher licensure requirement must be completed with a grade of B- or above.

Step III. Admission to the Internship and Graduate Phase of the Teacher Education Program

Undergraduate seniors should apply to the Graduate School in early November in the first semester of the senior year for the final phase of the teacher education program. Students with an undergraduate grade-point average of 3.2 or better admitted into the accelerated master's program may be allowed to begin the program in the second semester of the senior year, earning a maximum of 12 graduate credits.

Undergraduate juniors with an undergraduate grade-point average of 3.2 or better should apply to the Graduate School in early February in the second semester of the junior year for the final phase of the teacher education program. Students with an undergraduate grade-point average of 3.2 or better admitted into the accelerated master's program may be allowed to begin the program in the first semester of the senior year, earning a maximum of 12 graduate credits during the senior year.

The final phase of the program includes a full-year internship, electives, and a program portfolio and colloquium. This phase normally takes an academic year plus a summer to complete.

The yearlong internship (EDUC 900A Internship and Seminar in Teaching/EDUC 901A Internship and Seminar in Teaching) is part of the final stage of the five-year program. It meets the goals of increased clinical experience and better integration of theory and practice. The elementary internship year also includes two required graduate level literacy courses (EDUC 808, EDUC 809).

The internship is a teaching and learning experience in which the intern is involved in an elementary or secondary school over the course of an entire school year. Interns become a part of the school staff, sharing appropriate instructional tasks, and often carrying the full instructional duties in one or more classes.

Interns are mentored and supervised by a school staff member who is designated as a "cooperating teacher." A UNH faculty member collaborates in intern supervision and conducts a weekly seminar for all interns with whom he/she is working.

The internship is a full-time experience for 6 graduate credits each semester. It typically begins in September and runs through May or June. Due to the intensive time commitment, it is recommended that, at most, only one course be taken in addition to the internship each semester.

Before the internship, all students will have completed a bachelor's degree with a major outside of education. Because of this, they will possess a depth of knowledge in a subject area and a broad general education, in addition to substantive preparation for teaching. Secondary education candidates must have completed an approved major, or its equivalent, in the subject that they intend to teach. Elementary education candidates may pursue an undergraduate major in any area; however, majors in the core disciplines taught in elementary schools are desirable.

Undergraduates should apply for internship in September of their senior year. At the same time, it is advisable to begin the application process for graduate school. Arranging an appropriate placement is a time-consuming process. Starting early will facilitate finding the best setting for students' needs and goals. The director of field experiences in Durham and the associate director of teacher education in Manchester play a major role in identifying internship sites and should be consulted regarding the placement process. Internship applications are available at the Department of Education, Durham, and the Office of Teacher Education, Manchester. Admission to the internship requires a completed application to the internship, admission to the graduate school, and a consultation with the director of field experiences. Please note: Undergraduates interested in the master's degree in early childhood education, the early childhood special education option, and special education do not apply for internships in their senior year. Internships for this program are arranged with program faculty once core graduate requirements are met.

Admission to the Program

Step 1. Exploring Teaching is open to all students, subject to available space. Approximately 150 students are accepted each semester.

Step 2. Continuation in professional coursework is dependent upon positive recommendations from EDUC 500 Exploring Teaching.

Step 3. Admission to the internship and the graduate program requires acceptance to the Graduate School. The process is competitive because of high admissions standards and limited space in the program. Approximately 80 percent of applicants for Phase III are accepted.

In determining admission of students to teacher education graduate programs, several criteria are used:

- Undergraduate Grade-Point Average**
Average undergraduate GPA for student accepted is currently 3.52
- Passing scores on the Praxis Core Exam (Reading, Writing and Math)**
<https://www.ets.org/praxis/nh/requirements>
- Three letters of recommendations and positive recommendations from EDUC 500 Exploring Teaching, or the equivalent and from those able to relay information about a candidate's performance in teaching situations or related areas are important.**

In the admission process, the program seeks evidence that candidates have the following knowledge, abilities, and dispositions:

- motives to teach that include a strong social commitment to contribute to society through education;
- a disposition to care for students—each and every one;
- the ability to interact positively with children and adults;
- the capacity to win the respect of their peers and be effective in group interaction, showing openness to the needs and views of others;
- well-developed communication skills, including speaking, writing, and listening skills as well as an ability to engage others in both the giving and receiving of information and feelings;
- perceptiveness: the ability to identify and process the relevant details in a given environment, especially in the context of a classroom;
- the ability to make reasonable judgments in the context of complex situations that change from moment to moment;
- the capacity for clear thinking and an ability to translate complex thoughts into simple and clear explanations;

- superior academic skills: extensive knowledge of at least one major discipline, intellectual curiosity, and the ability to be open to the unknown;
- a disposition to take charge of one's own learning, which includes the active pursuit of feedback and the willingness to take thoughtful risks.

<https://cola.unh.edu/education>

Programs

- Education Four-Year, Undergraduate Option (p. 55)
- Educational Studies Dual Major (p. 56)
- Education Minor (p. 56)
- Special Education Minor (p. 57)

Faculty

<https://cola.unh.edu/education/faculty-staff-directory>

Education Four-Year, Undergraduate Option

<https://cola.unh.edu/education/program/ba/education-four-year-undergraduate-option>

Description

A bachelor's degree including a one-semester student-teaching requirement allows students to be recommended for licensure in certain specialized areas. Those areas are mathematics, music, pre-K-3rd grade, and health and physical education.

Requirements

These program options include a major appropriate for the licensure being sought, in addition to the following core professional courses or their equivalent:

Code	Title	Credits
EDUC 500	Exploring Teaching	4
EDUC 700	Educational Structure and Change	4
EDUC 701	Human Development and Learning: Educational Psychology	4
EDUC 705	Contemporary Educational Perspectives	4
EDUC 751A or EDUC 751B	Educating Exceptional Learners: Elementary Educating Exceptional Learners: Secondary	4
EDUC 694	Courses in Supervised Teaching	8

A minimum 2.8 cumulative grade-point average at the time of application to student teaching is required. Students in music, mathematics, and physical education need to apply by March 1st of the junior year and October 15th of the senior year for spring semester to the Department of Education for student teaching. An unofficial transcript and a current resume; must accompany the application. Return applications to the Department of Education Office, 207 Morrill Hall, attention Liz Arcieri.

Educational Studies Dual Major

<https://cola.unh.edu/education/program/educational-studies-dual-major>

Description

The Educational Studies Dual Undergraduate major provides an opportunity for students to broaden their disciplinary education through focused exploration and application of educational studies, acknowledging the inherent educational aspect of many professions that communicate information and work for social change at any scale. The Dual Major in Educational Studies emphasizes experiential learning in transdisciplinary learning communities, research with faculty, corporate and K-12 engagement, and community service. The dual major does **NOT** lead to a teaching certification.

Requirements

The Dual Major in Educational Studies requires (32 credits) each completed with a **C+ or better**. Any Education course to be applied for a future teacher licensure requirement must be completed with a grade of **B- or better**. The dual major cannot be declared until after a first major has been declared and students must have a UNH undergraduate GPA of a 2.50 or better at the time of declaring. The required minimum overall GPA in major coursework is 2.50.

Required courses

Code	Title	Credits
Foundations		4
EDUC 402	Introduction to Educational Studies (in development)	
Explorations in Learning and Teaching		4
Choose one (1) 500-level exploration and applied experience course:		
EDUC 500	Exploring Teaching	
EDUC 520	Education, Poverty, and Development	
Course Courses		8
Choose two (2) core courses emphasizing interdisciplinary grounding in education and learning (All 700 level Ed courses are open to only Juniors and Seniors):		
EDUC 700	Educational Structure and Change	
EDUC 701	Human Development and Learning: Educational Psychology	
EDUC 705	Contemporary Educational Perspectives	
Elective Courses		12
Choose three (3) elective courses, providing students with opportunities for focused inquiry in educational studies. Students may either emphasize a single cluster or take elective coursework in more than one cluster below:		
Instructional Methods in Schools		
EDUC 703C	Classroom Management: Creating Positive Learning Environments	
EDUC 703F	Teaching Elementary School Science	
EDUC 703M	Teaching Elementary Social Studies	
EDUC 706	Introduction to Reading in the Elementary School	
EDUC 741	Exploring Mathematics with Young Children	
EDUC 745	Math with Technology in Early Education	

Language and Literacy

EDUC 506	Literacy Tutoring at the Elementary School Level
EDUC 550	Language and Linguistic Diversity in Schools
EDUC 712	Teaching Multilingual Learners
EDUC 734	Children's Literature

Special Education

EDUC 556	Mentoring Adolescents with Disabilities in the Transition to Work
EDUC 751A	Educating Exceptional Learners: Elementary
EDUC 751B	Educating Exceptional Learners: Secondary
EDUC 756	Supporting Families of Individuals with Exceptionalities
EDUC 760	Introduction to Young Children with Special Needs
EDUC 761	Inclusive Curriculum for Young Children with Special Needs

Critical and Diverse Perspectives

EDUC 444B	Be the Change You Want to See: Active Citizenship in a Multicultural World
EDUC 520	Education, Poverty, and Development
EDUC 525	Teaching Race
EDUC 625	Anthropological Thinking on Education
EDUC 718	Critical Social Justice in and Beyond Education

Law and Educational Policy

EDUC 767	Students, Teachers, and the Law
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Capstone Course	4
Total Credits	32

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

Students who are interested in a dual major in Educational Studies will need to file an *Intent to Dual Major Form*. The form is available from the program website at cola.unh.edu/education. Program offices are located Morrill Hall room 203BA and room 209 and are open Monday through Friday from 8 a.m. to 11:30 a.m. and 12:30 p.m. to 4:30 p.m. For more information, please contact Professor Paula Salvio at paula.salvio@unh.edu or Cindy Glidden at cindy.glidden@unh.edu.

Education Minor

<https://cola.unh.edu/education/program/minor/education>

Description

Explore the field of education. Five courses (20 credits) comprise the minor in Education.

A Certification of Completion of Minor form needs to be completed at the beginning of a student's final undergraduate semester at UNH. Forms are available from the Registrar's Office or the Department of Education Office.

For more information, contact Cindy Glidden, Department Coordinator, cindy.glidden@unh.edu, (cindy.glidden@unh.edu) 209 Morrill Hall, (603) 862-2311.

Requirements

A minor consists of 20 credits in Education Department courses. A methods course located in another department may be counted for four of these 20 credits (e.g., ARTS 791 or ARTS 792, ENGL 792, MATH 708, MATH 709, etc.).

No more than 8 credits used by the student to satisfy major requirements may be used for the minor.

Courses used in obtaining a minor in special education cannot be used towards a minor in education.

EDUC 500 Exploring Teaching can only be counted once (four credits) towards the minor.

No more than two transferred courses in Education or a closely-related area from another college or university may be used towards a minor in Education. A three-credit course transferred from another school will count for three credits at UNH, not four credits.

Special Education Minor

<https://cola.unh.edu/education/program/minor/special-education>

Description

Explore the field of special education. Five courses (20 credits) comprise the minor in Special Education.

A Certification of Completion of Minor form needs to be completed at the beginning of a student's final undergraduate semester at UNH. Forms are available from the Registrar's Office or the Department of Education Office.

For more information, contact Cindy Glidden, Department Coordinator, cindy.glidden@unh.edu, (cindy.glidden@unh.edu) 209 Morrill Hall, (603) 862-2311.

Requirements

A minor consists of 20 credits in Education Department courses. The specific courses required for the minor are:

Code	Title	Credits
Required Courses		
EDUC 750	Introduction to Exceptionality	4
EDUC 756	Supporting Families of Individuals with Exceptionalities ¹	4
Choose one of the following: ²		4
EDUC 751A	Educating Exceptional Learners: Elementary	
EDUC 751B	Educating Exceptional Learners: Secondary	
EDUC 751C	Educating Exceptional Learners: Related Services	
Elective Courses		
Choose two of the following:		8
EDUC 556	Mentoring Adolescents with Disabilities in the Transition to Work ³	
EDUC 720	Integrating Technology into Classroom	
EDUC 752	Contemporary Issues in Learning Disabilities	

EDUC 753	Contemporary Issues in Behavioral Disabilities
EDUC 754	Contemporary Issues in Developmental Disabilities
EDUC 757	Contemporary Issues in Autism Spectrum Disorders
EDUC 760	Introduction to Young Children with Special Needs
EDUC 761	Inclusive Curriculum for Young Children with Special Needs
EDUC 762	Curriculum for Young Children with Special Needs: Evaluation and Program Design
EDUC #776	Reading for Learners with Special Needs
One course taken at UNH in a closely related department	

Total Credits 20

- 1 Offered Fall semester and Summer only
- 2 Section to be determined by the undergraduate major and future career interests
- 3 May be taken twice as the content/readings are different each semester

No more than one required course or one elective may be a transfer course. A three-credit course taken transferred from another school will count for three credits at UNH, not four credits. A minor in Special Education does **NOT** lead to a teaching certification.

English (ENGL)

The English department offers four majors: English, English literature, English teaching, and English/journalism. A fifth undergraduate program is the interdepartmental linguistics major. In Fall 2018 we are also introducing the English/law 3+3 option for students interested in pursuing a JD after just 3 years of undergraduate study as an English major and the English major/text, business writing and digital studies option.

Though we offer several different programs in the English department, our shared focus is on studying the expressive possibilities of the English language in its myriad forms. Our classes pursue three teaching missions. First, we train students in professional study of the English language. Second, we offer students ways of understanding the various traditions of works written in English, with emphasis upon close reading and placing works in historical and cultural contexts. Third, and particularly important, we teach students to write with clarity, persuasiveness and elegance, and for a variety of audiences and situations. In all of our undergraduate English majors, we provide our students with critical thinking, writing, and research skills that will enrich their personal and professional lives.

Writing Programs

The Department of English offers courses for students interested in becoming writers. Writing workshops are offered in fiction, poetry and creative nonfiction. Intermediate-level courses may be taken more than once for credit, especially with two different instructors.

<https://cola.unh.edu/english>

Programs

- English Literature Major (B.A.) (p. 58)
- English Major (B.A.) (p. 60)

- English Major/Text, Business Writing and Digital Studies Option (B.A.) (p. 61)
- English Major: Law 3+3 Option (B.A.) (p. 63)
- English Teaching Major (B.A.) (p. 67)
- English/Journalism Major (B.A.) (p. 67)
- English Minor (p. 69)
- Writing Minor (p. 69)

Faculty

<https://cola.unh.edu/english/faculty-staff-directory>

English Literature Major (B.A.)

<https://cola.unh.edu/english/program/ba/english-literature>

Description

The English literature major serves those students who want to focus particularly on the study of literature — its many forms and styles, its rich history, and the range of approaches to its analysis. The English literature track is an especially attractive major for those who plan to go on to graduate school in English or other fields in the humanities, but it is also an excellent program for those who want to develop an in-depth knowledge of literature in English in all its formal, historical, cultural and theoretical dimensions.

As an English Literature major, a student will learn about various literary traditions, both British and American literature as well as traditions organized around other principles, such as post-colonial literature, women's literature, African-American literature and genres like poetry and drama. Courses are designed to expose students to many different sorts of works and to help them develop questions and strategies of critical thinking that will make all kinds of literary expression meaningful. And the works students will study will provide many ways of looking at the world and enrich their quality of life. What's more, students have many opportunities to hone critical writing and research skills and to practice the art of presenting research findings to a group, all skills in high demand in today's workplace. The English literature major is an excellent way to combine development of interpretive and writing skills with an exciting, in-depth encounter with some of the very best writing ever produced in the English language.

Requirements

As an English literature major, you must complete a minimum of 40 credits of major coursework with a grade of C- or better, with the exception of ENGL 419 Introduction to Literary Analysis, which you must complete with a grade of C or better. You may not use ENGL 401 First-Year Writing, ENGL #403 Exploring Literature, ENGL 415s, "Literature and..." courses, or ENGL 444 classes to satisfy major requirements.

A minimum of six courses must be completed at the 600 level or higher.

Code	Title	Credits
Coursework must meet the following distribution requirements (a single course may satisfy multiple requirements):		
ENGL 419	Introduction to Literary Analysis ¹	
Select two 500-level literature courses (select from list below)		

Select two pre-1800 literature courses (select from list below)

Select two post-1800 literature courses (select from list below)

ENGL 619 Critical Approaches to Literature

Select one American literature course at the 600/700 level

Select one British literature course at the 600/700 level

Select two courses that investigate and question representations of identity; genre, including film; and/or theoretical positions (select from list below)

Select one course that addresses race, the construction of race, and racial theories (select from list below)

Capstone:

ENGL 787 English Major Seminar

¹ This must be completed with a minimum grade of "C." *ENGL 419 Introduction to Literary Analysis is the only 400-level class that may count towards the English Literature major. ENGL #403 Exploring Literature will NOT count towards this major.*

500-Level Literature Courses

Code	Title	Credits
Select one survey course of the following:		4
ENGL 512	British Literature I Age of Heroes: Beowulf to Dr. Faustus	
ENGL 513	British Literature II Age of Revolutions: Shakespeare to Austen	
ENGL 514	British Literature III: Revolts, Renewals, Migrations	
ENGL #515	American Literature I Conquest and Nation: First Contact to the Civil War	
ENGL 516	American Literature II Money, Migration, and Modernity: Huck Finn to Beloved	
Select one of the following:		4
ENGL 512	British Literature I Age of Heroes: Beowulf to Dr. Faustus	
ENGL 513	British Literature II Age of Revolutions: Shakespeare to Austen	
ENGL 514	British Literature III: Revolts, Renewals, Migrations	
ENGL #515	American Literature I Conquest and Nation: First Contact to the Civil War	
ENGL 516	American Literature II Money, Migration, and Modernity: Huck Finn to Beloved	
ENGL 517	Introduction to African American Literature and Culture	
ENGL 521	Nature Writers	
ENGL #530	Poetry	
ENGL #531	Introduction to Drama: How to Read a Play	
ENGL 581	Introduction to Postcolonial Literatures in English	
ENGL 585	Introduction to Women in Literature	
Total Credits		8

Pre-1800 Literature Courses

Either two advanced courses (600-level and above) or one advanced course and either ENGL 512 British Literature I Age of Heroes: Beowulf to Dr. Faustus or ENGL 513 British Literature II Age of Revolutions: Shakespeare to Austen. Choose from:

Code	Title	Credits
ENGL 657	Shakespeare	4
ENGL 741	Literature of Early America	4
ENGL 751	Medieval Epic and Romance	4
ENGL #753	Old English	4
ENGL #756	Chaucer	4
ENGL 758	Advanced Shakespeare	4
ENGL 759	Milton	4
ENGL 767	Literature of the Restoration and Early 18th Century	4
ENGL 768	Literature of the Later 18th Century	4
ENGL #780	Drama of Shakespeare's Contemporaries: Will and Company	4
ENGL #781	English Drama, 1660-1800	4
ENGL 783	English Novel of the 18th Century	4

Other courses may count. Please see your advisor if you have questions about other courses that might fulfill this requirement

Post-1800 Literature Courses

Either two advanced courses, or one advanced course and one of the following: ENGL 514 British Literature III: Revolts, Renewals, Migrations, ENGL #515 American Literature I Conquest and Nation: First Contact to the Civil War or ENGL 516 American Literature II Money, Migration, and Modernity: Huck Finn to Beloved.

Code	Title	Credits
ENGL #609	Ethnicity in America: The African American Experience in the 20th Century	4
ENGL 650	Studies in American Literature and Culture ¹	4
ENGL 681	Introduction to African Literatures in English	4
ENGL 690	Introduction to African American Literature in America	4
ENGL 739	American Indian Literature	4
ENGL 742	American Literature, 1815-1865	4
ENGL #743	American Literature, 1865-1915	4
ENGL #744	American Literature, 1915-1945	4
ENGL 745	Contemporary American Literature	4
ENGL 746	Studies in American Drama	4
ENGL 747	Studies in American Poetry	4
ENGL #748	Studies in American Fiction	4
ENGL #749	Major American Authors	4
ENGL #769	English Romantic Period	4
ENGL 771	English Victorian Period	4
ENGL #772	English Victorian Period	4
ENGL 773	Literary Modernisms: Return, Revolt, Recycle	4
ENGL 774	Modern & Contemporary British Literature: New Departures	4
ENGL 777	Postcolonial Novel	4
ENGL 782		4
ENGL 784	English Novel of the 19th Century	4

¹ If topic is appropriate. (Please see your advisor if you have questions about other courses that might fulfill this requirement.)

Courses That Investigate and Question Representations of Identity; Genre, including Film ¹; and/or Theoretical Positions

Code	Title	Credits
ENGL 517	Introduction to African American Literature and Culture	4
ENGL 550	Introduction to the Literature and Culture of Race	4
ENGL 581	Introduction to Postcolonial Literatures in English	4
ENGL 585	Introduction to Women in Literature	4
ENGL 681	Introduction to African Literatures in English	4
ENGL #685	Women's Literary Traditions	4
ENGL 690	Introduction to African American Literature in America	4
ENGL 738	Topics in Asian American Studies	4
ENGL 739	American Indian Literature	4
ENGL #740	Indigenous New England	4
ENGL 775	Modern Irish Literature: A Changing Landscape	4
ENGL 777	Postcolonial Novel	4
ENGL 616A	Studies in Film/Genre	4
ENGL 616B	Studies in Film/Authorship	4
ENGL 616C	Studies in Film/Culture and Ideology	4
ENGL 616D	Studies in Film/Narrative and Style	4
ENGL 618	Film Theory	4
ENGL 733	Special Studies in Film	4

Other courses may count. Please see your advisor if you have questions about other courses that might fulfill this requirement

¹ With the exception of ENGL 533 Introduction to Film Studies

Courses that Address Race, the Construction of Race, and Racial Theories

Choose from:

Code	Title	Credits
ENGL 517	Introduction to African American Literature and Culture	4
ENGL 550	Introduction to the Literature and Culture of Race	4
ENGL #609	Ethnicity in America: The African American Experience in the 20th Century	4
ENGL 690	Introduction to African American Literature in America	4
ENGL 739	American Indian Literature	4
ENGL #740	Indigenous New England	4
ENGL 693	Special Topics in Literature (subtopic R)	4
ENGL 797	Special Studies in Literature (subtopic R)	4

Other courses may count. Please see your advisor if you have questions about other courses that might fulfill this requirement

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each

individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

The required minimum overall GPA in major coursework is 2.0.

English literature majors may use one major-required course to satisfy one Discovery category requirement.

Majors may only count one online course toward their English major requirements.

Students interested in majoring in English Literature should consult Carla Cannizzaro, Coordinator of the Department of English, 230F Hamilton Smith Hall, (603) 862-1313 or the director of the English Literature program.

English Major (B.A.)

<https://cola.unh.edu/english/program/ba/english>

Description

Our general English major has two objectives: provide our students with a common core of literary experience and expertise, and offer them opportunity to shape a course of study suited to their personal interests. By offering flexible requirements, we encourage students to devise a path through coursework that has an intelligent rationale. If students have a special interest in writing, for example, they can take the minimum number of literature courses (five) and complete the major by taking offerings in fiction, creative nonfiction, and poetry writing; if students' interests are in literary studies, they can focus on offerings in that arena; or they can match up courses from different arenas in the department (say, literature and writing courses focused on poetry). All the undergraduate courses we offer in the English department are open to English majors so students can sample a range of courses in literature, linguistics, creative or nonfiction writing, and English teaching, according to how particular interests may change and grow.

The guiding principle of the general English major, then, is that it is open and liberal by design. It allows students to sample a variety of courses in order to study the operation of language from many perspectives.

Requirements

As an English major, you must complete a minimum of 40 credits of major coursework with a grade of C- or better, the one exception is ENGL 419 Introduction to Literary Analysis, which must be completed with a grade of C or better. You cannot use ENGL 401 First-Year Writing, ENGL #403 Exploring Literature, ENGL 415s, "Literature and..." courses, and ENGL 444s to satisfy major requirements. Note that any one course may satisfy more than one requirement.

Code	Title	Credits
ENGL 419	Introduction to Literary Analysis ¹	4
	Select two pre-1800 literature courses (select from list below)	8
	Select two post-1800 literature courses (select from list below)	8
	Select one course that addresses race, the construction of race, and racial theories (select from list below)	4
	Select one of the following options:	8
Option A:		
	Two 500-level courses ²	

Option B:		
ENGL/LING 405	Introduction to Linguistics	
One 500-level course ²		
	Select six courses numbered 600 and above ³	24
	Select one additional 500-, 600-, or 700-level English course of their choosing	4
Capstone:		
	One 700-level class in addition to the 10-course major ⁴	4

¹ This must be completed with a minimum grade of "C." ENGL 419 *Introduction to Literary Analysis* is the only 400-level class that may count towards the English major. ENGL #403 *Exploring Literature*, ENGL 415s, "Literature and..." courses and ENGL 444s will NOT count towards this major.

² ENGL 501 *Introduction to Creative Nonfiction* may be included here.

³ You may include any advanced-level courses even if taken to fulfill literature requirements above. All writing courses numbered 600 and above may be included here. [ENGL 620 *English Major Internship* and ENGL 788 *Senior Honors* (previously numbered ENGL 695), cannot be used to satisfy major requirements.]

⁴ Minimum grade required: C. The course you select for your Capstone may not be double-counted toward English major requirements. At the time of registration, you must submit a Capstone Declaration form indicating the English course you're taking for capstone credit at the time of registration. You can pick up a capstone Declaration form in the English Department main office.

Pre-1800 Literature Courses

Either two advanced courses (600-level and above) or one advanced course and either ENGL 512 *British Literature I Age of Heroes: Beowulf to Dr. Faustus* or ENGL 513 *British Literature II Age of Revolutions: Shakespeare to Austen*. Choose from the following:

Code	Title	Credits
ENGL 657	Shakespeare	4
ENGL 741	Literature of Early America	4
ENGL 751	Medieval Epic and Romance	4
ENGL #753	Old English	4
ENGL #756	Chaucer	4
ENGL 758	Advanced Shakespeare	4
ENGL 759	Milton	4
ENGL 767	Literature of the Restoration and Early 18th Century	4
ENGL 768	Literature of the Later 18th Century	4
ENGL #780	Drama of Shakespeare's Contemporaries: Will and Company	4
ENGL #781	English Drama, 1660-1800	4
ENGL 783	English Novel of the 18th Century	4

Other courses may count. Please see your advisor if you have questions about other courses that might fulfill this requirement.

Post-1800 Literature Courses

Either two advanced courses, or one advanced course and one of the following: ENGL 514 *British Literature III: Revolts, Renewals, Migrations*,

ENGL #515 American Literature I Conquest and Nation: First Contact to the Civil War, or ENGL 516 American Literature II Money, Migration, and Modernity: Huck Finn to Beloved.

Code	Title	Credits
ENGL #609	Ethnicity in America: The African American Experience in the 20th Century	4
ENGL 650	Studies in American Literature and Culture ¹	4
ENGL 681	Introduction to African Literatures in English	4
ENGL 690	Introduction to African American Literature in America	4
ENGL 739	American Indian Literature	4
ENGL 742	American Literature, 1815-1865	4
ENGL #743	American Literature, 1865-1915	4
ENGL #744	American Literature, 1915-1945	4
ENGL 745	Contemporary American Literature	4
ENGL 746	Studies in American Drama	4
ENGL 747	Studies in American Poetry	4
ENGL #748	Studies in American Fiction	4
ENGL #749	Major American Authors	4
ENGL #769	English Romantic Period	4
ENGL 771	English Victorian Period	4
ENGL #772	English Victorian Period	4
ENGL 773	Literary Modernisms: Return, Revolt, Recycle	4
ENGL 774	Modern & Contemporary British Literature: New Departures	4
ENGL 777	Postcolonial Novel	4
ENGL 782		4
ENGL 784	English Novel of the 19th Century	4

¹ If topic is appropriate. (Please see your advisor if you have questions about other courses that might fulfill this requirement.)

Course That Addresses Race, the Construction of Race, and Racial Theories

Code	Title	Credits
ENGL 517	Introduction to African American Literature and Culture	4
ENGL 550	Introduction to the Literature and Culture of Race	4
ENGL #609	Ethnicity in America: The African American Experience in the 20th Century	4
ENGL 690	Introduction to African American Literature in America	4
ENGL 738	Topics in Asian American Studies	4
ENGL 739	American Indian Literature	4
ENGL #740	Indigenous New England	4
ENGL 693	Special Topics in Literature (subtopic R)	4
ENGL 797	Special Studies in Literature (subtopic R)	4

Other courses may count. Please see your advisor if you have questions about other courses that might fulfill this requirement.

The required minimum overall GPA in major coursework is 2.0.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each

individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

English majors may use one major-required course to satisfy one Discovery category requirement.

English majors may only count one online course toward their English major requirements.

If you're interested in majoring in English please contact Carla Cannizzaro, coordinator of the Department of English, 230F Hamilton Smith Hall, (603) 862-1313.

English Major/Text, Business Writing and Digital Studies Option (B.A.)

<https://cola.unh.edu/english/program/ba/english-major-text-business-writing-digital-studies-option>

Description

The modern workplace requires that employees be adaptable. The Bureau of Labor Statistics conducted a long-term study that showed people held 11.7 jobs between the ages of 18 and 48, and those numbers are increasing with people moving between jobs more frequently every year. It is crucial that we prepare our students not just for one industry, but rather arm them with the transferable skills of critical reading, writing, analysis, production, theory, and aesthetics of new forms in digital media and business. Students will leave this major option with the skills that are in the highest demand in all fields today.

This major option addresses the growing demand for graduates who are well-versed in a combination of humanistic and digital skills and able to work in a variety of professional environments. In particular, graduates of this option will be prepared for careers at cultural and historical institutions, as well as in emerging job markets of information management and online content delivery. This specialization complements areas requirements for the English major but it is not limited to English majors. Double majors are encouraged. Small classes, a great sense of community, and a diversity of faculty specializations create an atmosphere that propels students toward success. Students will receive real-life work experience through our internship class, and they will also leave this major with a digital portfolio that contains a collection of professional projects that can be used on the job market.

In this English major option, students are trained in the critical reading, analysis, production, theory, and aesthetics of new forms in media and business. These forms include but are not limited to social media, business writing conventions, modes of digital storytelling (i.e. audio and video essays, podcasts, and wikis), digital archives, web design, and online communities and interaction. Students are also trained in analysis through traditional humanistic literature and they are expected to fulfill the core learning objectives shared by *all English major tracks*. These include:

- the ability to communicate and debate effectively with others, both orally and in writing,
- the ability to closely examine a variety of texts (including modern digital artifacts and archival materials)

- developing the ability to use a variety of media and communication platforms;
- experience and practice in dynamic critical thinking and creativity

Requirements

Eleven courses (44 credits)

Completed with a **minimum grade of C-** (with the exception of ENGL 419, which must be completed with a grade of C or better).

Students must meet the following distribution requirements. **Note that any one course may satisfy more than one requirement:**

Code	Title	Credits
ENGL 419	Introduction to Literary Analysis ¹	4
One 500-level Introductory Course. Select from the following: 4		
ENGL 501	Introduction to Creative Nonfiction (Digital Essay version)	4
ENGL 502	Professional and Technical Writing	4
ENGL 503	Persuasive Writing (Text, Business Writing, Digital version)	4
ENGL 595	Literary Topics (This topic only: Introduction to Digital Humanities)	4
ENGL 602	Advanced Professional and Technical Writing	4
Select three ENGL courses numbered 600 or above ² 12		
Select two pre-1800 literature courses (select from the list below) 8		
Select two post-1800 literature courses (select from the list below) 8		
Select one course that addresses race, the construction of race, and racial theories (select from the list below) 4		
Capstone: ³ 4		
ENGL 695	The Internship Experience	4
Digital Portfolio		

¹ Must be completed with a minimum grade of "C" to count towards the major.

² Students may include any advanced-level ENGL courses in which **20% of student assessment/work includes a digital humanities, digital research, or digital production component** (even if taken to fulfill literature requirements). *ENGL 602 may NOT be double counted for this requirement. Look for the 'DH' designation in the course descriptions during registration.*

³ **The Internship Experience:** Experiential learning course that allows students to apply all of the writing, speaking, and critical thinking skills into an on-the-job experience, enabling them first-hand practice with writing documents at work, peer collaboration, public speaking opportunities/presentations, and supervision and evaluation. Students must have JR or SR status to enroll in this course. Students should submit a Capstone Declaration form indicating the ENGL course taken for Capstone credit at time of registration. Capstone Declaration forms can be picked up in the main English office.
Digital Portfolio: A minimum of six polished projects represented in a digital portfolio started in ENGL 602 and expanded over your career at UNH. A reflective essay will accompany this portfolio. This is a non-credit degree requirement.

Pre-1800 Literature Courses

Either two advanced courses (600-level and above) or one advanced course and either ENGL 512 British Literature I Age of Heroes: Beowulf to Dr. Faustus or ENGL 513 British Literature II Age of Revolutions: Shakespeare to Austen. Choose from the following:

Code	Title	Credits
ENGL 657	Shakespeare	4
ENGL 741	Literature of Early America	4
ENGL 751	Medieval Epic and Romance	4
ENGL #753	Old English	4
ENGL #756	Chaucer	4
ENGL 758	Advanced Shakespeare	4
ENGL 759	Milton	4
ENGL 767	Literature of the Restoration and Early 18th Century	4
ENGL 768	Literature of the Later 18th Century	4
ENGL #780	Drama of Shakespeare's Contemporaries: Will and Company	4
ENGL #781	English Drama, 1660-1800	4
ENGL 783	English Novel of the 18th Century	4

Other courses may count. Please see your advisor if you have questions about other courses that might fulfill this requirement.

Post-1800 Literature Courses

Either two advanced courses, or one advanced course and one of the following: ENGL 514 British Literature III: Revolts, Renewals, Migrations, ENGL 515 American Literature I Conquest and Nation: First Contact to the Civil War, or ENGL 516 American Literature II Money, Migration, and Modernity: Huck Finn to Beloved.

Code	Title	Credits
ENGL #609	Ethnicity in America: The African American Experience in the 20th Century	4
ENGL 650	Studies in American Literature and Culture ¹	4
ENGL 681	Introduction to African Literatures in English	4
ENGL 690	Introduction to African American Literature in America	4
ENGL 739	American Indian Literature	4
ENGL 742	American Literature, 1815-1865	4
ENGL #743	American Literature, 1865-1915	4
ENGL #744	American Literature, 1915-1945	4
ENGL 745	Contemporary American Literature	4
ENGL 746	Studies in American Drama	4
ENGL 747	Studies in American Poetry	4
ENGL #748	Studies in American Fiction	4
ENGL #749	Major American Authors	4
ENGL #769	English Romantic Period	4
ENGL 771	English Victorian Period	4
ENGL #772	English Victorian Period	4
ENGL 773	Literary Modernisms: Return, Revolt, Recycle	4
ENGL 774	Modern & Contemporary British Literature: New Departures	4
ENGL 777	Postcolonial Novel	4

ENGL 782		4
ENGL 784	English Novel of the 19th Century	4

¹ If topic is appropriate. (Please see your advisor if you have questions about other courses that might fulfill this requirement.)

Course That Addresses Race, the Construction of Race, and Racial Theories

Code	Title	Credits
ENGL 517	Introduction to African American Literature and Culture	4
ENGL 550	Introduction to the Literature and Culture of Race	4
ENGL #609	Ethnicity in America: The African American Experience in the 20th Century	4
ENGL 690	Introduction to African American Literature in America	4
ENGL 738	Topics in Asian American Studies	4
ENGL 739	American Indian Literature	4
ENGL #740	Indigenous New England	4
ENGL 693	Special Topics in Literature (subtopic R)	4
ENGL 797	Special Studies in Literature (subtopic R)	4

Other courses may count. Please see your advisor if you have questions about other courses that might fulfill this requirement.

Notes:

To graduate from UNH, a student must earn a total of 128 credits.

E-COURSE RULE: Majors entering the department in Fall 2012 and beyond may only count one online course towards their major requirements.

English 403 'Exploring Literature', English 415 'Literature and...' and English 444 classes may NOT be used to satisfy ENGL major or minor requirements.

English majors may use one major-required course to satisfy one Discovery category requirement.

English Major: Law 3+3 Option (B.A.)

<https://cola.unh.edu/english/program/ba/english-major-law-33-option>

Description

The 3+3 program offers highly motivated UNH undergraduate students of English the possibility to earn both a bachelor's degree and a law degree in six, rather than seven, years of study. After completing three years as an undergraduate and gaining admission to the UNH Law School through the approved process, the 3+3 program participant will become a full-time first-year law student. Upon successful completion of the first year of law study, the credits earned will be counted toward the JD degree and as elective credits sufficient to complete UNH's requirements for the bachelor's degree.

Eligibility and Admission Process

STEP ONE: Application to the 3+3 English/Law B.A./JD option

Students apply to the program either when they submit their applications to UNH, selecting the English/JD option on the online application, *OR* after they are admitted to U NH, by applying directly to the English Department's "English/Law 3+3 Committee." In both cases, undergraduate applicants must fulfill the general requirements for admission to the English major.

Students applying at the time of admission to UNH will typically present the following high school credentials:

- A **3.5 GPA** in high school (UNH recalculates high school GPA's to a 4.0 weighted scale)
- A rigorous high school curriculum defined as the following:
 - 4 years of college prep (CP) or higher English
 - 4 years of CP or higher mathematics
 - 4 years of CP or higher social studies/history
 - Completed at least level 3 of a foreign language
 - 3 or more years of CP or higher laboratory sciences.
- A recommended score of **1200** or better (combined Math and Verbal) on the SAT or a **29** on the ACT.

Currently enrolled UNH students applying to the program must:

- Have a **3.5 GPA** in college courses at the time of application. The English Department Committee governing admission to the 3+3 program will also consider past SAT scores, maturity, and the ability to complete a highly demanding program of study based on performance thus far.
- For both groups, it is important to note that satisfying these requirements does not guarantee admission to this program. The review process is holistic (meaning all parts of the application carry weight and influence the final decision) and other components of the application will influence any admission decisions. Available space within the program will also influence who is admitted and how many students can be accepted.

STEP TWO: Application to UNH Law school

To be eligible, students must:

- Complete all Discovery and major requirements, and accrue at least 98 credits before beginning law school in their Senior year.
- Maintain at least a **3.5 GPA** (including transfer credits) at time of application to law school, and at the end of their Junior year.
- Take the LSAT no later than December of the final undergraduate year (i.e. the Junior year) and earn a score of **157 or above**.
- Submit the law school application through the Law School Admissions Council by January of the calendar year in which the student wishes to enroll in law school.

Requirements

Students in the English/Law 3+3 Option complete the requirements of the English major. See the Degree Plan for the recommended path through the English major.

Participation requires that students:

- Complete all discovery and major requirements and **at least 98 credits** before beginning law school
- Maintain a **3.5 or above** grade point average, including transfer credits
- Take the LSAT no later than December of the final undergraduate year and have a score of **157 or above**.
- Submit the law school application through the Law School Admissions by January 1 of the year in which the student wishes to enroll in law school.

As an English major, you must complete a minimum of 40 credits of major coursework with a grade of C- or better, the one exception is ENGL 419 Introduction to Literary Analysis, which must be completed with a grade of C or better. You cannot use ENGL 401 First-Year Writing, ENGL #403 Exploring Literature, ENGL 415s, "Literature and..." courses, and ENGL 444s to satisfy major requirements. Note that any one course may satisfy more than one requirement.

Code	Title	Credits
ENGL 419	Introduction to Literary Analysis ¹	4
Select two pre-1800 literature courses (select from list below)		8
Select two post-1800 literature courses (select from list below)		8
Select one course that addresses race, the construction of race, and racial theories (select from list below)		4
Select one of the following options:		8
Option A:		
Two 500-level courses ²		
Option B:		
ENGL/LING 405	Introduction to Linguistics	
One 500-level course ²		
Select six courses numbered 600 and above ³		24
Select one additional 500-, 600-, or 700-level English course of their choosing		4
Capstone:		
One 700-level class in addition to the 10-course major ⁴		4

¹ This must be completed with a minimum grade of "C." *ENGL 419 Introduction to Literary Analysis is the only 400-level class that may count towards the English major. ENGL #403 Exploring Literature, ENGL 415s, "Literature and..." courses and ENGL 444s will NOT count towards this major.*

² ENGL 501 Introduction to Creative Nonfiction may be included here.

³ You may include any advanced-level courses even if taken to fulfill literature requirements above. All writing courses numbered 600 and above may be included here. [ENGL 620 English Major Internship and ENGL 788 Senior Honors (previously numbered ENGL 695), cannot be used to satisfy major requirements.]

⁴ Minimum grade required: C. The course you select for your Capstone may not be double-counted toward English major requirements. At the time of registration, you must submit a Capstone Declaration form indicating the English course you're taking for capstone credit at the time of registration. You can pick up a capstone Declaration form in the English Department main office.

Pre-1800 Literature Courses

Either two advanced courses (600-level and above) or one advanced course and either ENGL 512 British Literature I Age of Heroes: Beowulf to Dr. Faustus or ENGL 513 British Literature II Age of Revolutions: Shakespeare to Austen. Choose from the following:

Code	Title	Credits
ENGL 657	Shakespeare	4
ENGL 741	Literature of Early America	4
ENGL 751	Medieval Epic and Romance	4
ENGL #753	Old English	4
ENGL #756	Chaucer	4
ENGL 758	Advanced Shakespeare	4
ENGL 759	Milton	4
ENGL 767	Literature of the Restoration and Early 18th Century	4
ENGL 768	Literature of the Later 18th Century	4
ENGL #780	Drama of Shakespeare's Contemporaries: Will and Company	4
ENGL #781	English Drama, 1660-1800	4
ENGL 783	English Novel of the 18th Century	4

Other courses may count. Please see your advisor if you have questions about other courses that might fulfill this requirement.

Post-1800 Literature Courses

Either two advanced courses, or one advanced course and one of the following: ENGL 514 British Literature III: Revolts, Renewals, Migrations, ENGL #515 American Literature I Conquest and Nation: First Contact to the Civil War, or ENGL 516 American Literature II Money, Migration, and Modernity: Huck Finn to Beloved.

Code	Title	Credits
ENGL #609	Ethnicity in America: The African American Experience in the 20th Century	4
ENGL 650	Studies in American Literature and Culture ¹	4
ENGL 681	Introduction to African Literatures in English	4
ENGL 690	Introduction to African American Literature in America	4
ENGL 739	American Indian Literature	4
ENGL 742	American Literature, 1815-1865	4
ENGL #743	American Literature, 1865-1915	4
ENGL #744	American Literature, 1915-1945	4
ENGL 745	Contemporary American Literature	4
ENGL 746	Studies in American Drama	4
ENGL 747	Studies in American Poetry	4
ENGL #748	Studies in American Fiction	4
ENGL #749	Major American Authors	4
ENGL #769	English Romantic Period	4
ENGL 771	English Victorian Period	4
ENGL #772	English Victorian Period	4
ENGL 773	Literary Modernisms: Return, Revolt, Recycle	4
ENGL 774	Modern & Contemporary British Literature: New Departures	4
ENGL 777	Postcolonial Novel	4

ENGL 782		4
ENGL 784	English Novel of the 19th Century	4

¹ If topic is appropriate. (Please see your advisor if you have questions about other courses that might fulfill this requirement.)

Course That Addresses Race, the Construction of Race, and Racial Theories

Code	Title	Credits
ENGL 517	Introduction to African American Literature and Culture	4
ENGL 550	Introduction to the Literature and Culture of Race	4
ENGL #609	Ethnicity in America: The African American Experience in the 20th Century	4
ENGL 690	Introduction to African American Literature in America	4
ENGL 738	Topics in Asian American Studies	4
ENGL 739	American Indian Literature	4
ENGL #740	Indigenous New England	4
ENGL 693	Special Topics in Literature (subtopic R)	4
ENGL 797	Special Studies in Literature (subtopic R)	4

Other courses may count. Please see your advisor if you have questions about other courses that might fulfill this requirement.

The required minimum overall GPA in major coursework is 2.0.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

English majors may use one major-required course to satisfy one Discovery category requirement.

English majors may only count one online course toward their English major requirements.

If you're interested in majoring in English please contact Carla Cannizzaro, coordinator of the Department of English, 230F Hamilton Smith Hall, (603) 862-1313.

Law School Requirements

The following summarizes the required curriculum and bar recommended curriculum. 85 credits are required for graduation.

Required courses include:

Administrative Process
Criminal Procedure
Professional Responsibility
Upper Level Writing Course
Upper Level Skills Course

Bar recommended courses include:

Personal Taxation
Business Associations
Wills, Trust & Estates
Evidence

Questions about the English/Law 3+3 program should be directed to UNH's 3+3 advisor.

Degree Plan

The Path Through the English Undergraduate Major

Below is a suggested course outline to help guide English undergraduate students participating in the English/Law 3+3 program through completion of their major and Discovery program requirements.

Variations to this suggested path of courses may be undertaken with the approval of the student's English undergraduate advisor.

Course	Title	Credits
First Year		
Fall		
ENGL 401	First-Year Writing	4
	Discovery Course	4
ENGL 419	Introduction to Literary Analysis	4
	Foreign Language Course	4
	Credits	16

Spring

	Discovery Course	4
	Discovery Course	4
	ENGL 500-level Course (512, 513 count as pre-1800 lit courses; 514, 515, 516 are post-1800 lit.)	4

Select one of the following:

ENGL 512	British Literature I Age of Heroes: Beowulf to Dr. Faustus	
ENGL 513	British Literature II Age of Revolutions: Shakespeare to Austen	
ENGL 514	British Literature III: Revolts, Renewals, Migrations	
ENGL #515	American Literature I Conquest and Nation: First Contact to the Civil War	
ENGL 516	American Literature II Money, Migration, and Modernity: Huck Finn to Beloved	

	Foreign Language or Elective (if FL is completed in one semester)	4
	Credits	16

Second Year

Fall

	Discovery Course	4
	Discovery Course	4
	ENGL 500-level Course (512, 513 count as pre-1800 lit courses; 514, 515, 516 are post-1800 lit.)	4

Select one of the following:

ENGL 512	British Literature I Age of Heroes: Beowulf to Dr. Faustus	
ENGL 513	British Literature II Age of Revolutions: Shakespeare to Austen	
ENGL 514	British Literature III: Revolts, Renewals, Migrations	

ENGL #515	American Literature I Conquest and Nation: First Contact to the Civil War	
ENGL 516	American Literature II Money, Migration, and Modernity: Huck Finn to Beloved	
Any 500-700 Level ENGL Course		4
LAW 475	Getting Ready to Succeed in Law School (Option: can instead be taken in second year spring or third year fall.)	2
Credits		18
Spring		
Discovery Course		4
Discovery Course		4
ENGL 600-700 Pre-1800 Literature Course (such as Shakespeare, Chaucer, Literature of Early America)		4
ENGL 600-700 Post-1800 Literature Course (such as Victorian Novel, Contemporary American Literature, Postcolonial Literature)		4
LAW 475	Getting Ready to Succeed in Law School (if not previously taken.)	0
Credits		16
Third Year		
Fall		
Discovery Course		4
Discovery Course		4
ENGL 600-700 Pre-1800 Literature Course (if you took 512 or 513, this can be any 600-700-level ENGL course.)		4
ENGL 600-700 Post-1800 Literature Course (If you took 514, 515, or 516, this can be any 600-700-level ENGL course.)		4
LAW 475	Getting Ready to Succeed in Law School (if not previously taken.)	0
Credits		16
Spring		
ENGL 600-700 Race Course Requirement		4
ENGL 600-700-level Elective Course		4
ENGL 787	English Major Seminar	4
Elective Course		4
Credits		16
Total Credits		98

TOTAL: 98 Credits (40 Discovery, 44 English, 4-8 Foreign Language, 4-8 Elective)

NEED: Beyond ENGL 401 First-Year Writing, 3 more WI courses, one in major, one at 600 level.

LAW 475: Students should take LAW 475 Getting Ready to Succeed in Law School at some point during their Sophomore year but no later than the first semester of their Junior year. This course, taught by a UNH Law School faculty member, will teach students how to prepare for a legal education. The course will instruct students on the LSAT exam and offer valuable strategies on how to improve LSAT scores. Such instruction will include administration of practice test questions as well as explanations for answers. This two-credit course will also explain the necessary study skills to excel in law school.

HONORS: It is not necessary to complete the honors program, but it is possible: Honors in Discovery + Honors in Major with Thesis (See addendum I) .

SEQUENCE: With the exception of ENGL 419 Introduction to Literary Analysis and ENGL 787 English Major Seminar, English courses don't need to be taken in any specific order; the guide above is only a suggestion. In general, 500-level courses should be taken before 600-700 level ones. However, a student could take a class that satisfies the Race Requirement in Semester I of Junior year rather than Semester II, or a pre-1800 600-700 level literature course in Semester II of Junior year. As long as all the categories listed above are met, students have the flexibility to choose the courses that best meet their interests and schedules. There are some writing and journalism courses that have prerequisites, and students should be careful to note these before choosing upper-level courses in those fields.

ADVISING: It is very important that students progressing through the 3+3 English/Law program maintain close contact with their degree advisor. This will help students remain "on track" to complete degree requirements, and the advisor will guide the student into the next phase of the program, admission to the Law school. Students who **plan early and work closely** with their advisor may find it possible to include study abroad and participation in other University programs, if desired, but only with careful planning.

All students participating in the English/Law 3+3 program are strongly encouraged to consult with the pre-law advisor on campus: **Paula DiNardo**, paula.dinardo@unh.edu; 603-862-2064.

The Path Through UNH Law School

This is a possible Law School course outline. Variations to this suggested path of courses may be undertaken with the approval of the student's Law school advisor.

Senior/First Year Law (31 credits)

Course	Title	Credits
Fourth Year		
Fall		
LGP 920	Contracts	3
LGP 909	Civil Procedure	4
LGP 960	Torts	3
LSK 919	Legal Analysis and Writing 1	2
LSK 900	Legal Research and Information Literacy	2
LGP 900	The Legal Profession	1
Credits		15
Spring		
LGP 969	Article II Sales	2
LGP 916	Constitutional Law	4
LGP 952	Property	4
LSK 920	Legal Analysis and Writing 2	3
LIP 944 or LPI 912	Fundamentals of Intellectual Property or Fundamentals of Law Practice	3
Credits		16
Total Credits		31

The schedule and track of the second and third years of law school are directed by each student with careful advising from the law faculty.

English Teaching Major (B.A.)

<https://cola.unh.edu/english/program/ba/english-teaching-major>

Description

Are you passionate about serving your community? Do you enjoy reading, writing, creative thinking, and imagination? Are you eager to shape the future? The English teaching major could be a wonderful choice for you!

English teaching majors synthesize knowledge across areas — literature, language, composition, speaking, listening, identity, linguistics, and education, just to name a few. We think critically and collaborate. We spark learning and we study it. We evaluate texts and resources, examine literacy skills, consider appropriate media, and design reading and writing opportunities and instruction in a variety of contexts. In particular, the English teaching major focuses on preparing future teachers and educational leaders, but the skills students learn are valuable in many settings, from the classroom to the workplace to the broader world.

The goal of the English teaching major is to prepare informed, thoughtful, and skilled English teachers who will become educational leaders in their own communities and in the teaching profession. In the English Department, students learn about literature, cultural theories of race and identity, composition, grammar, a variety of textual and digital media, and instructional practices appropriate to grades five through twelve. In the Education Department, students learn about human development, the history of schooling, and many philosophical perspectives on learning and education.

Finally, students who choose to complete our master's program will complete a yearlong teaching internship where they collaborate with a teacher to apply their knowledge in a classroom and fulfill the requirements for teacher certification in the state of New Hampshire. Students who complete this program are uniquely well prepared to become leaders in the profession over the long term. State certification is transferable to most other states, and, after five years, 88.7% of UNH master's program graduates report that they are teaching or employed in an education-related job. Join the English teaching major and turn your passion for English into a fulfilling career serving your community!

Requirements

Completion of the undergraduate teaching major does not in itself meet state certification requirements. Students should enroll in the undergraduate major and:

Pass the following courses with an average of 2.5 or better.

Code	Title	Credits
ENGL 419	Introduction to Literary Analysis	4
ENGL 514	British Literature III: Revolts, Renewals, Migrations	4
ENGL 516	American Literature II Money, Migration, and Modernity: Huck Finn to Beloved	4
ENGL 657	Shakespeare	4
Select one of the following:		8
ENGL 725 & ENGL 726	Seminar in English Teaching and Seminar in English Teaching	
ENGL 710 & ENGL 792	Teaching Writing and Teaching Literature and Literacy	

ENGL 791	English Grammar	4
Two additional literature courses numbered 600 or above ¹		8
One course that addresses race, the construction of race, and radical theories ²		0-4
Any English department course in writing, linguistics, critical theory, film, or literature ³		4
Complete the Discovery Program capstone for English Teaching majors:		
ENGL 789	Special Topics in English Teaching	4
EDUC 500	Exploring Teaching	4

¹ ENGL 512 British Literature I Age of Heroes: Beowulf to Dr. Faustus or ENGL 513 British Literature II Age of Revolutions: Shakespeare to Austen may be substituted for one of the two required literature courses numbered 600 or above

² Choose from a department-approved list (other courses may count, when relevant and with prior written approval of the student's adviser). The course used to fulfill this requirement may be double counted within the 'Two literature courses 600 or above' OR 'Any English Department course...' requirement area.

³ Except ENGL 401 First-Year Writing, ENGL #403 Exploring Literature, ENGL 415s, "Literature and..." courses, and ENGL 444s

Apply for the fifth-year teaching internship and master's degree program by fall or spring of their senior year (usually September 30 for the internship and November 1 or February 1 for the master's program). Students with a GPA of 3.2 or better can apply for the master's degree program in their junior year. If accepted early, the student can earn graduate credit for up to three undergraduate English or education courses.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of Arts candidates must also satisfy the foreign language proficiency requirement.

English teaching majors may use one major-required course to satisfy one Discovery category requirement.

Majors may only count one online course towards their English major requirements.

Students interested in majoring in English teaching should consult Carla Cannizzaro, coordinator of the Department of English, 113 Hamilton Smith Hall, (603) 862-1313, or the director of the English teaching program, Prof. Alecia Magnifico.

English/Journalism Major (B.A.)

<https://cola.unh.edu/english/program/ba/englishjournalism-major>

Description

In our digital age, the ability to evaluate, edit, package and communicate information has become crucial to many, if not most, careers. Founded on the study of literature, the oldest form of story-telling, our English/journalism major prepares students for success in the media or any vocation that requires strong research and communications skills. Learn the basics: interviewing, fact gathering, verification, and writing in both news and feature styles. Then broaden your repertoire by

producing stories for digital platforms using audio, photo, video and data visualization.

Requirements

English/journalism majors must complete ENGL 401 First-Year Writing before taking the first journalism course, ENGL 534 21st Century Journalism: How the News Works. After completing ENGL 534 21st Century Journalism: How the News Works, majors may move on to ENGL 621 Writing and Reporting the News I. Students must get a B or better in 621 to go on to ENGL 622 Writing and Reporting the News II and ENGL 631 Introduction to Digital Reporting—both courses are required for the major.

Code	Title	Credits
ENGL 401	First-Year Writing ¹	4
ENGL 419	Introduction to Literary Analysis ²	4
Select one pre-1800 literature course (select from list below)		
Select one post-1800 literature course (select from list below)		
Select one course that addresses race, the construction of race, and racial theories (select from list below)		
ENGL 534	21st Century Journalism: How the News Works	4
ENGL 621	Writing and Reporting the News I	4
ENGL 622	Writing and Reporting the News II	4
ENGL 631	Introduction to Digital Reporting	4
Select two additional journalism courses from the following:		8
ENGL 623	Creative Nonfiction	
ENGL #708	Nonfiction: Form and Technique	
ENGL 711	Editing	
ENGL 712	Multimedia Storytelling	
ENGL 724	Sports Writing	
ENGL 735	Entrepreneurial Journalism	
Capstone:		
ENGL 720	Journalism Internship	1-16
Select a three-course concentration in another area ³		12

¹ With a B or better, or the AP or transfer credit equivalent

² This must be completed with a minimum grade of C. ENGL 419 Introduction to Literary Analysis is the only 400-level class that may count towards the English Literature major. ENGL #403 Exploring Literature, ENGL 415s, "Literature and..." courses, and ENGL 444s will NOT count towards this major.

³ Because media outlets expect even entry-level staff to have an area of expertise, English/journalism majors must take a three-course concentration in another field, such as sociology, German, environmental science, criminal justice, or other English disciplines (e.g., African American studies). Courses taken for a minor will count toward the three-course concentration.

Pre-1800 Literature Courses

Code	Title	Credits
ENGL 512	British Literature I Age of Heroes: Beowulf to Dr. Faustus	4
ENGL 513	British Literature II Age of Revolutions: Shakespeare to Austen	4
ENGL 657	Shakespeare	4

ENGL 741	Literature of Early America	4
ENGL 751	Medieval Epic and Romance	4
ENGL #753	Old English	4
ENGL #756	Chaucer	4
ENGL 758	Advanced Shakespeare	4
ENGL 759	Milton	4
ENGL 767	Literature of the Restoration and Early 18th Century	4
ENGL 768	Literature of the Later 18th Century	4
ENGL #780	Drama of Shakespeare's Contemporaries: Will and Company	4
ENGL #781	English Drama, 1660-1800	4
ENGL 783	English Novel of the 18th Century	4

Other courses may count. Please see your advisor if you have questions about other courses that might fulfill this requirement.

Post-1800 Literature Courses

Code	Title	Credits
ENGL 514	British Literature III: Revolts, Renewals, Migrations	4
ENGL #515	American Literature I Conquest and Nation: First Contact to the Civil War	4
ENGL 516	American Literature II Money, Migration, and Modernity: Huck Finn to Beloved	4
ENGL #609	Ethnicity in America: The African American Experience in the 20th Century	4
ENGL 650	Studies in American Literature and Culture ¹	4
ENGL 681	Introduction to African Literatures in English	4
ENGL 690	Introduction to African American Literature in America	4
ENGL 739	American Indian Literature	4
ENGL 742	American Literature, 1815-1865	4
ENGL #743	American Literature, 1865-1915	4
ENGL #744	American Literature, 1915-1945	4
ENGL 745	Contemporary American Literature	4
ENGL 746	Studies in American Drama	4
ENGL 747	Studies in American Poetry	4
ENGL #748	Studies in American Fiction	4
ENGL #749	Major American Authors	4
ENGL #769	English Romantic Period	4
ENGL 771	English Victorian Period	4
ENGL #772	English Victorian Period	4
ENGL 773	Literary Modernisms: Return, Revolt, Recycle	4
ENGL 774	Modern & Contemporary British Literature: New Departures	4
ENGL 777	Postcolonial Novel	4
ENGL 782		4
ENGL 784	English Novel of the 19th Century	4

¹ If topic is appropriate. (Please see your advisor if you have questions about other courses that might fulfill this requirement.)

Other courses may count. Please see your advisor if you have questions about other courses that might fulfill this requirement.

Courses That Address Race, the Construction of Race, and Racial Theories

Code	Title	Credits
ENGL 517	Introduction to African American Literature and Culture	4
ENGL 550	Introduction to the Literature and Culture of Race	4
ENGL #609	Ethnicity in America: The African American Experience in the 20th Century	4
ENGL 690	Introduction to African American Literature in America	4
ENGL 738	Topics in Asian American Studies	4
ENGL 739	American Indian Literature	4
ENGL #740	Indigenous New England	4
ENGL 693	Special Topics in Literature (subtopic R)	4
ENGL 797	Special Studies in Literature (subtopic R)	4

Other courses may count. Please see your advisor if you have questions about other courses that might fulfill this requirement.

(Note: the course used to fulfill this requirement may be double counted as one of the pre-1800 and post-1800 literature courses required for this major.)

Certain courses publish student writing digitally, at times in collaboration with professional news outlets. Students are also encouraged to write and edit for student publications such as The New Hampshire and Main Street. Beyond these requirements, majors work at one media internship for a semester (ENGL 720 Journalism Internship). Students must get a least a B in 621 and permission of the 622 and 631 instructor to do the internship. A faculty member supervises the internships, which are central to the English/journalism major, requiring students to use their new skills in a professional environment.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

English/journalism majors may use one major-required course to satisfy one Discovery category requirement.

Majors entering the department in Fall 2012 and beyond may only count one online course toward their English major requirements.

Students interested in the English/journalism major should see Carla Cannizzaro, coordinator of the Department of English, 113 Hamilton Smith Hall, (603) 862-1313, or the director of the Journalism Program.

English Minor

<https://cola.unh.edu/english/program/minor/english>

Description

The English minor offers students the opportunity to develop critical thinking, writing and research skills that will enrich both their personal lives and their professional careers. Students draw upon courses in literature, creative writing, journalism and linguistics to craft their own course of study.

Requirements

To minor in English at UNH, students complete five courses (20 credits).

Code	Title	Credits
Required course		
ENGL 419	Introduction to Literary Analysis	4
Electives ¹		16
Total Credits		20

¹ Elective courses: at least three courses at the 600 level or above.

ENGL 401 First-Year Writing and ENGL 415s, "Literature and..." courses cannot be applied toward the English minor.

No more than two transfer courses may be applied toward the English minor.

The minimum acceptable grade for each course is C-.

Writing Minor

<https://cola.unh.edu/english/program/minor/writing>

Description

With employers stressing the importance of writing skills and the writing demands of all professions increasing, the writing minor is designed to serve students who want to demonstrate sustained work with writing. Students take a concentration of courses in creative writing or journalism, focusing on the creative and practical uses of writing. The completion of a writing minor will enhance the job prospects in fields where the demands for writing is higher than ever. The writing minor also serves students who want to use the imagination to develop stories, poems, essays and screenplays.

Requirements

Students must complete at least five 4-credit courses (20 credits) from the list of approved courses. At least three of the courses must be at the 600 level or higher. ENGL 415s, "Literature and..." courses cannot be applied toward the English writing minor. The minimum acceptable grade for each course is C-. No more than two transfer courses can be applied toward the English writing minor. English literature and English teaching majors may declare a writing minor with the approval of their faculty adviser. A maximum of two English courses (8 credits) are allowed to double-count toward the literature or teaching major and writing minor. Other English Department majors are not eligible to declare a writing minor.

Courses that Count Toward the Writing Minor

Code	Title	Credits
ENGL 419	Introduction to Literary Analysis	4
ENGL 501	Introduction to Creative Nonfiction	4
ENGL 502	Professional and Technical Writing	4
ENGL 503	Persuasive Writing	4
ENGL 526	Introduction to Fiction Writing	4
ENGL 527	Introduction to Poetry Writing	4

ENGL 602	Advanced Professional and Technical Writing	4
ENGL 621	Writing and Reporting the News I	4
ENGL 622	Writing and Reporting the News II	4
ENGL 623	Creative Nonfiction	4
ENGL 625	Intermediate Fiction Writing Workshop	4
ENGL 627	Intermediate Poetry Writing Workshop	4
ENGL 694	Special Topics in Creative Writing	4
ENGL 701	Advanced Fiction Writing Workshop	4
ENGL #703	Travel Writing	4
ENGL #705	Advanced Poetry Writing Workshop	4
ENGL #708	Nonfiction: Form and Technique	4
ENGL #709	Poetry: Form and Technique	4
ENGL 710	Teaching Writing	4
ENGL 711	Editing	4
ENGL 721	Advanced Reporting	4
ENGL 729	Special Topics in Composition Studies	4
ENGL 791	English Grammar	4

At the beginning of your final semester of study at UNH, please fill out a Certification of Completion of Minor form and obtain signatures from your major advisor, the English department coordinator, and the Dean of your college.

French (FREN)

Study Abroad in Dijon

The department offers a junior year and semesters abroad at the University of Burgundy in Dijon, France (see FREN 690 Study Abroad in Dijon France). This program is open to all qualified students at the University of New Hampshire who have completed, with a grade of B- or better, FREN 631 Advanced French: Reading and Writing-FREN 632 Advanced French: Listening and Speaking and FREN 651 Readings in French Literature-FREN 652 Readings in French Literature by the end of the semester preceding their departure. Early consultation with the director of the program is urged. Non-credit orientation meetings are required during the semester prior to departure.

Summer Study in Dijon

This program is open to all students interested in an immersion program during the summer. It provides four to eight weeks of intensive courses in French at the CIEF (Centre International des Etudes Francaises) at the Universite de Bourgogne in Dijon, France. A minimum GPA of 2.5 is required. The pre-requisite for non-French majors is a minimum of one year of elementary French. The pre-requisite for French majors is FREN 631 Advanced French: Reading and Writing, FREN 632 Advanced French: Listening and Speaking, FREN 651 Readings in French Literature and/or FREN 652 Readings in French Literature. For French majors, the course is only open to those who cannot fulfill their semester-long study abroad requirement for documented academic reasons. By petition only. Special fee. 4 to 8 credits.

Teaching Assistantship in France

Each year the French government offers teaching assistantships in a French secondary school to graduating French majors or minors. Applications are accepted during the fall semester.

<https://cola.unh.edu/languages-literatures-cultures>

Programs

- French Major (B.A.) (p. 70)
- French Studies Major (B.A.) (p. 71)
- French Minor (p. 72)
- French Studies Minor (p. 72)

Faculty

<https://cola.unh.edu/languages-literatures-cultures/faculty-staff-directory>

French Major (B.A.)

<https://cola.unh.edu/languages-literatures-cultures/program/ba/french-major>

Description

The undergraduate major in French offered by the Department of Languages, Literatures, and Cultures is centered on the study of the French language and the literatures and cultures of France and the French-speaking world. Students who complete the requirements for the major can expect to become proficient in French at a level that would allow them to communicate with native speakers, to develop an in-depth critical appreciation of French and Francophone cultures and literatures, and to be culturally sensitive members of society.

The program offers courses devoted to authors, works, and literary and cultural movements that span ten centuries and four continents. The curriculum also includes interdisciplinary courses on relations between literature and other areas of study such as history, law, religion, politics, and the arts. All courses are conducted in French, and majors are expected to write papers and examinations in that language.

French can be taken either as a primary major or as one of two majors, in consultation with the director of undergraduate studies. Appropriate majors to combine with French might include, but are not limited to, international affairs, political science, English, education, film and media studies, history, music, philosophy, theater studies, women's studies, business, and communication.

The French major may interest students desiring a general humanistic education based on the language and literature of the French-speaking world; students planning to teach French at the elementary or secondary level; students who intend to pursue graduate work in preparation for teaching and research at the college level; and students preparing for careers in such areas as international law, business, journalism, international organizations, and public or government service, which require both training in a major foreign language and/or a general background in a humanistic discipline.

Requirements

A major consists of 40 credits in courses numbered 631 or above, in which readings are in French. Coursework for the French major must be completed with a grade of C or better. Majors are required to take:

Code	Title	Credits
FREN 631	Advanced French: Reading and Writing	4
FREN 632	Advanced French: Listening and Speaking	4
FREN 651	Readings in French Literature	4
FREN 652	Readings in French Literature	4
FREN 790	Advanced Language and Style	4
Select at least two 700-level literature courses at the Durham campus:		8
FREN 762	17th Century French Literature	
FREN 765	18th Century French Literature	
FREN #775	19th Century French Literature	
FREN 785	Topics in Francophone Literatures	
Select three other elective courses:		12
FREN 675	Topics in French Civilization	
FREN 676	Topics in Francophone Culture	
FREN 677	France in the European Union	
FREN 762	17th Century French Literature	
FREN 765	18th Century French Literature	
FREN #775	19th Century French Literature	
FREN 785	Topics in Francophone Literatures	
Total Credits		40

Students are required to enroll in at least one course each semester in their major program and to spend at least one semester abroad in a French-speaking country. The UNH-managed program in Dijon is highly recommended and offers year- and semester-long options. Other options are available, but non-UNH programs must be chosen in consultation with a major adviser and the UNH Center for International Education. Students in majors with inflexible curricula (like engineering, some sciences, and health care) who wish to complete a second major in French should consult with a French adviser about possible alternate means of satisfying the study abroad requirement.

Transfer students must earn a minimum of 12 major credits at the Durham campus. Of these 12 credits, one course must be FREN 790 Advanced Language and Style and at least one 700-level course in French/Francophone literature.

The Discovery Program capstone requirement may be fulfilled by completing FREN 790 Advanced Language and Style.

The required minimum overall GPA in major coursework is 2.0.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

French majors may use two major-required courses to satisfy two Discovery category requirements.

French Studies Major (B.A.)

<https://cola.unh.edu/languages-literatures-cultures/program/ba/french-studies>

Description

This major gives students a variety of perspectives not only on French and Francophone literature but also on a variety of other issues pertaining to the Francophone world. A major in French studies prepares graduates to negotiate successfully the economic reality of an increasingly international job market, and provides them with a wide range of career prospects after they leave the University.

Requirements

The major consists of 44 credits in French courses numbered 631 or above and of cross-listed courses in other departments, including the following requirements:

Code	Title	Credits
FREN 631	Advanced French: Reading and Writing	4
FREN 632	Advanced French: Listening and Speaking	4
FREN 651	Readings in French Literature	4
FREN 652	Readings in French Literature	4
Select one of the following:		4
FREN 675	Topics in French Civilization	
FREN 676	Topics in Francophone Culture	
FREN 677	France in the European Union	
FREN 790	Advanced Language and Style	4
Select two 700-level courses in French or Francophone literature		8
Select at least three elective courses (12 credits) closely related to French and Francophone cultural studies ¹		12
Total Credits		44

¹ These are to be chosen in consultation with a faculty adviser from among the following departments: history, geography, or anthropology, one 600- to 700-level course; art history or music, one 600- to 700-level course; economics, political science, or education, one 600- to 700-level course.

Coursework for the French studies major must be completed with a grade of C or better. Students are required to enroll in at least one course each semester in their major program and to spend at least one semester abroad in a French-speaking country. The UNH-managed study abroad program in Dijon is highly recommended. It offers both year- and semester-long programs. Other options are available, but non-UNH programs must be chosen in close consultation with a major adviser and the UNH Center for International Education. Students in majors with inflexible curricula who wish to complete a second major in French studies should consult with a French adviser about alternate means of satisfying the study abroad requirement.

Transfer students must earn a minimum of 12 credits on the Durham campus. Of these 12 credits, one course must be FREN 790 Advanced Language and Style and at least one 700-level course in French/Francophone literature.

The Discovery Program capstone requirement may be fulfilled by completing FREN 790 Advanced Language and Style.

The required minimum overall GPA in major coursework is 2.0.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

French studies majors may use two major-required courses to satisfy two Discovery category requirements.

French Minor

<https://cola.unh.edu/languages-literatures-cultures/program/minor/french>

Description

The minor in French provides students with the components of a well-rounded education: a solid understanding of grammar and pronunciation, intercultural awareness, exposure to Francophone literatures and cultures, and a sufficient command of the language to enhance their chosen field of study, and countless career opportunities across the public, private, and nonprofit sectors, including government, international development, journalism, law, communications, and business.

Students in the French minor program at UNH are encouraged to complete some portion of their undergraduate study abroad through the Study Abroad in Dijon. Given the increasing globalization of our world, living abroad enhances cross-cultural awareness, competency, and adaptability. Students find that living and studying abroad expands their perspective, improves critical thinking, increases independence and better prepares them for a career in an increasingly global marketplace.

Requirements

A minor in French consists of 20 credits in French courses numbered FREN 503 Intermediate French I and above. No fewer than three courses have to be taken at UNH. No more than one course conducted in English (e.g., FREN 525 A Road Trip Through France: Baguette, Brie, Bordeaux, and Beyond or FREN #625 Cuisine, Culture, and the Creation of French Identity) will be counted toward the minor, although students may elect to take more than one such course provided they earn more than 20 credits. Those entering the minor at FREN 504 Intermediate French II or higher will be expected to complete FREN 651 Readings in French Literature or FREN 652 Readings in French Literature. LLC 791 Methods of Foreign Language Teaching does not count for the minor. After completing the five required courses, students submit a "Completion of Minor" form.

French Studies Minor

<https://cola.unh.edu/languages-literatures-cultures/program/minor/french-studies>

Description

Students who minor in French or French studies learn to perfect their communications skills, explore works of imaginative literature in French, and investigate dimensions of historical and contemporary civilization and culture in one or more French-speaking countries.

Requirements

The minor in French studies consists of 20 credits numbered FREN 503 Intermediate French I or above. No fewer than three courses have to be taken at UNH. No more than one course conducted in English (FREN 525 A Road Trip Through France: Baguette, Brie, Bordeaux, and Beyond or FREN #625 Cuisine, Culture, and the Creation of French Identity) will be counted toward the minor. Students entering the minor at FREN 504 Intermediate French II or higher will be expected to complete FREN 651 Readings in French Literature or FREN 652 Readings in French Literature. LLC 791 Methods of Foreign Language Teaching does not count toward the minor. After completing the five required courses, students submit a "Completion of Minor" form.

Geography (GEOG)

Geography, as the study of place, space, and environment, addresses the "why of where" by uniting social and biophysical sciences, humanities and technology to examine the factors that make a place or environment unique. Connecting academic inquiry to real-world problem solving, our courses teach critical thinking skills that prepare students to transfer classroom and field experience into a wide range of careers. With interests ranging from globalization to climate change and sustainability, urbanization to community development at home and abroad, geography majors gain the knowledge, techniques and perspectives needed to meet current and future challenges.

Geography at UNH is an undergraduate-only department offering both major and minor degree programs. With small class sizes, personalized advising by department faculty, and opportunities for independent study, our students receive a high degree of individual attention. UNH geography graduates are prepared to enter a variety of careers or professional and graduate degree programs.

<https://cola.unh.edu/geography>

Programs

- Geography Major (B.A.) (p. 72)
- Geography Minor (p. 74)

Faculty

<https://cola.unh.edu/geography/faculty-staff-directory>

Geography Major (B.A.)

<https://cola.unh.edu/geography/program/ba/geography>

Description

The geography major provides undergraduates with a solid foundation in geography by uniting social and biophysical sciences, humanities and technology to examine the factors that make a place or environment unique. Connecting academic inquiry to real-world problem solving, you will develop critical thinking skills and be prepared to transfer classroom and field experience into a wide range of careers.

With interests ranging from globalization to climate change and sustainability, urbanization to community development at home and abroad, UNH geography graduates have gone on to careers in urban, regional, and transportation planning, community development, environmental conservation and natural resources management, sustainability science, geographic information science, market research, locational analysis, population studies, foreign aid, international diplomacy, and education.

Requirements

To earn a bachelor of arts in geography, students must complete 10 geography courses with a minimum grade of C-minus:

Code	Title	Credits
	Select five core courses	
	Select four courses in one of three areas of concentration	
	Select one elective course	

Students must select an area of concentration within six months of declaring geography as their major.

Core Courses

All geography majors must complete five core courses:

Code	Title	Credits
GEOG 401	Regional Geography of the Western World	4
GEOG 402	Regional Geography of the Non-Western World	4
GEOG 572	Geography of the Natural Environment	4
GEOG 581	Human Geography	4
GEOG/NR 658	Introduction to Geographic Information Systems	4
Total Credits		20

The core courses are intended to provide students a basic understanding of human, physical, and world regional geography, plus geographic information systems. They should be taken as early as possible in a student's program because they provide a foundation for more advanced coursework.

Students are encouraged to complete GEOG 595 Statistics for Spatial Science, or another statistics course approved by their adviser, before enrolling in GEOG 658 Introduction to Geographic Information Systems.

Human Geography Concentration

Intended for students most interested in the geography of human activity, including population, urban, cultural, political, and economic geography.

Code	Title	Credits
Select three of the following, including one course at the 600-level or above:		
GEOG 582	Global Trade and Local Development	
GEOG 584	Political Geography	
GEOG 673	Political Ecology	
GEOG 685	Geography of Population and Development	
GEOG 686	World Economy and Globalization	
Select one of the following regional geography courses:		4
GEOG #514	Geography of the United States and Canada	
GEOG #520	Geography of Latin America and the Caribbean	

GEOG 530	Geography of China	
GEOG 540	Geography of the Middle East	
GEOG 550	Geography of Sub-Saharan Africa	
Total Credits		16

Environmental Geography Concentration

Intended for students most interested in the geography of the natural environment, including weather, climate, landforms, biogeography, and human-environment interactions.

Code	Title	Credits
GEOG 595	Statistics for Spatial Science ¹	4
Select three of the following, including one course at the 600-level or above:		12
GEOG 405	Human-Environment Geography	
GEOG 473	Elements of Weather	
GEOG 560	Geography of Natural Hazards	
GEOG #573	Biogeography	
GEOG 574	Geography of Landforms	
GEOG 670	Climate and Society	
GEOG 671	Weather Forecasting	
GEOG 673	Political Ecology	
Total Credits		16

¹ Students who do not complete GEOG 595 must complete an advisor approved statistics course and one additional course from the list above.

Geotechniques Concentration

Intended for students most interested in geographic information systems, aerial photo interpretation, remote sensing, photogrammetry, and other geotechniques.

Code	Title	Credits
GEOG 595	Statistics for Spatial Science ¹	4
Select three of the following:		12
GEOG/NR 757	Remote Sensing of the Environment	
GEOG 590	Field Research	
GEOG/NR 759	Digital Image Processing for Natural Resources	
GEOG/NR 760	Geographic Information Systems in Natural Resources	
Total Credits		16

¹ Students who do not complete GEOG 595 must complete an advisor approved statistics course and one additional course from the list above.

Elective Requirement

Code	Title	Credits
One Elective Course numbered 400 to 799 ¹		4

¹ GEOG 796 Special Topics may fulfill the major elective requirement or be applied to a concentration if approved by department faculty. The following courses may fulfill the major elective requirement if taken for four credits but cannot be applied to a concentration: GEOG 695 Internship, GEOG 795 Special Project, GEOG 799 Honors Thesis.

Additional Requirements

Students must pass a comprehensive examination in their senior year to fulfill the Discovery capstone requirement.

The required minimum overall GPA in major coursework is 2.0. Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

The University's foreign language requirement can be fulfilled by the following languages: French, Italian, Spanish, Portuguese, German, Russian, Chinese, Japanese, Arabic, Latin, or Greek. Other languages will be considered by petition.

Geography majors may use two major-required courses to satisfy two Discovery category requirements, excluding GEOG 401, GEOG 402, GEOG 572, and GEOG 581.

Geography Minor

<https://cola.unh.edu/geography/program/minor/geography>

Description

The geography minor allows undergraduates to explore one or more of the three main areas of geography – human geography, environmental geography, and geotechniques. Studying geography prepares students to pursue a wide variety of careers or enter graduate school.

Requirements

To minor in geography, you must complete any **five geography courses (at least 20 credit hours)** with a grade of **at least C-**. Courses taken Pass/Fail cannot be used for the minor. All minor courses can be used to fulfill Discovery Program requirements.

At the beginning of your final semester at UNH you should complete a Certification of Completion of Minor form (<http://www.unh.edu/registrar/regforms/minorform.pdf>). The minor must be approved by your major and minor supervisors. The completed form is then presented to the college dean for approval and, finally, forwarded to the Registrar.

Please direct questions about minoring in geography to Mary Stampone (mary.stampone@unh.edu), Chair.

German (GERM)

German is the most widely spoken language in Europe, and Germany holds a prominent role in the EU and world economy. Germany is also the world's second leader in the development of alternative energy. The country's rich cultural history and intellectual life make Germany's contributions critical to a well-informed education.

Study Abroad

Summer Study in Berlin, Germany

The UNH German Program manages a five-week program in Berlin, Germany. Students earn 4 or 8 credits through GERM 586 Study in Berlin, designed to give students an immersion experience in the German language and culture. In the course of five weeks, students will receive seventy hours of intensive language instruction at the appropriate level (elementary, intermediate, or advanced) at the BSI Private Language School in central Berlin. No prior German language study is required. On designated weekday afternoons, students will gather for cultural excursions and discussions with the on-site UNH faculty member. Students can receive UNH language credit and fulfill the World Cultures Discovery requirement. In line with UNH's goals to educate students to become global citizens, this immersion experience will give students insight into what it means to experience a different culture and language. For more information, contact Charles Vannette at (603) 862-1690, e-mail berlin.program@unh.edu, (berlin.program@unh.edu) or visit cola.unh.edu/study-abroad/program/germany-berlin (<http://www.cola.unh.edu/study-abroad/program/germany-berlin>).

Other Programs

The University allows both German majors and minors and other students to attend approved study abroad programs for UNH credit. Students may attend accredited one- or two-semester programs at universities such as Berlin, Freiburg, Heidelberg, Innsbruck, Marburg, Munich, Tübingen, or Vienna. Most study abroad programs require a minimum of two years of college German. For details, see the German coordinator or the foreign study coordinator in the Center for International Education. Internships with a German firm or organization may also be taken for credit (see GERM 595 Internship). Financial aid applies to all approved programs.

<https://cola.unh.edu/languages-literatures-cultures>

Programs

- German Major (B.A.) (p. 74)
- German Minor (p. 75)

Faculty

<https://cola.unh.edu/languages-literatures-cultures/faculty-staff-directory>

German Major (B.A.)

<https://cola.unh.edu/languages-literatures-cultures/program/ba/german-major>

Description

The German major is offered by the Department of Languages, Literatures, and Cultures. This program is of interest to the following groups of students:

- Those who have a special interest in the German language, literature, and culture.
- Those who intend to enter fields in which a background in foreign languages and literatures is desirable, such as international business

and law, trade, journalism, science, library science, government service, and international service organizations.

- Those who plan to teach German in secondary schools. Since most secondary schools require their teachers to teach more than one subject, students planning to enter teaching at this level should plan their programs carefully. They should combine a major in one language and its literature with a minor or at least a meaningful sequence of courses in another subject. Dual majors also are possible. For certification requirements, see the section coordinator.

All German majors are strongly encouraged to double major or include a relevant minor in their studies.

Requirements

A major consists of 10 courses in German beyond GERM 402 Elementary German II. Courses required for the major (or their equivalents):

Code	Title	Credits
GERM 503	Intermediate German I	4
GERM 504	Intermediate German II	4
GERM 525	Introduction to German Culture and Civilization	4
GERM 631W	Advanced Communications Skills I	4
GERM 632	Advanced Communications Skills II	4
Select four courses, taken at the 600 or 700 levels ¹		16
Capstone: Select one course at the 700 level ²		4
Total Credits		40

¹ A successful IROP or SURF application may count as one of the 700-level courses.

² Including GERM 797 Special Studies in German Language and Literature and GERM 798 Special Studies in German Language and Literature

A grade of C- or better is required in all major coursework. Majors are required to spend a minimum of one semester in an approved German-speaking study abroad program, or at least eight weeks in a summer study program. For students spending one semester abroad, two or three of the five upper-level courses are normally taken in Durham. For students spending an academic year abroad, three or four of the five upper-level courses are normally taken in Durham. LLC 791 Methods of Foreign Language Teaching does not count for major credit; LLC 791 Methods of Foreign Language Teaching is recommended as an elective and required for teacher certification.

The required minimum overall GPA in major coursework is 2.0.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

German majors may use two major-required courses to satisfy two Discovery category requirements.

German Minor

<https://cola.unh.edu/languages-literatures-cultures/program/minor/german>

Description

The German minor is appropriate for those who have a special interest in the German language, literature, and culture; and those who intend to enter fields in which a background in foreign languages and literatures is desirable, such as international business and law, trade, journalism, science, library science, government service, and international service organizations.

Requirements

A minor consists of five courses in German numbered 503 and above.

Code	Title	Credits
Five electives selected from GERM 503 or above		20
Total Credits		20

The minor may include one course taught in English but not LLC 791 Methods of Foreign Language Teaching.

You do not need to declare a minor; however, it might be wise to meet with a faculty member from the German program to discuss your minor plan.

At the beginning of your final semester of study, you should complete a certification of completion of minor form (<http://www.unh.edu/registrar/regforms/minorform.pdf>), obtain the necessary signatures, and submit it to your Dean's Office.

History (HIST)

The Department of History is one of the top history departments in the country, with an internationally recognized faculty in American, European, and World and Ancient history. History professors have won some of the most important prizes in the profession, and they often appear on television and other media outlets. But what really distinguishes the department's faculty is that we love to teach. Our courses cover a wide range of times, places, and subjects, from ancient history to the history of the modern world.

History is a flexible major, which makes it a good choice for students who want to complete a double major in another discipline. Popular double majors include communication, justice studies, economics, and international affairs.

The Education Department's 4+1 graduate program is also available to history majors. Students who complete that program receive their social studies teacher certification in five years and graduate with a B.A. and M.Ed. or M.A.T.

The Department offers a major and minor in history. We also administer two interdisciplinary minors: the history and philosophy of science minor and the religious studies minor.

The History Department at UNH has approximately 200 undergraduate majors; about 50 students graduate with a history major every year.

<https://cola.unh.edu/history>

Programs

- History Major (B.A.) (p. 76)
- History Major: Law 3+3 Option (B.A.) (p. 77)
- History Minor (p. 79)
- History and Philosophy of Science Minor (p. 80)
- Religious Studies Minor (p. 80)

Faculty

<https://cola.unh.edu/history/faculty-staff-directory>

History Major (B.A.)

<https://cola.unh.edu/history/program/ba/history>

Description

The study of history gives students the analytical and communication skills necessary to succeed in today's workplace. It is also essential for being an informed citizen. The history major covers an array of subjects: the Roman Empire, modern U.S. foreign policy, China's Cultural Revolution, medieval Islam, the American Revolution, and many, many others. Every major takes an introductory seminar on historical writing and analysis, and the major concludes with a senior colloquium that allows students to conduct in-depth research on a topic of their choosing. History is a flexible major. That makes history an excellent choice for students who plan to study abroad or who want to complete a double major in another discipline.

Students sometimes ask, "what can you do with a history major?" The answer is practically anything you want. History majors have attended some of the top graduate programs in the country. Many become teachers, but history majors also go into law, medicine, and business, as well as careers in technology, international relations, politics, and the media. Majoring in history prepares students well for the intellectual flexibility and ability to think outside the box that today's job market demands.

Undergraduate Awards for Majors

The Philip M. Marston Scholarship, an award of \$500, is available to students who are interested in colonial or New England history and have demonstrated financial need. There are course requirements for this scholarship. More details are available from the history office.

Each spring, the members of the departmental undergraduate committee choose history majors to receive the following prizes in history:

- The William Greenleaf Prize is given for the best senior colloquium paper. Award candidates must have a minimum grade-point average of 3.2 in history courses. Individuals may nominate themselves or may be nominated by faculty members.
- The Allen Linden Prize for the best senior history thesis is funded by the Signal Fund.
- The Charles Clark Prize is for the best essay or research paper submitted by a history major and is funded by the Signal Fund.

Phi Alpha Theta, the history honor society, is an international scholastic organization dedicated to promoting historical study on the

undergraduate and graduate levels. Admission to the UNH Psi Pi chapter is open to undergraduates with an overall grade-point average of 3.0, a grade-point average of 3.4 or better in history courses, and completion of HIST 500 Introduction to Historical Thinking.

Requirements

To complete a major in history, students must take ten (10) 4-credit history courses or their equivalent. Students who enter the University as history majors, or who declare a major in history, should take the first required course, HIST 500 Introduction to Historical Thinking, as soon as possible. To declare a major in history, students must have completed or be enrolled in two history courses. HIST 500 Introduction to Historical Thinking is a prerequisite for the second required course, HIST 797 Colloquium, which fulfills the Discovery Program capstone requirement for history majors and is taken during the senior year. Students should consult the list of topics for HIST 797 Colloquium advertised each semester.

History Major Requirements

Code	Title	Credits
HIST 500	Introduction to Historical Thinking	4
HIST 797	Colloquium	4
At least eight (8) additional courses, following the guidelines below.		32
No more than two (2) may be at the 400-level and a minimum of three (3) must be at the 600-level or above.		
Total Credits		40

A student's program of study must include two parts:

1. An area of specialization. A student must select at least four courses to serve as an area of specialization within the major. Up to two courses (each four credits or their equivalent) in the area of specialization may be taken in other departments; such courses must be 500-level or above and have the approval of the student's advisor. The area of specialization may be in a nation, region, a time period, global history, or one of the following:
 - * ancient and pre-modern worlds
 - * cultural and intellectual history
 - * empires and colonialism
 - * international and diplomatic history
 - * politics, law, and government
 - * race, gender, and sexuality
 - * religion
 - * revolution and social change
 - * science, technology, medicine, and the environment
 - * war and society
 - * world economy
 - * design your own (with advisor's permission)
2. Complementary courses. A student must select, in consultation with his or her advisor, at least three history courses in fields outside the area of specialization, chosen to broaden his or her understanding of the range of history. Each major should take at least one course from each of Groups I, II, and III. Group I contains all American history courses, Group II contains all European history courses, and Group III contains all other history courses.

The program must be planned in consultation with an advisor. A copy of the program, signed by the advisor, must be placed in a student's file no later than the second semester of the student's junior year. Courses at the 700-level will be judged by the advisor as to their applicability for

area of specialization. The program may be modified with the advisor's approval.

Only one HIST 695 Independent Study may be used to fulfill the 600-level requirement, and no more than two Independent Study courses may count toward the ten-course requirement. No more than two 400-level courses may be counted toward the major requirements. Students must receive at least a C in HIST 500 Introduction to Historical Thinking and at least a C- in the other nine courses. Majors must maintain a 2.0 or better in all history courses.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of Arts (B.A.) candidates must also satisfy the foreign language proficiency requirement.

History majors may use history courses to fulfill Discovery category requirements but may not double-count history courses for major and Discovery category requirements.

History majors must satisfy the language requirement for the B.A. degree in an international language that they could use for historical research. That list includes Arabic, Chinese, French, German, Greek, Italian, Japanese, Latin, Portuguese, Russian, and Spanish. Students may petition the department curriculum committee for exceptions.

For transfer students, a minimum of five (5) of the semester courses used to fulfill the major requirements must be taken at the University. One upper-level course may be transferred to satisfy the requirement that a major must take at least three courses numbered 600 or above. Transfer students must complete both HIST 500 Introduction to Historical Thinking (or its equivalent) and HIST 797 Colloquium.

Students intending further work in history beyond the bachelor's degree are urged to take HIST 775 Historical Methods.

Students intending to major in history should consult with the department administrative assistant. Suggested programs for students with special interests or professional plans are available in the department office.

History Major: Law 3+3 Option (B.A.)

<https://cola.unh.edu/history/program/ba/history-major-law-33-option>

Description

The Law 3+3 option offers highly motivated UNH undergraduates the opportunity to complete their bachelor's degree (B.A.) with a history major and their law degree (J.D.) at UNH in six years, rather than the usual seven years. It promises significant savings in both time and money. Students apply to the UNH Law School in their junior year (by Jan. 1), following the approved process below, and after taking the LSAT exam. If admitted, undergraduates begin their first year of law school in their senior year. The credits earned upon successful completion of the law school courses will be applied to both the J.D. degree and as elective courses for the B.A. degree. After four years, students receive a B.A. with a history major. After six years, students, having completed all law school requirements successfully, will receive their J.D.

Eligibility and Admission Process

1) **Phase I: applying to the Law 3+3 option.** Students apply to the program either when they submit their applications to UNH by selecting

the History/J.D. option on the online application, or after they are admitted, applying directly to the History Department's History/Law 3+3 Committee. In both cases, undergraduate applicants must fulfill the general requirements for admission to the History major.

a. Students applying at time of admission to UNH will typically present the following high school (HS) credentials:

- a 3.5 GPA in HS
- a rigorous HS curriculum defined as the following:
 - 4 years of college prep (CP) or higher English
 - 4 years of CP or higher mathematics
 - 4 years of CP or higher social studies/history
 - Completed at least level 3 of a foreign language
 - 3 or more years of CP or higher laboratory sciences
- a score of 1200 or better (combined Math and Verbal) on the SAT or a 29 on the ACT)

b. Currently enrolled UNH students applying to the program must:

- have a 3.5 GPA in college courses at time of application.
- The History/Law 3+3 Committee governing admission to the program will also consider past SAT scores, maturity, and ability to complete a highly demanding program of study based on performance thus far.

For both groups, it is important to note that satisfying these requirements does not guarantee admission to this program. The review process is holistic (meaning all parts of the application carry weight and influence the final decision) and other components of the application will influence any admission decisions. Available space will also influence who is admitted to the program and how many students can be accepted.

2) **Phase 2: applying to UNH Law School.** To be eligible, students must:

- Complete all Discovery and major requirements, and accrue at least 98 credits before beginning law school in their senior year
- Maintain at least a 3.5 grade point average (including transfer credits) at time of application to law school, and at end of junior year
- Take the LSAT no later than December of the final undergraduate year (i.e. the junior year) and have a **score of 157 or above**
- Submit the law school application through the Law School Admissions Council by Jan. 1 of the calendar year in which the student wishes to enroll in law school
- If, for some reason, students are not admitted to UNH Law, they will complete their final, fourth year at UNH, following the typical undergraduate program.

Requirements

Students in the History/Law 3+3 Option complete the requirements of the History Major. See the Degree Plan for the recommended path through the major.

To complete a major in history, students must take ten (10) 4-credit history courses or their equivalent. Students who enter the University as history majors, or who declare a major in history, should take the first required course, HIST 500 Introduction to Historical Thinking, as soon as possible. To declare a major in history, students must have completed or be enrolled in two history courses. HIST 500 Introduction to Historical Thinking is a prerequisite for the second required course, HIST 797 Colloquium, which fulfills the Discovery Program capstone requirement

for history majors and is taken during the senior year. Students should consult the list of topics for HIST 797 Colloquium advertised each semester.

History Major Requirements

Code	Title	Credits
HIST 500	Introduction to Historical Thinking	4
HIST 797	Colloquium	4
At least eight (8) additional courses, following the guidelines below.		32
No more than two (2) may be at the 400-level and a minimum of three (3) must be at the 600-level or above.		
Total Credits		40

A student's program of study must include two parts:

1. An area of specialization. A student must select at least four courses to serve as an area of specialization within the major. Up to two courses (each four credits or their equivalent) in the area of specialization may be taken in other departments; such courses must be 500-level or above and have the approval of the student's advisor. The area of specialization may be in a nation, region, a time period, global history, or one of the following:
 - * ancient and pre-modern worlds
 - * cultural and intellectual history
 - * empires and colonialism
 - * international and diplomatic history
 - * politics, law, and government
 - * race, gender, and sexuality
 - * religion
 - * revolution and social change
 - * science, technology, medicine, and the environment
 - * war and society
 - * world economy
 - * design your own (with advisor's permission)
2. Complementary courses. A student must select, in consultation with his or her advisor, at least three history courses in fields outside the area of specialization, chosen to broaden his or her understanding of the range of history. Each major should take at least one course from each of Groups I, II, and III. Group I contains all American history courses, Group II contains all European history courses, and Group III contains all other history courses.

The program must be planned in consultation with an advisor. A copy of the program, signed by the advisor, must be placed in a student's file no later than the second semester of the student's junior year. Courses at the 700-level will be judged by the advisor as to their applicability for area of specialization. The program may be modified with the advisor's approval.

Only one HIST 695 Independent Study may be used to fulfill the 600-level requirement, and no more than two Independent Study courses may count toward the ten-course requirement. No more than two 400-level courses may be counted toward the major requirements. Students must receive at least a C in HIST 500 Introduction to Historical Thinking and at least a C- in the other nine courses. Majors must maintain a 2.0 or better in all history courses.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of Arts (B.A.) candidates must also satisfy the foreign language proficiency requirement.

History majors may use history courses to fulfill Discovery category requirements but may not double-count history courses for major and Discovery category requirements.

History majors must satisfy the language requirement for the B.A. degree in an international language that they could use for historical research. That list includes Arabic, Chinese, French, German, Greek, Italian, Japanese, Latin, Portuguese, Russian, and Spanish. Students may petition the department curriculum committee for exceptions.

For transfer students, a minimum of five (5) of the semester courses used to fulfill the major requirements must be taken at the University. One upper-level course may be transferred to satisfy the requirement that a major must take at least three courses numbered 600 or above. Transfer students must complete both HIST 500 Introduction to Historical Thinking (or its equivalent) and HIST 797 Colloquium.

Degree Plan

Undergraduate Courses

Below is a suggested course outline. There might be other possible plans.

NOTE: Students should **plan early and work closely with their advisors** if they want to pursue the fast track program. It may be possible to include study abroad and other programs, if desired, but only with careful planning. They are also strongly encouraged to consult with the pre-law advisor on campus (Paula DiNardo, paula.dinardo@unh.edu, 603-862-2064.)

Course	Title	Credits
First Year		
Fall		
Discovery Course		4
Discovery Course		4
History 400-level Course		4
Foreign Language Course		4
Credits		16
Spring		
Discovery Course		4
Discovery Course		4
History 500-level Course (may be taken in Sem. 1 of sophomore year)		4
Foreign Language or Elective Course (if Foreign Language is completed in one semester)		4
Credits		16
Second Year		
Fall		
Discovery Course		4
Discovery Course		4
History 500-level Course		4
History 600-level Course		4
Credits		16
Spring		
Discovery Course		4
Discovery Course		4
History 500-level Course		4

History 600-level Course	4
PLUS one 2-credit course or two 1-credit courses. LAW 475 Getting Ready to Succeed in Law School is recommended (can be taken fall semester of junior year instead). ¹	2
Credits	18

Third Year**Fall**

Discovery Course	4
Discovery Course	4
History 600-level Course	4
History Course Elective any level (no more than two 400-level courses may be counted towards major)	4
If not taken sophomore year, one 2-credit course or two 1-credit courses must be taken. LAW 475 Getting Ready to Succeed in Law School is recommended. ¹	
Credits	16

Spring

HIST 797 Colloquium	4
History Elective Course any level (no more than two 400-level courses may be counted towards major)	4
Elective Course	4
Elective Course	4
Credits	16
Total Credits	98

TOTAL UNDERGRADUATE CREDITS REQUIRED - 98 cr.

40 total Discovery Program credits; 40 history credits; 4-8 foreign language credits; 8-12 elective credits; and two 1-credit courses OR one 2-credit course¹. In addition to fulfilling the Discovery Program and history major requirements, students need to fulfill the Bachelor of Arts foreign language requirement and take four (4) writing intensive courses. HIST 500 Introduction to Historical Thinking and HIST 797 Colloquium fulfill two (2) WI courses.

¹ **Clarification:** to earn 98 credits in 3 years, **students will need to take one (1) 2-credit course or two (2) 1-credit courses.** The 2-credit course, LAW 475 Getting Ready to Succeed in Law School, is recommended and is best taken in the spring semester of sophomore year or the fall semester of the junior year as it will include LSAT prep. Other 2-credit options include JUST 550 Mock Trial and JUST 551 Mock Trial. For other possible 1-2 credit courses, see the Time & Room Schedule. The 1-2 credit courses can be completed at any point in your first 3 years at UNH-Durham. You can also complete them during the January term [see, e.g., THDA 531 The London Experience: Discovery, a 2-credit study abroad program] or in the summer.

Law School Course Outline**Fourth Year/First Year Law (31 credits)**

Course	Title	Credits
Fourth Year		
Fall		
LGP 920	Contracts	3
LGP 909	Civil Procedure	4
LGP 960	Torts	3
LSK 919	Legal Analysis and Writing 1	2

LSK 900	Legal Research and Information Literacy	2
LGP 900	The Legal Profession	1
	Credits	15

Spring

LGP 969	Article II Sales	2
LGP 916	Constitutional Law	4
LGP 952	Property	4
LSK 920	Legal Analysis and Writing 2	3
LIP 944 or LPI 912	Fundamentals of Intellectual Property or Fundamentals of Law Practice	3
	Credits	16
	Total Credits	31

LAW SCHOOL COURSES

After completing the first year courses (above), the schedule and track of the second and third years of law school are directed by each student with careful advising from the law faculty. The following summarizes the required curriculum and bar-recommended curriculum. 85 credits are required for graduation.

Required courses include:

Administrative Process
Criminal Procedure
Professional Responsibility
Upper Level Writing Course
Upper Level Skills Course

Bar-recommended courses include:

Personal Taxation
Business Associations
Wills, Trusts, and Estates
Evidence

History Minor

<https://cola.unh.edu/history/program/minor/history>

Description

The study of history is an essential element of the liberal education. Studying history provides both an awareness of the past and the tools to evaluate and express one's knowledge.

Requirements

A minor in history consists of 20 semester credits with C- or better and at least a 2.0 grade-point average in courses that the Department of History approves.

Code	Title	Credits
	Five elective HIST courses	20
	Total Credits	20

- Courses taken on a pass/fail basis may not be used for the minor.
- No more than 12 credits in 400-level courses may be used for this minor.

- For transfer students, no more than two transfer courses, or 8 transfer credits, may be used toward the minor.

History and Philosophy of Science Minor

<https://cola.unh.edu/history/program/minor/history-philosophy-science>

Description

What is science? When people ponder this question, they often are led to seek answers outside the sciences themselves. This interdisciplinary minor helps students address historical and philosophical questions about science. The history of science asks: How did we come to hold the beliefs we do about the natural world? How were the great scientists of the past led to the discoveries for which they are remembered? Why did people in the past have very different ideas on issues like the motions of the heavens or the nature of the human body? It is a puzzling reality of world history that the human understanding of nature, society, and the mind has varied greatly with place and time. This intriguing variety also raises philosophical questions: What separates science from pseudoscience or religion? How can we decide whether scientific knowledge will have good or bad consequences for humanity? Can science ever reach the ultimate truth about the universe?

The minor in history and philosophy of science offers courses in such diverse departments as economics, history, mathematics, philosophy, and psychology. It presupposes no specialized scientific background and may be combined with any undergraduate major. Five 4-credit courses are required for the minor, with no more than three from any single department.

Students interested in taking the minor should contact the coordinator, Jan Golinski, Department of History, Horton Social Science Center, e-mail jan.golinski@unh.edu.

Requirements

Code	Title	Credits
Select five of the following:		20
ECON 698	Topics ¹	
ECON 798	Economic Problems ¹	
HIST 521	Origins of Modern Science	
HIST 522	Science in the Modern World	
HIST 621	History of American Thought	
HIST 622	History of American Thought	
HIST 652	Topics in European Intellectual History	
HIST 654	Topics in History of Science	
PHIL 424	Science, Technology, and Society	
PHIL 435	Human Nature and Evolution	
PHIL 447	Artificial Intelligence, Robots, and People	
PHIL 630	Neuroscience and Philosophy	
PHIL 780	Special Topics ¹	
PSYC 571	Pioneers of Psychology	
PSYC 591	Special Topics ¹	
Total Credits		20

¹ With approval.

Religious Studies Minor

<https://cola.unh.edu/history/program/minor/religious-studies>

Description

The religious studies program at the University of New Hampshire currently offers an interdisciplinary minor, bringing together courses in several fields that address religion as a cultural, logical, or expressive phenomenon in human history. A religious studies major is available through the self-designed major program. Religious studies courses at UNH avoid theological or confessional biases and emphasize multicultural tolerance and diversity.

For more information, consult the director:

Funso Afolayan
Department of History
415 Horton Social Science Center
(603) 862-3026
e-mail funso.afolayan@unh.edu.

Requirements

Code	Title	Credits
RS 483W/ HIST 483	History of World Religions	4
RS 699	Seminar in Religious Studies (to be taken in the senior year)	4
Select at least three courses either cross-listed in religious studies or otherwise relevant to the study of religion (by student's petition to the program director)		12
Total Credits		20

Students especially interested in religious studies are encouraged to combine the minor with further pertinent coursework in one of the established departments contributing to the program: history, philosophy, anthropology, and English. The religious studies self-designed major involves seven courses beyond the minor requirements, at least five of which are 600 level or higher. The program director can aid in advising such a major program.

Courses ordinarily have some degree of focus on issues related to the academic study of religion, conceptualizing religion, or religious influences as a principal problem, asking comparative questions, and/or developing models of cross-cultural usefulness. Courses listed here generally are offered at least once every two years:

Code	Title	Credits
Historical-Cultural		
RS 483W/ HIST 483	History of World Religions	4
HIST 585	Medieval Islam	4
HIST 587	History of Africa from the Earliest Times to 1870	4
HIST #589	Islam in Africa	4
HIST 642	Saints, Sinners, and Heretics: Europe in the Age of Religious Reform	4

Theoretical

PHIL 417	God, Religion, and the Meaning of Life	4
ANTH 616	Religion, Culture, and Society	4
RS 699	Seminar in Religious Studies	4

Textual

ENGL 518	Bible as Literature	4
RS/HIST 601	Seminar in Religious Texts	4

Interested students also should be alert for special topics courses in history (HIST 600 Explorations), English, anthropology (ANTH 500 Peoples and Cultures of the World), religious studies (RS 600 Special Topics), and other disciplines that might be relevant to the study of religion.

Students interested in the religious studies minor should see the director to fill out an intent-to-minor form by the beginning of their junior year.

Humanities (HUMA)

The humanities program examines the fundamental questions and issues of human civilization. Through studying diverse texts in the arts, music, literature, history, philosophy, and science, students seek answers to questions that thoughtful human beings must address in the course of their lives. Whether these questions come from Socrates (What is justice?), from Sir Thomas More (What is obligation to God?), from Raphael (What is beauty?), from Newton (What are the laws of nature?), or from Martin Luther King, Jr. (What is freedom?), they direct our attention to enduring human concerns and to texts that have suggested or illustrated the most profound and powerful answers. The humanities program is housed in the Department of Classics, Humanities, and Italian Studies.

<https://cola.unh.edu/classics-humanities-italian-studies>

Programs

- Humanities Dual Major (p. 81)
- Humanities Minor (p. 82)

Faculty

<https://cola.unh.edu/classics-humanities-italian-studies/faculty-staff-directory>

Humanities Dual Major

<https://cola.unh.edu/classics-humanities-italian-studies/program/ba/humanities-dual-major>

Description

The dual major in humanities is structured in such a way that students can focus on a chosen primary major while taking advantage of the humanities program curriculum and its emphasis on analytical writing, critical thinking, and well-rounded interdisciplinary cultural knowledge. Students combine our curriculum with another, disciplinary major that allows them to pursue a narrower field of study in some depth. The dual major in interdisciplinary humanities offers students a set of tools and skills so they can understand and forge our 21st century world. Its

curriculum provides structure, progression, and rigor. Citizens of the 21st century need to know how to analyze texts and navigate cultures. That is why the humanities are essential to the lives of educated people.

Requirements

The humanities dual major consists of a minimum of 32 credits of academic work, with a minimum grade of C-. Students cannot declare the dual major until they have declared a primary major. They must have a GPA of 2.75 to be accepted to the dual major program.

Code	Title	Credits
Core Requirements: Four Core Courses (16 Credits)		
HUMA 500	Critical Methods in the Humanities ¹	
Select EITHER two of the following team-taught courses		
HUMA 510A/510B/510C	Ancient World: An Interdisciplinary Introduction	
HUMA 511A/511B/511C/511D	Medieval World: An Interdisciplinary Introduction	
HUMA 512A/512B/512C/512D	Renaissance and Early Modern: An Interdisciplinary Introduction	
HUMA 513A/513B/513C/513D	Modern World: An Interdisciplinary Introduction	
HUMA 514A/514B/514C/514D	20th Century, 1900-1945: An Interdisciplinary Introduction	
HUMA 515A/515B/515C/515D	20th Century, 1945-1999: An Interdisciplinary Introduction	
OR one team-taught course PLUS		
HUMA 401/401W	Introduction to the Humanities	
Discovery Program Capstone		
Select EITHER		
HUMA 700	Seminar (preferably during junior or senior year) ²	
OR		
HUMA 798 & HUMA 799	Research Seminar and Research Seminar ³	
Additional Requirements (16 Credits)		
Select four area courses in HUMA (500 level or above) from at least three of five areas of disciplinary focus ⁴		

¹ Students will be made acquainted with the methods and technology required for research in humanities.

² This seminar provides an opportunity for in-depth reading, viewing, and/or listening to texts and artifacts. The emphasis is on the multiple perspectives and methodologies that can be brought to bear upon these works from several humanistic disciplines.

³ Each student participates in the research tutorial (for a total of 6 credits) throughout the senior year. The tutorial provides a context within which students may discuss and receive direction in the course of completing a major research paper, the senior thesis. At the end of the second semester, students present their research to the faculty and their fellow students.

⁴ Selected with the advice and approval of each student's major adviser or the program coordinator. These offerings should bear some relation to the student's particular interests and senior research paper, as seems appropriate in each individual case.

The required minimum overall GPA in major coursework is 2.0.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

Humanities Minor

<https://cola.unh.edu/classics-humanities-italian-studies/program/minor/humanities>

Description

There has never been a more exciting time to be human—or has there? What exactly does it mean to be a human being in the twenty-first century? How can you get the most out of your humanity? Find out by minoring in the humanities. It can help prepare you for a life you may not have considered, in ways you've never imagined.

Requirements

The humanities minor consists of the following courses:

Code	Title	Credits
Select two courses (8 credits) of the following sequence:		8
HUMA 510A/510B/510C	Ancient World: An Interdisciplinary Introduction	
HUMA 511A/511B/511C/511D	Medieval World: An Interdisciplinary Introduction	
HUMA 512A/512B/512C/512D	Renaissance and Early Modern: An Interdisciplinary Introduction	
HUMA 513A/513B/513C/513D	Modern World: An Interdisciplinary Introduction	
HUMA 514A/514B/514C/514D	20th Century, 1900-1945: An Interdisciplinary Introduction	
HUMA 515A/515B/515C/515D	20th Century, 1945-1999: An Interdisciplinary Introduction	
Select two courses (8 credits) from other humanities program courses, one of which should be at the 600 level		8
HUMA 700	Seminar (or another approved course)	4
Total Credits		20

International Affairs (IA)

The international affairs program offers undergraduate students the opportunity to pursue a dual major or a minor in international affairs (IA). The dual major and minor pair with any primary major in any college at UNH. The IA program adds an international dimension to the primary major and expands career opportunities in a global, interdependent world. IA courses core courses are interdisciplinary, taught by faculty with expertise in international studies from around the university. Required IA courses and IA elective courses help students appreciate complex interconnections among nations and peoples and equip them with the analytical skills, cultural competence, and global perspectives needed for careers in the public, private and nonprofit sectors.

<https://cola.unh.edu/international-affairs>

Programs

- International Affairs Dual Major (p. 82)
- International Affairs Minor (p. 86)

Faculty

<https://cola.unh.edu/international-affairs/people>

International Affairs Dual Major

<https://cola.unh.edu/international-affairs/program/international-affairs-dual-major>

Description

The international affairs (IA) dual major can complement and add a global dimension to any other major at UNH. The completion of the dual major requires no additional credits for graduation beyond the 128 required of all UNH students. All coursework required for international affairs must be completed with a grade of C or better. For information, contact the International Affairs Program Assistant (<https://cola.unh.edu/international-affairs/contact-us>).

Students who wish to declare international affairs dual major must earn a C or better in IA 401, have declared a primary major, and have a 2.5 cumulative grade-point average. Students are expected to maintain at least a 2.5 grade-point average, the minimum required for study abroad at UNH.

Note:

Participation in the international affairs dual major and minor is open to ALL students at UNH. For instance, the Department of Civil Engineering has developed a dual-major program in civil engineering and international affairs. Students do not need to have pre-existing skills in a foreign language before coming to UNH. For more information about the civil engineering/IA program, contact Ray Cook at ray.cook@unh.edu.

Requirements

Code	Title	Credits
Required Core Courses		
IA 401	International Perspectives	4
IA 501	Global Issues in International Affairs	4
IA 701	Seminar	4
Select one of the following:		4
ECON 401	Principles of Economics (Macro)	
ECON 402	Principles of Economics (Micro)	
EREC 411	Environmental and Resource Economics Perspectives	
International Affairs Language Requirement ¹		variable
International Experience - Study Abroad ²		variable
Electives - see list below		
Select one course from each category list, plus one more course from either category (3 courses total):		

Politics, Culture, & History

Science, Environment, Economy, & Health

¹ International Affairs Language Requirement

IA majors must demonstrate functional reading, writing, and speaking ability equivalent to a second-year, second-semester college level (504). Students may take placement tests to establish proficiency. Native second language speakers are exempt from this requirement - speak to an IA advisor. Language study may be pursued at UNH; through study abroad in the summer, J-term, or academic year; or through transfer credits from other institutions with the permission of an IA advisor.

² International Experience - Study Abroad

Minimum of eight weeks. The IA international experience is typically conducted in a country or region that uses the student's second language. Students may pursue their international experience elsewhere after consultation with an IA advisor.

The international experience (usually completed in the junior year) is completed before taking IA 701 in the senior year. Students may spend an academic year, semester, or summer in an academic institution, in an internship with a private or public organization, or in purposeful travel/research. Students must meet with the Study Abroad advisors at the Global Education Center (<https://www.unh.edu/global/education-abroad>) to plan their international experience, typically a year in advance of study abroad.

Electives (three total)

IA Dual Majors take three electives, one course from each category list: Politics, Culture, and History and from Science, Environment, Economy and Health. IA dual majors choose their 3rd elective from either list. IA electives are offered across the university and may be used to fulfill Discovery, Honors Program and/or other minor requirements. Up to 8 credits may be double counted between your primary major and IA. Additional courses taken in the primary major may count for IA if these courses do not count towards your primary major requirements. Electives may be taken at UNH, on the international experience, or transferred from another university with permission of your IA advisor.

Code	Title	Credits
Politics, Culture, & History Electives		
ANTH 411	Global Perspectives on the Human Condition: An Introduction to Anthropology (or ANTH 411H)	
	or ANTH 411 Global Perspectives on the Human Condition: An Introduction to Anthropology	
ANTH 500	Peoples and Cultures of the World (area specific) ¹	
ANTH 501	World Archaeological Cultures	
ANTH #515	Anthropology and Contemporary Issues	
ANTH 616	Religion, Culture, and Society	
ANTH 640	Anthropology of Islam: Muslims' everyday lives in contemporary communities	
ANTH 697	Special Topics	
ANTH 750	Islam and Gender: Gendered Lives of Muslims	
ARTS 674	Greek Art and Architecture	
ARTS 675	Roman Art and Architecture	
ARTS 678	Romanesque and Gothic Art	
ARTS #679	Northern Renaissance Art I	
ARTS #680	Northern Renaissance Art II	
ARTS 681	Early Renaissance Art	

ARTS 682	The High Renaissance
ARTS 683	Baroque Art
ARTS #684	Baroque Art in Northern Europe
ARTS 687	Nineteenth-Century European Art
ARTS 688	Histories of Late 19th & 20th Century European Modernism
CHIN 425	Introduction to Chinese Culture
CHIN 521	What does it Mean to be Modern? Lenses of Modern Chinese Literature and Film
CLAS 405	Introduction to Greek Civilization
CLAS 406	Introduction to Roman Civilization
CLAS #421	Major Greek Authors in English
CLAS 510	Building Rome
CLAS 520D	Classical Society, Politics and Ethics: Greek and Roman Religion
CLAS 550A	Identities and Difference in the Ancient World: Greek and Roman Women
CLAS 604	Golden Age of Rome
FREN 525	A Road Trip Through France: Baguette, Brie, Bordeaux, and Beyond
FREN #526	Introduction to Francophone Cultures
FREN #625	Cuisine, Culture, and the Creation of French Identity
FREN 651	Readings in French Literature
FREN 652	Readings in French Literature
	or FREN #65 Honors/Readings in French Literature
FREN 675	Topics in French Civilization
FREN 676	Topics in Francophone Culture
FREN 677	France in the European Union
FREN 762	17th Century French Literature
FREN 765	18th Century French Literature
GEOG 401	Regional Geography of the Western World
	or GEOG 401 Honors/Regional Geography of the Western World
GEOG 402	Regional Geography of the Non-Western World
	or GEOG 402 Honors/Regional Geography of the Non-Western World
GEOG #514	Geography of the United States and Canada
GEOG #520	Geography of Latin America and the Caribbean
GEOG 530	Geography of China
GEOG 540	Geography of the Middle East
GEOG 550	Geography of Sub-Saharan Africa
GEOG 584	Political Geography
GEOG 796	Special Topics
GERM 521	Major German Authors in English
GERM 524	German Cinema
	or GERM #5: Honors/Special Topics in German Film
GERM 525	Introduction to German Culture and Civilization
	or GERM 525 Honors/Introduction to German Culture and Civilization
GERM #601	Introduction to German Literature
GERM 797	Special Studies in German Language and Literature
GERM 798	Special Studies in German Language and Literature
HIST 421	World History to the 16th Century

HIST 422	World History in the Modern Era or HIST 422H Honors/World History in the Modern Era	HIST 656	Twentieth Century Europe
HIST 425	Foreign Cultures (area specific; or HIST 425H) ¹ or HIST 425W Foreign Cultures	HIST 662	England in the Tudor and Stuart Periods
HIST 435	Origins of European Society (or HIST 435H) or HIST 435V Origins of European Society	HIST 664	Russia: Modernization through Soviet Empire
HIST 436	Europe and the Modern World (or HIST 436H) or HIST 436V Europe and the Modern World	HIST #669	Germany from 1918 to Present
HIST 440D	Honors/Citizens and Persons	HIST 675	Early History of Ancient Greece
HIST 440F	Honors/Islam, Art, and the Past	HIST 676	Classical and Hellenistic Greek Worlds
HIST #444B	Revolutions Across the Atlantic	HIST 677	Roman Republic
HIST #444C	World War Propaganda in Britain and the United States	HIST 678	Roman Empire
HIST 444D	Slavery and Society in Pre-Colonial Africa	HIST #681	Society and Culture in 20th-Century China
HIST 444J	Global Citizenship: In Pursuit of Liberty	HIST 684	History of Southern Africa since 1652
HIST 483/ RS 483W	History of World Religions or HIST 483V History of World Religions	HIST 690	Seminar: Historical Expl
HIST 498	Explorations of Historical Perspectives	HIST 797	Colloquium
HIST 532	Modern Latin America	IA 699	Topics ¹
HIST 537	Espionage and History	HUMA 510A	Ancient World: An Interdisciplinary Introduction
HIST 538	Modern European War and Society: The Napoleonic Wars to World War II	HUMA 510B	Ancient World: An Interdisciplinary Introduction
HIST 560	Modern Britain	HUMA 510C	Ancient World: An Interdisciplinary Introduction
HIST 563	Introduction to Russian Culture and Civilization	HUMA 510D	Ancient World: An Interdisciplinary Introduction
HIST 564	Russia and the Soviet Union in World War II	HUMA 511A	Medieval World: An Interdisciplinary Introduction
HIST 565	Women in Modern Europe	HUMA 511B	Medieval World: An Interdisciplinary Introduction
HIST 566	Comparative Revolutions: How to Make a Revolution in the World before Marx	HUMA 511C	Medieval World: An Interdisciplinary Introduction
HIST 575	Ancient Near East	HUMA 511D	Medieval World: An Interdisciplinary Introduction
HIST 579	History of China in Modern Times	HUMA 512A	Renaissance and Early Modern: An Interdisciplinary Introduction
HIST 580	History of Japan in Modern Times	HUMA 512B	Renaissance and Early Modern: An Interdisciplinary Introduction
HIST 585	Medieval Islam	HUMA 512C	Renaissance and Early Modern: An Interdisciplinary Introduction
HIST 586	Islam in the Modern Age, 15th Century to present	HUMA 512D	Renaissance and Early Modern: An Interdisciplinary Introduction
HIST 587	History of Africa from the Earliest Times to 1870	HUMA 513A	Modern World: An Interdisciplinary Introduction
HIST 588	History of Modern Africa: 1870 to the Present	HUMA 513B	Modern World: An Interdisciplinary Introduction
HIST #589	Islam in Africa	HUMA 513C	Modern World: An Interdisciplinary Introduction
HIST 595	Explorations	HUMA 513D	Modern World: An Interdisciplinary Introduction
HIST 596	Explorations	HUMA #514A	20th Century, 1900-1945: An Interdisciplinary Introduction
HIST 600	Explorations ¹	HUMA #514B	20th Century, 1900-1945: An Interdisciplinary Introduction
HIST #602	Holocaust: The War on Europe's Jews	HUMA #514C	20th Century, 1900-1945: An Interdisciplinary Introduction
HIST 609	Special Topics in American Legal History	HUMA 514D	20th Century, 1900-1945: An Interdisciplinary Introduction
HIST 619	Foreign Relations of the United States	HUMA #515A	20th Century, 1945-1999: An Interdisciplinary Introduction
HIST 620	Foreign Relations of the United States	HUMA #515B	20th Century, 1945-1999: An Interdisciplinary Introduction
HIST 632	Latin American History: Topics ¹	HUMA #515C	20th Century, 1945-1999: An Interdisciplinary Introduction
HIST 633	Medieval England 800-1300	HUMA #515D	20th Century, 1945-1999: An Interdisciplinary Introduction
HIST 640	Holy War in the Holy Land: The Medieval Crusades	HUMA 700	Seminar
HIST 641	Europe after the Black Death	ITAL 425	Introduction to Italian Studies or ITAL 425H Honors/Introduction to Italian Studies
HIST 642	Saints, Sinners, and Heretics: Europe in the Age of Religious Reform		
HIST #645	19th Century European Great Powers - Diplomacy and International Law		
HIST 652	Topics in European Intellectual History ¹		

ITAL 444A	Italians Come to America: Representing Emigration and Immigration on Both Sides of the Atlantic	POLT 569	The Rise of China
ITAL 444B	Mamma Mia! Italian Motherhood from the Virgin Mary to Carmela Soprano	POLT 570	Counterterrorism: Nation states' responses to terrorist activity
ITAL 500	Selected Topics in World Literature	POLT 588	Selected Topics in Comparative Politics
ITAL 521	Medieval and Renaissance Italian Culture	POLT 592	Selected Topics in International Politics
ITAL 522	Modern and Contemporary Italian Culture	POLT 740	States and Societies in the Middle East
ITAL 525	Italian Cinema	POLT 748	Food and Wine Politics
ITAL 651	Introduction to Italian Culture and Civilization I: Middle Ages, Renaissance, Baroque	POLT 760	Theories of International Relations
ITAL 652	Introduction to Italian Culture and Civilization II: Age of Enlightenment, Romanticism, Modernism	POLT 778	International Organization
ITAL 681A	Interdisciplinary Field Seminar in Italian Culture: Ancient and Medieval Italy	POLT 797E	Seminar in International Politics
ITAL 681B	Interdisciplinary Field Seminar in Italian Culture: Ancient and Medieval Italy	or POLT 798E	Seminar in International Politics
ITAL #682A	Interdisciplinary Field Seminar in Italian Culture: Early Modern and Contemporary Italy	PORT 526	Luso-Brazilian Culture and Civilization
ITAL #682B	Interdisciplinary Field Seminar in Italian Culture: Early Modern and Contemporary Italy	RUSS #425	Introduction to Russia: Contemporary Society and Culture
JPN 425	Introduction to Japanese Culture and Civilization	or RUSS 425W	Topics in Russian Culture and Society in Moscow
or JPN 425H	Honors/Introduction to Japanese Culture and Civilization	RUSS #521	Devils, Deities, and Madness in Russian Literature
LING 606	Languages of the World	or RUSS 521	Devils, Deities, and Madness in Russian Literature
LLC #444C	World of Salvador Dali	RUSS #522W	Morality, Sex and Revolution in Russian Literature
LLC 535	Professional Culture in the European Union - Case Study/Germany	RUSS 525	Russia: Mythology and Propaganda
LLC 535A	Professional Culture in European Union - - Case Study: Germany	or RUSS 525	Russia: Mythology and Propaganda in Moscow
LLC 535B	Professional Culture in Latin America - Case Study: Mexico and Brazil	RUSS 691	Readings in Russian Literature
LLC 535C	Professional Culture in Asia -- Case Study: China and Japan	SOC 444A	Society in the Arctic
PHIL 520	Introduction to Eastern Philosophy	SOC 597	Special Topics
PHIL 620	20th Century European Philosophy	SOC 656	Terrorism
POLT 403	United States in World Affairs (or POLT 403H)	SOC 693	Global Social Change
or POLT 403I	United States in World Affairs	SPAN 525	Introduction to Spanish Cultures
POLT #522	Dissent and the Political Community	SPAN 526	Introduction to Latin American Cultures
POLT #543	The Politics of Costa Rica	SPAN 647	Hispanic Cultural Studies
POLT 544	Of Dictators and Democrats	SPAN 651	Introduction to Spanish Literature and Thought
POLT 545	People and Politics in Asia	SPAN 652	Introduction to Spanish Literature and Thought
POLT 546	Wealth and Politics in Asia	SPAN #653	Introduction to Latin American Literature and Thought
POLT 550	Comparative Government and Society	SPAN 654	Introduction to Latin American Literature and Thought
POLT 552	Contemporary European Politics	Science, Environment, Economy, & Health Electives	
POLT 554	Revolution and Protest in Latin America	ACFI 703	International Financial Management
POLT #555W	Politics in Russia	ANTH 440A	Honors/Medicine and Culture: Science, Technology and the Body
POLT 556	Politics in China	ANTH 610	Medical Anthropology: Illness and Healing
POLT 558	Government and Politics of Canada	or ANTH 610	
POLT 559	Comparative Politics of the Middle East	ANTH #627	Urbanization in Africa
POLT 560	World Politics	ANTH 680	
POLT 562	Strategy and National Security Policy	ANTH 685	Gender, Sexuality and HIV/AIDS in Sub-Saharan Africa
POLT #565	United States Policy in Latin America	ANTH 695	Globalization and Global Population Health
POLT 566	Asian Challenge to Global Order	BIOL 520	Our Changing Planet
		CEE 520	Environmental Pollution and Protection: A Global Context
		CHE 410	Energy and Environment
		or CHE 410H	Honors/Energy and Environment
		CLAS 540A	Environment, Technology and Ancient Society: Sustaining Ancient Rome Ecology and Empire
		CLAS 540B	Environment, Technology and Ancient Society: Roman Houses, Domestic Space and Public Life

CLAS 540C	Environment, Technology and Ancient Society: Tech, Tools and Engineering in the Ancient World	NR 415	Natural Resources Field Methods
CMN 696W	Seminar in Media Studies	NR 435	Contemporary Conservation Issues and Environmental Awareness
ECOG 685	EcoGastronomy Study Abroad	or NR 435H	Honors/Contemporary Conservation Issues and Environmental Awareness
ECON 645	International Economics	NR 502	Forest Ecosystems and Environmental Change
ECON 655	Innovation in the Global Economy	NR 606	International Energy Topics
ECON 668	Economic Development	NR 720	International Environmental Politics and Policies for the 21st Century
ECON #669	Women and Economic Development	NR 784	Sustainable Living - Global Perspectives
ECON 698	Topics	NURS 794	Special Topics
ECON 746	International Finance	or NURS 794H	Special Topics
ECON #747	Multinational Enterprises	PHIL 424	Science, Technology, and Society
ENGL/LING 606	Languages of the World	or PHIL 424H	Honors/Science, Technology and Society
EREC 444	The New Pirates of the Caribbean	POLT 444	Politics and Policy in a Warming World
ESCI 405	Global Environmental Change	POLT 561	Introduction to International Political Economy
ESCI 444	Water - How Much is Enough?	POLT 563	The Global Information Grid's Disruptive Impact on Government, Politics, and Society
GEOG 560	Geography of Natural Hazards	POLT 567	Politics of Global Resources
GEOG 581	Human Geography	POLT 568	Introduction to Intelligence
GEOG 582	Global Trade and Local Development	or POLT 568H	Introduction to Intelligence
or GEOG 582	Global Trade and Local Development	POLT 592	Selected Topics in International Politics
GEOG 590	Field Research	POLT 751	Comparative Environmental Politics and Policy
GEOG 595	Statistics for Spatial Science	POLT 762	International Political Economy
GEOG 670	Climate and Society	POLT 780	International Environmental Politics, Policy, and Law
GEOG 673	Political Ecology	SOC 565	Environment and Society
GEOG 685	Geography of Population and Development	SOC 665	Environmental Sociology
GEOG 686	World Economy and Globalization	SW 625	Social Welfare Policy in a Global Context
GEOG #690	Geography of Third World Development	TOUR 510	Tourism and Global Understanding
GEOG 796	Special Topics		
HDFS 772	International Approaches to Child Advocacy		
HDFS 773	International Perspectives on Children and Families		
or HDFS #77	International Perspectives on Children and Families		
HIST 522	Science in the Modern World		
HIST 654	Topics in History of Science		
HIST 789	Seminar in the History of Science		
HMG 570	International Food and Culture		
HMG 756	International Franchising		
HMG 771	International Wine and Beverage		
HMP 440A	Honors/Global Public Health Issues		
HMP 444A	Global Public Health Issues		
HMP 715	Environmental Health		
ITAL 635	Food Aesthetics in Italy		
ITAL 645	Food Technology in Italy		
ITAL 675	Special Topics in Italian Studies		
JUST 405	Technology, Crime, and Society: A Forensic Exploration of High-Tech and Digital Crime		
LING 779	Linguistic Field Methods		
MGT 755	International Management		
MKTG/HMG 756	International Franchising		
MKTG 760	International Marketing		
MKTG 798	Topics		

¹ Check with IA Program Assistant

International Affairs Minor

<https://cola.unh.edu/international-affairs/program/minor/international-affairs>

Description

The international affairs (IA) minor adds a recognized distinction and global context to any primary major in any college at UNH. It was developed for those students who, due to the demands of their primary majors, are unable to complete the more rigorous requirements of the IA dual major.

Students who wish to declare the international affairs minor must earn a C or better in all IA course requirements and have a 2.5 cumulative grade-point average. The minor is declared when the fifth course is being taken. The student should obtain the declaration form from the IA program assistant.

Requirements

Code	Title	Credits
Required Core Courses		
IA 401	International Perspectives	4
Select one of the following:		4
ECON 401	Principles of Economics (Macro)	
ECON 402	Principles of Economics (Micro)	
EREC 411	Environmental and Resource Economics Perspectives	
International Affairs Language Requirement ¹		4
International Experience - Study Abroad ²		
Electives		
Choose one course from each category list (2 courses total): ³		8
Politics, Culture, & History		
Science, Environment, Economy, & Health		
Total Credits		20

¹ International Affairs Language Requirement

Functional reading, writing, and speaking ability equivalent to a first-year, second-semester college level (402). Students may take placement tests to establish equivalency, include language study on the international experience, or transfer credits from other institutions.

² International Experience - Study Abroad

Minimum of three weeks (or 4 credits). The international experience may include study (<https://www.unh.edu/global/education-abroad>), directed research, internship or service/volunteer experience abroad. Students should plan with the Study Abroad Advisors to plan for their international experience well in advance.

³ See elective category lists under IA dual major heading. Elective courses may count towards Discovery, Honors, Writing Intensive, and major requirements.

Italian Studies (ITAL)

The Italian studies program offers courses in Italian language, culture, literature, history, and cinema, as well as courses on Italian American culture. Italian courses can also be used to fulfill Discovery Program requirements and the bachelor of arts foreign language proficiency requirement. In addition to the Italian studies major, an Italian studies minor is available.

The program provides opportunities both to achieve high competence in Italian language and culture and to apply these knowledge skills to other disciplines. The Italian studies program encourages independent and innovative thinking and research so that students may pursue and achieve individualized goals while they prepare for the challenges of thriving in the world community.

Study Abroad

The Italian studies program allows students to register for approved study abroad programs through the University.

<https://cola.unh.edu/classics-humanities-italian-studies>

Programs

- Italian Studies Major (B.A.) (p. 87)
- Italian Studies Minor (p. 88)

Faculty

<https://cola.unh.edu/classics-humanities-italian-studies/faculty-staff-directory>

Italian Studies Major (B.A.)

<https://cola.unh.edu/classics-humanities-italian-studies>

Description

The Italian studies program offers courses in Italian language, culture, literature, history, and cinema, as well as courses on Italian American culture. Italian courses can also be used to fulfill Discovery Program requirements and the Bachelor of Arts foreign language proficiency requirement. The program provides opportunities both to achieve high competence in Italian language and culture and to apply these knowledge skills to other disciplines. The Italian studies program encourages independent and innovative thinking and research so that students may pursue and achieve individualized goals while they prepare for the challenges of thriving in the world community.

Requirements

The Italian studies major curriculum consists of 10 courses (40 credits) that include:

Code	Title	Credits
ITAL 632	Advanced Conversation and Composition II (or equivalent proficiency 0-24)	4
Select sixteen credits minimum at 600-level or above (including ITAL 631 and ITAL 632)		16
Select a minimum of one semester approved immersion experience abroad		
Select two complementary courses from approved complementary disciplines of classics and humanities (courses from other disciplines must be approved by advisor)		8
Select one of the following Discovery capstone requirements:		4
Thesis:		
ITAL 795	Independent Study in Italian Language and Literature	
	or ITAL 796 Independent Study in Italian Language and Literature	
Seminar:		
Select one 700-level ITAL course		
Internship:		
ITAL 595A	Practicum	
Select any additional ITAL courses needed to reach 40 credits		8
Total Credits		40

Additional Requirements

- The minimum grade for each major course is a C.
- Once students declare the Italian studies major, they must maintain a 2.5 cumulative grade point average in order to fulfill the study abroad requirement.
- Italian studies majors may use two major-required courses to satisfy two Discovery category requirements.

List of POTENTIAL Complementary Discipline Elective Courses

This list of electives is not exhaustive. Courses from other departments can only be used to satisfy the Italian Studies major requirements after consultation with and subject to the approval of the student's advisor.

Code	Title	Credits
ARTS 574	Introduction to Architectural History	4
ARTS #677	Early Medieval Art	4
ARTS 678	Romanesque and Gothic Art	4
ARTS 681	Early Renaissance Art	4
ARTS 682	The High Renaissance	4
ARTS 683	Baroque Art	4
ARTS #685	Graphic Art of the Renaissance and Baroque Periods	4
ARTS 695I	Problems in Visual Arts/Italy	4
ECON 645	International Economics	4
EDUC 500	Exploring Teaching	4
ENGL 619	Critical Approaches to Literature	4
ENGL 651	Comparative Literature	4
HIST 500	Introduction to Historical Thinking	4
HIST 501	Medieval Military History	4
HIST 521	Origins of Modern Science	4
HIST #540	Foundations of Medieval History: 300-1300 CE	4
HIST 565	Women in Modern Europe	4
HIST 640	Holy War in the Holy Land: The Medieval Crusades	4
HIST 641	Europe after the Black Death	4
HIST 642	Saints, Sinners, and Heretics: Europe in the Age of Religious Reform	4
HIST 652	Topics in European Intellectual History	4
LLC 551	Comparative Literature: Masterpieces of World Literature I	4
LLC #552	Comparative Literature: Masterpieces of World Literature II	4
LLC 791	Methods of Foreign Language Teaching	4
LING 605	Intermediate Linguistic Analysis	4
MUSI 501	History and Literature of Music	3
MUSI 502	History and Literature of Music	3
MUSI 715	Survey of Opera	3
NUTR 595	Mediterranean Diet and Culture	4
PHIL 570	Ancient Philosophy	4
PHIL 580	Modern Philosophy from Descartes to Kant	4
PHIL 620	20th Century European Philosophy	4
POLT 552	Contemporary European Politics	4
POLT 560	World Politics	4

Italian Studies Minor

<https://cola.unh.edu/classics-humanities-italian-studies/program/minor/italian-studies>

Description

The Italian studies minor provides students with the opportunity to explore the language, culture, and society of Italy through an interdisciplinary program. The minor is advantageous for applicants to graduate and professional schools in Italian, modern languages, linguistics, film, history, theater, philosophy, and law. It is also a valuable asset for careers in economics, international affairs, international business, fashion, teaching, communications, translation, interpretation, government, and Foreign Service.

The Italian studies minor is offered by the Department of Classics, Humanities, and Italian Studies.

Requirements

The minor consists of five courses.

Code	Title	Credits
Five ITAL elective courses ¹		20
Demonstrate linguistic proficiency at the level of intermediate Italian (ITAL 504 Intermediate Italian II or equivalent).		
Total Credits		20

¹ One course from a related field of study may be counted towards the minor, subject to the approval of the Italian studies advisor.

- All courses for the Italian studies minor must be completed with a minimum grade of C.
- New students will be assigned to the proper course in consultation with the section coordinator.

Justice Studies (JUST)

Justice studies students think critically about issues that are part of the national conversation concerning justice: race and policing, cybercrime, the opioid crisis, juvenile delinquency, sexual and interpersonal violence, immigrants and refugees, wrongful convictions and bullying. All majors do applied or research internships in New England or Washington. Many spend a semester studying in Budapest and participating in Mock Trial. Our graduates excel in various positions including FBI agents, federal probation and patrol, police officers from local to federal levels, victim/witness advocates, prison wardens, police prosecutors, attorneys and juvenile justice advocates.

<https://cola.unh.edu/justice-studies>

Programs

- Justice Studies Dual Major (p. 89)
- Justice Studies Minor (p. 90)
- Forensics Minor (p. 90)

Faculty

<https://cola.unh.edu/justice-studies-program/faculty-staff-directory>

Justice Studies Dual Major

<https://cola.unh.edu/justice-studies/program/justice-studies-dual-major>

Description

The justice studies dual major is an interdisciplinary area that blends topics from humanities departments (e.g., philosophy), social science departments (e.g., psychology, sociology, women's studies), departments that include both humanities and social science faculty (history, political science), and professionally oriented departments (education, family studies, social work). Topics studied include courts, family violence, rights, substance abuse, juvenile justice, school law, children as witnesses, hate crimes, and community policing. Students will be required to choose a first major before they will be able to declare justice studies as a second major. The goal is to produce graduates who have a higher level of knowledge about law and justice in American society and in the world so that they will mature into more knowledgeable and effective citizens. The justice studies dual major is intended for students who are looking for careers in the justice system or who seek graduate training in law or social sciences and humanities related to the law.

Requirements

The dual major in justice studies requires students to take a minimum of eight courses (32 credits), each completed with a grade of a C- or better. Students are required to have a grade-point average of a 2.5 or better before they can be accepted into the program. The dual major cannot be declared until after a first major has been declared. Students can count no more than two courses for both the first major and dual major, and students are not allowed to take more than two courses from any one department (except for JUST). An unlimited number of dual major courses can be used to satisfy Discovery requirements.

Code	Title	Credits
Required Courses		
JUST 401	Introduction to Justice Studies	4
JUST 501	Research Methods	4
JUST 601	Internship (seniors only)	4
or JUST 602	Research Internship	
JUST 701	Senior Seminar (writing-intensive course) ¹	4
Select one of the following:		4
POLT 407	Law and Society	
POLT 507	Politics of Crime and Justice	
SOC 515	Introductory Criminology	
Elective Courses		
Select three elective courses from the justice studies approved course list		12
Total Credits		32

¹ This course fulfills the program capstone requirement.

Elective Courses

This list is approved and published yearly by the Justice Studies Executive Committee.

Code	Title	Credits
ANTH 550	Introduction to Forensic Anthropology	4
ANTH 697	Special Topics (Only topic: Culture and Citizenship)	4
BIOL 420	Introduction to Forensic Sciences	4
CMN 637	Controversy and Reasoning in Law	4
CMN #765	Police Talk	4
EDUC 767	Students, Teachers, and the Law	4
HDFS 772	International Approaches to Child Advocacy	4
HDFS 776	Children, Adolescents and the Law	4
HDFS 794	Families and the Law	4
HMP 744L	Health Law	2
HIST 440A	Martin Luther King, Jr., and the Struggle for Racial Justice	4
HIST 440C	Honors/Collective Guilt and Collective Responsibility in History	4
HIST 440D	Honors/Citizens and Persons	4
HIST 498	Explorations of Historical Perspectives (Before the Museum Ban: Immigration and Law in U.S. History)	4
HIST 509	Law in American Life	4
HIST 609	Special Topics in American Legal History	4
HIST #645	19th Century European Great Powers - Diplomacy and International Law	4
HLS 410	Introduction to Homeland Security	4
HLS 415	Fundamentals of Corporate Security	4
HLS 580	Environmental and Human Security	4
HLS 760	Strategic Planning and Decision Making	4
HMG T 625	Hospitality and Employment Law (only HMG T majors allowed)	4
HUMA 444E	What is a Criminal?	4
HUMA 525	Humanities and the Law	4
INCO 460	Deflategate	4
JUST 405	Technology, Crime, and Society: A Forensic Exploration of High-Tech and Digital Crime	4
JUST 410	Sexual Harassment and Rape Prevention (SHARPP) Peer Advocacy	2
JUST 415	SHARPP Advocacy II	2
JUST 520	Girls Gone Bad: Delinquent Girls in Cultural Context	4
JUST #530	Inside the Courtroom: Torn from the Headlines	4
JUST 550	Mock Trial	4
& JUST 551	and Mock Trial (must take 2 semesters to count as a JS elective)	
JUST 591	Forensic Psychology	4
or PSYC 591	Special Topics	
JUST 595	Special Topics (no more than two courses)	4
JUST 650	Special Studies in Comparative Justice Systems	10
& JUST 651	and Field Studies in the Hungarian Justice System	
JUST 795	Reading and Research (variable credit)	1-4
LLC 540	Film History (Terrorism(s) A Humanistic and Cinematic Outlook)	4

MGT 647	Business Law I (only Business Administration, Accounting, and Business Administration and Management allowed)	4
NR 718	Law of Natural Resources and Environment	3
PHIL 436	Social and Political Philosophy	4
PHIL 635	Philosophy of Law	4
PHIL 660	Law, Medicine, and Ethics	4
PHIL 701	Topics in Value Theory	4
PHIL 740	Advanced Topics in the Philosophy of Law	4
POLT 440A	Honors/Global Justice (Global Justice)	4
POLT 444B	Cruel and Unusual in a Federal System	4
POLT 508	Supreme Court and the Constitution	4
POLT 513	Civil Rights and Liberties	4
POLT 520	Politics, Justice, and Morality	4
POLT #547	Race and Justice in the Americas: Insights from Film, Literature, and Politics	4
POLT 548	Drug Wars	4
POLT 568	Introduction to Intelligence (only when taught by Professor MacPherson)	4
POLT 701	Courts and Public Policy	4
POLT 765	Security Intelligence Study	4
POLT 798B	Seminar in American Politics (only topic: Security Intelligence)	4
PSYC 591 or JUST 591	Special Topics (Forensic Psychology) Forensic Psychology	4
PSYC 755	Psychology and Law	4
PSYC 756	Psychology of Crime and Justice	4
RMP 772	Law and Public Policy in Leisure Services (must have junior/senior status)	4
SOC 525	Juvenile Crime and Delinquency	4
SOC 535	Homicide	4
SOC 620	Drugs and Society	4
SOC 655	Sociology of Law and Justice	4
SOC 656 or POLT 570	Terrorism Counterterrorism: Nation states' responses to terrorist activity	4
SOC 715	Criminological Theory	4
SOC 720	Sociology of Drug Use	4
SOC 780	Social Conflict	4
SW 525	Social Welfare Policy: History of Social and Economic Justice	4
SW 705	Child and Adolescent Risks and Resiliency: Program, Policy and Practice	4
WS 595	Special Topics (Only topics Violence Against Women and Gender and the Law)	1-4

The required minimum overall GPA in major coursework is 2.5.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

Students who are interested in a dual major in justice studies will need to file an Intent to Dual Major form. The form is available in the justice studies office or can be downloaded from the program website at

[cola.unh.edu/justice-studies](http://www.cola.unh.edu/justice-studies) (<http://www.cola.unh.edu/justice-studies>). Program offices are located in Room 206 of Huddleston Hall and are open Monday through Friday from 8 a.m. to 12 p.m. and 1 p.m. to 4:30 p.m. For more information, please contact Ellen Cohn at (603) 862-3197, e-mail ellen.cohn@unh.edu; or Deb Briand at (603) 862-1716, e-mail deborah.briand@unh.edu.

Justice Studies Minor

<https://cola.unh.edu/justice-studies/program/minor/justice-studies>

Description

The justice studies minor is an interdisciplinary program that blends topics from humanities departments (e.g., philosophy), social science departments (e.g., psychology, sociology, women's studies), departments that include both humanities and social science faculty (history, political science), and professionally oriented departments (education, family studies, social work). Topics studied include courts, family violence, rights, substance abuse, juvenile justice, school law, children as witnesses, hate crimes, and community policing.

Requirements

The minor in justice studies requires students to take a total of five courses (20 credits) each with a grade of C- or better in order to complete the program. Students are allowed to "double count" no more than two courses toward their major and minor, and are not allowed to take more than two courses from any one department (except for justice studies).

Code	Title	Credits
Required Courses		
JUST 401	Introduction to Justice Studies	4
Select one of the following:		4
POLT 407	Law and Society	
POLT 507	Politics of Crime and Justice	
SOC 515	Introductory Criminology	
Elective Courses		
Select three elective courses from the justice studies approved course list ¹		12
Total Credits		20

¹ This list is approved and published yearly by the Justice Studies Executive Committee. Departmental offerings that are currently accepted for the minor are listed on the Justice Studies major page.

For program information on the forensics minor, see the Forensics Minor program page.

Forensics Minor

<https://cola.unh.edu/justice-studies/program/minor/forensics>

Description

The forensics minor provides students with the opportunity to explore the different components of forensics through the interdisciplinary study of biology, psychology, sociology, and justice studies. This well-rounded curriculum will enable students to build upon their interests in

justice studies by specializing in an area of increasing importance. Once students have decided to pursue the minor, they are required to meet with the coordinator, academic counselor, or appropriate affiliated faculty adviser at least once per semester for regular review and assessment of their program, learning outcomes, and progress toward the degree.

Requirements

The forensic minor requires five courses (20 credits) drawn from a list of approved courses. Students must receive a grade of a C- or better for a course to count toward the minor requirements. The five courses include:

Code	Title	Credits
Introductory Courses		
JUST 401	Introduction to Justice Studies	4
BIOL 420	Introduction to Forensic Sciences	4
Additional Courses		
Select three of the following:		12
ANTH 550	Introduction to Forensic Anthropology	
JUST 405	Technology, Crime, and Society: A Forensic Exploration of High-Tech and Digital Crime	
JUST/PSYC 591	Forensic Psychology ¹	
SOC 515	Introductory Criminology	
SOC 535	Homicide	
Total Credits		20

¹ If JUST 591 Forensic Psychology or PSYC 591 Special Topics is not being offered, you may take PSYC 755 Psychology and Law, or PSYC 756 Psychology of Crime and Justice, in its place.

Two courses can double count toward your justice studies dual major. These courses are most commonly JUST 401 Introduction to Justice Studies, and SOC 515 Introductory Criminology.

Latin American Studies

Programs

- Latin American Studies Minor (p. 91)

Latin American Studies Minor

<https://cola.unh.edu/interdisciplinary-studies/program/minor/latin-american-studies>

Description

Latin American studies is an interdisciplinary minor encompassing anthropology, communications, economics, geography, history, linguistics, political science, Spanish, and Portuguese. Knowledge of Latin America is especially valuable for students who plan to work in education, international organizations, government, social services, and business, or for graduate studies related to Latin America.

For more information on the Latin American studies minor, contact: Lori Hopkins, lori.hopkins@unh.edu.

Requirements

Students can complete the minor by selecting any five courses (20 credits) representing at least three disciplines.

Code	Title	Credits
HIST 532	Modern Latin America	4
Minimum of high-intermediate level proficiency in Spanish or Portuguese. Select from the following:		0-4
SPAN 504	Intermediate Spanish II	
PORT 504	Intermediate Portuguese II	
equivalent courses or equivalent testing		
Elective courses		12-16

Enrollment in these five courses must follow the guidelines below to count for the minor:

1. At least three courses must be taken in residence.
2. All coursework required for the Latin American minor must be completed with a grade of C or better.
3. Courses for the minor may not be taken pass/fail.

Academic study in Latin America is strongly recommended: Speak with faculty to help you find the study abroad program that best fits your interests. UNH and its affiliates offer several short- and long-term programs throughout Latin America.

Elective Course List

Students should consult with the professor to ensure that the majority of this coursework concentrates on Latin America.

Code	Title	Credits
ANTH 500	Peoples and Cultures of the World (Topic: Latin America)	4
ANTH 501	World Archaeological Cultures (Topic: Mesoamerica)	4
ANTH 674	Archaeological Survey and Mapping in Belize	4
CMN 515	Analysis of News	4
ECON 668	Economic Development	4
ECON #669	Women and Economic Development	4
ENGL 650	Studies in American Literature and Culture (Topic: Latina/o Literature)	4
GEOG 796	Special Topics (Topic: Geography of Narcotics)	4
HIST 425	Foreign Cultures (Topic: Women in Latin America)	4
HIST 532	Modern Latin America	4
HIST 632	Latin American History: Topics	4
LING 790	Special Topics in Linguistics Theory (Topic: Sustainable Languages)	4
POLT 403	United States in World Affairs	4
POLT 548	Drug Wars	4
POLT #565	United States Policy in Latin America	4
POLT 795	Advanced Study (Topic: The Politics of Poverty)	1-4
SPAN 526	Introduction to Latin American Cultures	4
SPAN 631	Advanced Conversation and Composition I	4
SPAN 641	Spanish Phonetics	4
SPAN 647	Hispanic Cultural Studies	4

SPAN 648	The Hispanic World Today	4
SPAN 650	Hispanic Literature and Popular Culture	4
SPAN #653	Introduction to Latin American Literature and Thought	4
SPAN 654	Introduction to Latin American Literature and Thought	4
SPAN 797	Topics in Hispanic Literary and Cultural Studies	4
SPAN 798	Topics in Hispanic Linguistics and Cultural Studies	4
SW 697	Special Topics in Social Welfare (Topic: Social Action in the Dominican Republic)	4
SW 797	Special Topics in Social Welfare (Topic: Social Action in the Dominican Republic)	4

Linguistics (LING)

Linguistics is the study of one of the most important characteristics of human beings—language. It cuts across the boundaries between the sciences and the humanities. The program is an excellent liberal arts major or preprofessional major for education, law, medicine, clergy, and others. It is a particularly appropriate major for students who want to teach English as a second language. Dual majors with a foreign language, international affairs, business administration, and the like are quite feasible.

Students interested in the major or the minor should consult with the program coordinator or with any professor who teaches linguistics courses. To declare a major in linguistics, a student must meet with the linguistics coordinator to design a course of study. Information is available from the Advising Center, Hood House, and at [cola.unh.edu/linguistics](http://www.cola.unh.edu/linguistics) (<http://www.cola.unh.edu/linguistics>).

<https://cola.unh.edu/linguistics>

Programs

- Linguistics Major (B.A.) (p. 92)
- Linguistics Minor (p. 93)
- TESOL Minor (p. 93)

Faculty

<https://cola.unh.edu/linguistics/faculty-staff-directory>

Linguistics Major (B.A.)

<https://cola.unh.edu/linguistics/program/ba/linguistics>

Description

Linguistics is the study of one of the most important characteristics of human beings—language. It cuts across the boundaries between the sciences and the humanities. The program is an excellent liberal arts major or preprofessional major for education, law, medicine, clergy, and others. It is a particularly appropriate major for students who want to teach English as a second language. Dual majors with a foreign language, international affairs, business administration, and the like are quite feasible.

Students interested in the major should consult with the program coordinator or with any professor who teaches linguistics courses. To declare a major in linguistics, a student must meet with the linguistics coordinator to design a course of study. Information is available from the Advising Center, Hood House, and at [cola.unh.edu/linguistics](http://www.cola.unh.edu/linguistics) (<http://www.cola.unh.edu/linguistics>).

Requirements

Code	Title	Credits
LING 405	Introduction to Linguistics	4
LING 605	Intermediate Linguistic Analysis	4
LING 793	Phonetics and Phonology	4
LING 794	Syntax	4
Select one course in historical linguistics of the following:		4
CLAS #506	Introduction to Comparative and Historical Linguistics	
ENGL 752	History of the English Language	
ITAL 733	History and Development of the Italian Language	
LING/ENGL 719	Sociolinguistics Survey	
RUSS 733	History of Slavic Languages and Culture	
SPAN 798	Topics in Hispanic Linguistics and Cultural Studies (Subtopic A)	
Two years of college study (or equivalent) of one foreign language		4-16
Select one of the following cognate specialties:		8
One year study (or equivalent) of a second foreign language from a different language family or subfamily ¹		
PSYC 712	Psychology of Language ²	
Select two elective courses from list below, one of which must be a 600- or 700- level LING or ENGL course ³		8
Discovery Program Capstone Experience:		
LING 779	Linguistic Field Methods	4
or LING 695	Senior Honors	
Total Credits		44-56

¹ Old English may count as the second foreign language if the first foreign language is not in the Germanic family.

² With its prerequisite, either PSYC 512 Psychology of Primates or PSYC 513 Cognitive Psychology

³ History of the English Language or Sociolinguistics can be used as an elective if the other one is used for the Variation/Historical requirement.

Elective Courses

Code	Title	Credits
Anthropology		
ANTH #670	Language and Culture	4
ANTH 795	Reading and Research (Subtopic B)	1-8
ANTH 796	Reading and Research (Subtopic B)	1-8
Communication		
CMN 572	Analysis of Language and Social Interaction	4
CMN 666	Conversation Analysis	4
Communication Science and Disorders		
COMM 738	Linguistics of American Sign Language	4

English		
ENGL 606	Languages of the World	4
ENGL 715	Teaching English as a Second Language: Theory and Methods	4
ENGL 716	Curriculum, Materials and Assessment in English as a Second Language	4
ENGL 719	Sociolinguistics Survey	4
ENGL 727	Issues in Second Language Writing	4
ENGL 752	History of the English Language	4
ENGL 790	Special Topics in Linguistics	4
ENGL 791	English Grammar	4
LLC		
LLC 791	Methods of Foreign Language Teaching	4
Italian		
ITAL 733	History and Development of the Italian Language	4
Latin		
LATN 795	Special Studies (when topic is appropriate)	4
LATN 796	Special Studies (when topic is appropriate)	4
Linguistics		
LING 606	Languages of the World	4
LING 620	Applied Experience in Linguistics	1-4
LING 719	Sociolinguistics Survey	4
LING 790	Special Topics in Linguistics Theory	4
LING 795	Independent Study	1-4
LING 796	Independent Study	1-4
Psychology		
PSYC 512	Psychology of Primates ¹	4
PSYC 513	Cognitive Psychology ¹	4
PSYC 712	Psychology of Language	4
Russian		
RUSS 733	History of Slavic Languages and Culture	4
Spanish		
SPAN 641	Spanish Phonetics	4
SPAN #645	Intro to Spanish Linguistics	4
SPAN 798	Topics in Hispanic Linguistics and Cultural Studies (Subtopic A)	4

¹ Students may count either PSYC 512 Psychology of Primates or PSYC 513 Cognitive Psychology toward the linguistics major or minor, but not both.

Other courses may be substituted, with the permission of the student's adviser and the linguistics committee, when they are pertinent to the needs of the student's program.

The required minimum overall GPA in major coursework is 2.0.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

Linguistics majors may use one major-required course to satisfy one Discovery category requirement.

Linguistics Minor

<https://cola.unh.edu/linguistics/program/minor/linguistics>

Description

Linguistics is the study of one of the most important characteristics of human beings—language. It cuts across the boundaries between the sciences and the humanities. Students interested in the minor should consult with the program coordinator or with any professor who teaches linguistics courses.

Requirements

Code	Title	Credits
LING/ENGL 405	Introduction to Linguistics	4
Select any four linguistics courses approved by the linguistics coordinator		16
Total Credits		20

TESOL Minor

<https://cola.unh.edu/linguistics/program/minor/tesol>

Description

The TESOL minor is a set of courses that are related to teaching English to speakers of other languages. This minor primarily is for students who are interested in teaching English to speakers of other languages, whether that be teaching English abroad or teaching ESL students in U.S. public schools (K-12). It is also appropriate for students who are going into social work or other professions that require regular interaction with nonnative English speakers.

The TESOL minor will not certify students to teach in New Hampshire public schools (K-12). For that purpose, students must complete the ESL certification program that is offered at the graduate level by the Education and English departments. However, the coursework in this minor will provide a very good foundation for students who want to later pursue ESL certification or an M.A. in TESOL at UNH or another institution. English Teaching majors may double-count ENGL 791 towards both their teaching major and the TESOL minor. Teaching majors who intend to later get dual certification in English and ESOL may use ENGL 719/LING 719 and its pre-requisite ENGL 405/LING 405 to satisfy their race requirement.

Requirements

The TESOL minor requires the following five courses:

Code	Title	Credits
ENGL 715	Teaching English as a Second Language: Theory and Methods	4
ENGL 716	Curriculum, Materials and Assessment in English as a Second Language	4
Select one of the following courses on the structure of English:		4
ENGL 791	English Grammar	

ENGL/LING 405	Introduction to Linguistics	
Select two of the following approved TESOL electives:		8
ENGL 791	English Grammar ¹	
ENGL/LING 405	Introduction to Linguistics ¹	
ENGL/LING 719	Sociolinguistics Survey	
ENGL 727	Issues in Second Language Writing (WI)	
ENGL 752	History of the English Language (WI)	
ENGL/LING 790	Special Topics in Linguistics (when offered on a TESOL-related topic (WI))	
LLC 791	Methods of Foreign Language Teaching	
Special topics courses that are related to TESOL ²		
Total Credits		20

¹ Whichever was not taken before

² The TESOL coordinator can provide you with a list of available courses for a particular semester.

Students must receive a C- or better in each course and achieve a 2.0 GPA in the five courses.

No more than eight transfer credits will be accepted.

For more information about the TESOL minor, please contact Soo Hyon Kim, soohyon.kim@unh.edu, 603-862-5290.

Middle Eastern Studies

Programs

- Middle Eastern Studies Minor (p. 94)

Middle Eastern Studies Minor

<https://cola.unh.edu/interdisciplinary-studies/program/minor/middle-eastern-studies>

Description

The minor in Middle Eastern studies introduces students to the many facets of Middle Eastern cultures and societies through the interdisciplinary study of languages, history, politics, geography, and anthropology. Minor coursework enables students' understanding of the Middle East as a dynamic region in a global and comparative context. This minor therefore encompasses not only the study of the region itself, but also the flows and circulation of migration, diasporas, refugees, ideas, literatures, social movements, war, and natural resources that make the region pivotal to world history and the global economy. In addition, participation in the minor prepares students for study abroad experiences, helps them acquire skills and qualifications for graduate study, and enhances employment opportunities.

Students interested in the minor should contact the coordinator and/or affiliated faculty to discuss their program of study. The coordinator, Sara Wolper, may be reached at esw@unh.edu, (603) 862-3884.

Requirements

The Middle Eastern studies minor requires five courses (20 credits) drawn from the list of approved courses or from exceptional courses and opportunities approved by the affiliate faculty in respective disciplines. The five-course requirement will include one general introductory course.

Code	Title	Credits
Introductory Course		
Select one of the following:		4
HIST 425	Foreign Cultures	
ANTH 500	Peoples and Cultures of the World (only topic C)	
GEOG 540	Geography of the Middle East	
POLT 559	Comparative Politics of the Middle East	
Elective Courses		
Select four of the following:		16
ANTH 500	Peoples and Cultures of the World (only topic C)	
ANTH 640	Anthropology of Islam: Muslims' everyday lives in contemporary communities	
ANTH 700	Internship (only topic A: Preserving Cultural Heritage in Syria and Iraq)	
ANTH 750	Islam and Gender: Gendered Lives of Muslims	
ARBC 401	Elementary Arabic I	
ARBC 402	Elementary Arabic II	
ARBC 503	Intermediate Arabic	
ARBC 504	Intermediate Arabic	
ARBC 631	Advanced Arabic I	
ARBC 632	Advanced Arabic II	
HIST 425W	Foreign Cultures (Islamic Culture and Civilization)	
HIST 575	Ancient Near East	
HIST 583		
HIST 585	Medieval Islam	
HIST 586	Islam in the Modern Age, 15th Century to present	
HIST #589	Islam in Africa	
HIST 640	Holy War in the Holy Land: The Medieval Crusades	
HUMA 444F	Travelers in the Premodern World	
HUMA 730	Special Studies (Symbols of Islam in America)	
POLT 588	Selected Topics in Comparative Politics (Ethnic Violence, Politics, and Identity)	
POLT 740	States and Societies in the Middle East	
POLT 798C	Seminar in Comparative Politics (The Politics of Afghanistan, Pakistan, and India)	
Total Credits		20

Students must receive a grade of C- or better for a course to count toward the minor. Courses for the minor may not be taken on a pass/fail basis.

Foreign Language Study: The study of a Middle Eastern language or language relevant to Middle Eastern studies is strongly encouraged but not required. Students are encouraged and permitted to count Arabic toward the five-course requirement. Students who have studied Hebrew, Turkish, Farsi, or other Middle Eastern languages at other institutions may apply for transfer of their credit toward the minor. Through petition to the minor coordinator and with support of affiliate faculty in the respective discipline, students may apply for European languages, such

as French and Italian, to count toward minor requirements, provided these are relevant to their research and study interests in the region.

Transfer or Articulation Agreements with other Institutions: Transfer of credits may be approved by the coordinator to count toward the minor if the transfer is accepted by the University and fits within the scope of the minor.

Students interested in the minor should contact the coordinator and/or affiliated faculty to discuss their program of study. At the beginning of their final semester of study at UNH, students should fill out a completion of minor form and submit it to their Dean's Office.

Music (MUSI, MUED)

The Department of Music offers two degree programs: the bachelor of arts in music and the bachelor of music.

The University of New Hampshire Department of Music is an accredited institutional member of the National Association of Schools of Music.

Prospective majors in music are advised to contact the department for information on acceptance into the major.

All music students must earn grades of C- or better in all required music and music education courses. The required minimum overall GPA in required music and music education coursework is 2.0.

Bachelor of Arts in Music

The bachelor of arts in music program offers students an opportunity to major in music within the liberal arts curriculum. This program is intended for those who wish to pursue the serious study of music and to acquire at the same time a broad general education; it is recommended for those considering graduate study leading to master's or doctoral degrees.

To be admitted formally to the B.A. program, students must give evidence of satisfactory musical training by taking an admission audition. Students must declare music as a major before the beginning of the junior year, but it is highly recommended that they declare as early as possible, considering the large number of required courses.

The bachelor of arts degree is offered with three options: music liberal studies, performance study, and composition.

Bachelor of Music Degree Program

The bachelor of music degree program is offered to students who wish to develop their talent in performance, composition, or music education to a high professional level. The program is recommended to those considering graduate study leading to the M.M. or D.M.A. degrees. The music education option is part of the undergraduate certification program (see the Department of Education).

To be admitted to the B.M. program, students must demonstrate a high degree of musical competence or significant creative ability during an audition or examination. Selection is made on the professional requirements appropriate to each option. Students must formally declare the B.M. as a degree program before the beginning of the sophomore year. Continuation into the upper level of the program is subject to review by the department faculty.

Four degrees are offered in the bachelor of music curriculum: bachelor of music in music education¹; bachelor of music in performance¹; bachelor of music in composition², and bachelor of music pre-teaching².

¹ Degree program has final approval from the National Association of Schools of Music.

² Degree program has plan approval from the National Association of Schools of Music.

<https://cola.unh.edu/music>

Programs

- Music Major: Composition Option (B.A.) (p. 95)
- Music Major: Music Liberal Studies Option (B.A.) (p. 96)
- Music Major: Performance Study Option (B.A.) (p. 97)
- Composition Major (B.M.) (p. 98)
- Music Education Major (B.M.) (p. 98)
- Performance Major (B.M.) (p. 100)
- Pre-Teaching Major (B.M.) (p. 101)
- Music Minor (p. 102)

Faculty

<https://cola.unh.edu/music/faculty-staff-directory>

Music Major: Composition Option (B.A.)

<https://cola.unh.edu/music/program/ba/music-major-composition-option>

Description

Students wanting to declare composition as their option must submit a music portfolio in addition to an audition on their major instrument.

The Discovery Program capstone requirement is fulfilled by a final project or a public performance given during the senior year. For students in the composition option, there is a choice of completing a half lecture, half lecture-recital, or a half recital including at least one original composition.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

Major department courses may not be used to satisfy Discovery category requirements except in the case of a second major. B.A. in music majors may use MUSI 502 History and Literature of Music (a required core course for the major) to satisfy the Inquiry Discovery requirement.

Requirements

Bachelor of Arts in Music Core Curriculum

Code	Title	Credits
MUSI 471 & MUSI 472	Theory I and Theory I	6
MUSI 473 & MUSI 474	Ear Training I and Ear Training I	2
MUSI 475 & MUSI 476	Functional Piano I and Functional Piano I ¹	2
MUSI 571 & MUSI 572	Theory II and Theory II	6
MUSI 573 & MUSI 574	Ear Training II and Ear Training II	2
MUSI 575 & MUSI 576	Functional Piano II and Functional Piano II ¹	2
MUSI 501 & MUSI 502	History and Literature of Music and History and Literature of Music	6
MUSI 515	Music in World Cultures	4
Select 3 credits of MUSI 703-MUSI 715 Advanced Music History		3
Select one of the following:		3
MUSI 771	Counterpoint	
MUSI 781W	Analysis: Form and Structure	
MUSI 782W	Analysis: Form and Structure	
Select variable credits of MUSI 541-MUSI 564, MUSI 741-MUSI 764 Performance Study (Applied Lessons)		
Select variable credits of MUSI 441-MUSI 464 Performing Ensemble ²		
Total Credits		36

¹ Students will be given the opportunity to test out of MUSI 475 Functional Piano I-MUSI 476 Functional Piano I and MUSI 575 Functional Piano II-MUSI 576 Functional Piano II.

² A maximum of 8 ensemble credits may count toward graduation for all bachelor of arts in music students.

Music Composition Option Requirements

Degree program has plan approval from the National Association of Schools of Music.

Code	Title	Credits
Select 6 credits of the following:		6
MUSI 771	Counterpoint	
MUSI 779	Orchestration	
MUSI 781W	Analysis: Form and Structure	
MUSI 782W	Analysis: Form and Structure	
Select 8 credits of the following:		8
MUSI 775	Composition	
MUSI 776	Composition	
MUSI 777	Advanced Composition	
MUSI 731	Conducting	2
Select 4 credits of MUSI 541-MUSI 564/MUSI 741-MUSI 764 Performance Study (Applied Lessons)		4

Select 8 credits of MUSI 441-MUSI 464 Performing Ensemble	8
Total Credits	28

Students in the composition option, if not in a lesson studio, will attend composition seminar.

Music Major: Music Liberal Studies Option (B.A.)

<https://cola.unh.edu/music/program/ba/music-major-music-liberal-studies-option>

Description

Students enrolling in the B.A. music liberal studies program—a program that stresses the development of skills in analysis, writing, and critical thinking about a wide variety of music and the larger connection with history, culture, and society—are required to submit a writing sample and interview with one of the music liberal studies program faculty members. The writing sample should be non-fiction, preferably an assignment for a course in English, history, or a similar subject, 500 words or more in length.

The Discovery Program capstone requirement is fulfilled by a final project or a public performance given during the senior year. For students in the music liberal studies option, there is a choice of completing a half recital or comparable final project.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

Major department courses may not be used to satisfy Discovery category requirements except in the case of a second major. B.A. in music majors may use MUSI 502 History and Literature of Music (a required core course for the major) to satisfy the Inquiry Discovery requirement.

Requirements

Bachelor of Arts in Music Core Curriculum

Code	Title	Credits
MUSI 471 & MUSI 472	Theory I and Theory I	6
MUSI 473 & MUSI 474	Ear Training I and Ear Training I	2
MUSI 475 & MUSI 476	Functional Piano I and Functional Piano I ¹	2
MUSI 571 & MUSI 572	Theory II and Theory II	6
MUSI 573 & MUSI 574	Ear Training II and Ear Training II	2
MUSI 575 & MUSI 576	Functional Piano II and Functional Piano II ¹	2
MUSI 501 & MUSI 502	History and Literature of Music and History and Literature of Music	6
MUSI 515	Music in World Cultures	4
Select 3 credits of MUSI 703-MUSI 715 Advanced Music History		3

Select one of the following:	3
MUSI 771 Counterpoint	
MUSI 781W Analysis: Form and Structure	
MUSI 782W Analysis: Form and Structure	
Select variable credits of MUSI 541-MUSI 564, MUSI 741-MUSI 764 Performance Study (Applied Lessons)	
Select variable credits of MUSI 441-MUSI 464 Performing Ensemble ²	
Total Credits	36

¹ Students will be given the opportunity to test out of MUSI 475 Functional Piano I-MUSI 476 Functional Piano I and MUSI 575 Functional Piano II-MUSI 576 Functional Piano II.

² A maximum of 8 ensemble credits may count toward graduation for all bachelor of arts in music students.

Music Liberal Studies Option Requirements

Degree program has plan approval from the National Association of Schools of Music.

Code	Title	Credits
Select 12 credits of the following: ¹		12
MUSI 771 Counterpoint		
MUSI 775-MUSI 777		
MUSI 779 Orchestration		
MUSI 781W Analysis: Form and Structure		
MUSI 782W Analysis: Form and Structure		
MUSI 703-MUSI 715		
Select 8 credits of the following: ²		8
MUSI 536-MUSI 564		
MUSI 736-MUSI 764		
MUSI 441-MUSI 464		
Total Credits		20

¹ Any combination of advanced theory and history (12 credits) in addition to the core curriculum.

² Any combination of performance and/or ensemble study (8 credits total).

Music Major: Performance Study Option (B.A.)

<https://cola.unh.edu/music/program/ba/music-major-performance-study-option>

Description

The Discovery Program capstone requirement is fulfilled by a final project or a public performance given during the senior year. For students in the performance study option, a full recital is required.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

Major department courses may not be used to satisfy Discovery category requirements except in the case of a second major. B.A. in music majors may use MUSI 502 History and Literature of Music (a required core course for the major) to satisfy the Inquiry Discovery requirement.

Requirements

Bachelor of Arts in Music Core Curriculum

Code	Title	Credits
MUSI 471 & MUSI 472	Theory I and Theory I	6
MUSI 473 & MUSI 474	Ear Training I and Ear Training I	2
MUSI 475 & MUSI 476	Functional Piano I and Functional Piano I ¹	2
MUSI 571 & MUSI 572	Theory II and Theory II	6
MUSI 573 & MUSI 574	Ear Training II and Ear Training II	2
MUSI 575 & MUSI 576	Functional Piano II and Functional Piano II ¹	2
MUSI 501 & MUSI 502	History and Literature of Music and History and Literature of Music	6
MUSI 515	Music in World Cultures	4
Select 3 credits of MUSI 703-MUSI 715 Advanced Music History		3
Select one of the following:		3
MUSI 771 Counterpoint		
MUSI 781W Analysis: Form and Structure		
MUSI 782W Analysis: Form and Structure		
Select variable credits of MUSI 541-MUSI 564, MUSI 741-MUSI 764 Performance Study (Applied Lessons)		
Select variable credits of MUSI 441-MUSI 464 Performing Ensemble ²		
Total Credits		36

¹ Students will be given the opportunity to test out of MUSI 475 Functional Piano I-MUSI 476 Functional Piano I and MUSI 575 Functional Piano II-MUSI 576 Functional Piano II.

² A maximum of 8 ensemble credits may count toward graduation for all bachelor of arts in music students.

Performance Study Option Requirements

Degree program has final approval from the National Association of Schools of Music.

Code	Title	Credits
MUSI 731	Conducting	2
Select 16 credits of MUSI 541-MUSI 565/MUSI 741-MUSI 764 Performance Study (Applied Lessons) ¹		16
Select 4 credits of MUSI 520-MUSI 521 Diction for Singers I & II ²		4
Select 8 credits of MUSI 441-MUSI 464 Performing Ensemble		8
Total Credits		30

¹ 2 credits per semester

² Required for vocal performance option only

The language requirement for a student in the vocal performance option is satisfied by taking ITAL 401 Elementary Italian I-ITAL 402 Elementary Italian II, GERM 401 Elementary German I-GERM 402 Elementary German II or FREN 401 Elementary French I-FREN 402 Elementary French II.

Composition Major (B.M.)

<https://cola.unh.edu/music/program/bm/composition-major>

Description

All bachelor of music students are required to give a public performance during their senior year, which fulfills the Discovery Program capstone requirement:

- For students in the composition option, a full lecture, lecture-recital, or recital including at least one original composition is required.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. B.M. in music majors may use MUSI 502 History and Literature of Music (a required core course for the major) to satisfy the Inquiry Discovery category requirement, and MUSI 515 Music in World Cultures (a required core course for the major) to satisfy the World Cultures Discovery category requirement.

Requirements

Bachelor of Music Core Curriculum

Code	Title	Credits
MUSI 471 & MUSI 472	Theory I and Theory I	6
MUSI 473 & MUSI 474	Ear Training I and Ear Training I	2
MUSI 475 & MUSI 476	Functional Piano I and Functional Piano I ¹	2
MUSI 571 & MUSI 572	Theory II and Theory II	6
MUSI 573 & MUSI 574	Ear Training II and Ear Training II	2
MUSI 575 & MUSI 576	Functional Piano II and Functional Piano II ¹	2
MUSI 501 & MUSI 502	History and Literature of Music and History and Literature of Music	6
MUSI 515	Music in World Cultures	4
MUSI 731	Conducting	2
Select any course between MUSI 703-MUSI 715		3
Select one of the following:		3
MUSI 771	Counterpoint	
MUSI 781W	Analysis: Form and Structure	
MUSI 782W	Analysis: Form and Structure	
Select variable credits of MUSI 541-MUSI 564/MUSI 741-MUSI 764 Performance Study (Applied Lessons)		Variable
Select variable credits of MUSI 441-MUSI 464 Performing Ensemble		Variable
Total Credits		38

¹ Students will be given the opportunity to test out of MUSI 475 Functional Piano I-MUSI 476 Functional Piano I and MUSI 575 Functional Piano II-MUSI 576 Functional Piano II.

Bachelor of Music in Composition

Degree program has plan approval from the National Association of Schools of Music.

Code	Title	Credits
Select 9 credits of MUSI 771, MUSI 795 (Independent Study/ Advanced Counterpoint), MUSI 781W, and MUSI 782W		9
Select 4 credits of MUSI 775-MUSI 776		4
Select 12 credits of MUSI 777		12
MUSI 779	Orchestration	3
MUSI 795	Special Studies (Advanced Music Theory) ¹	3
MUSI 795	Special Studies (Electronic Music)	2
Select 3 credits of MUSI 703-MUSI 715 Advanced Music History ²		3
Select 8 credits of MUSI 541-MUSI 564/MUSI 741-MUSI 764 Performance Study		8
Select 8 credits of MUSI 441-MUSI 464 Performing Ensemble		8
Total Credits		52

¹ This is in addition to the other 700-level theory classes outlined above.

² This is in addition to the core required 700-level music history class.

Students in the bachelor of music in composition degree program may use a maximum of 8 ensemble credits toward graduation.

Students in the bachelor of music in composition degree are required to attend 8 semesters of composition seminar.

Music Education Major (B.M.)

<https://cola.unh.edu/music/program/bm/music-education-major>

Description

The B.M. music education is the traditional program of choice for students seeking a career as a school music teacher. The bachelor of music degree in music education provides a route to undergraduate certification leading to state of New Hampshire teacher certification in music, grades K-12 (cert. #612.13). New Hampshire also participates in a reciprocal agreement with many other states: the Interstate Certification Compact.

Successful applicants must demonstrate a high degree of musical competence and promise of future growth as a performer. A firm commitment to leading school musicians to artistic success is expected, as is a willingness to acquire the breadth of skills required for K-12 music certification. Continuation in the B.M. music education program is made with the recommendation of the appropriate faculty members and contingent upon personal commitment to the teacher licensure program.

Students interested in a five-year, bachelor/masters degree program typically complete the B.M pre-teaching (described elsewhere) as an undergraduate and apply to the UNH Department of Education for admission to the Master of Arts in Teaching (Secondary) degree program.

Students in music education must maintain an overall minimum 2.8 grade-point average at the time of application for student teaching (February 15 of junior year). Any education course taken for a teacher licensure requirement must be completed with a B- or better.

B.M. music education majors may use MUSI 501 History and Literature of Music (a required core course for the major) to satisfy the Fine and Performing Arts Discovery category requirement. In addition, they may use MUSI 502 History and Literature of Music (a required core course for the major) to satisfy the Inquiry Discovery category requirement, and MUSI 515 Music in World Cultures (a required core course for the major) to satisfy the World Cultures Discovery category requirement.

All bachelor of music students are required to give a public performance during their senior year, which fulfills the Discovery Program capstone requirement:

- For students in the music education option, a half recital is required.

The four-year bachelor of music in music education curriculum is highly structured due to the number of required courses to complete. In the table below is the list of additional classes required to earn a degree and a certificate to teach. Students may elect a vocal/choral or instrumental emphasis. See curriculum chart for differing requirements.

Requirements

Bachelor of Music Core Curriculum

Code	Title	Credits
MUSI 471 & MUSI 472	Theory I and Theory I	6
MUSI 473 & MUSI 474	Ear Training I and Ear Training I	2
MUSI 475 & MUSI 476	Functional Piano I and Functional Piano I ¹	2
MUSI 571 & MUSI 572	Theory II and Theory II	6
MUSI 573 & MUSI 574	Ear Training II and Ear Training II	2
MUSI 575 & MUSI 576	Functional Piano II and Functional Piano II ¹	2
MUSI 501 & MUSI 502	History and Literature of Music and History and Literature of Music	6
MUSI 515	Music in World Cultures	4
MUSI 731	Conducting	2
Select any course between MUSI 703-MUSI 715		3
Select one of the following:		3
MUSI 771	Counterpoint	
MUSI 781W	Analysis: Form and Structure	
MUSI 782W	Analysis: Form and Structure	
Select variable credits of MUSI 541-MUSI 564/MUSI 741-MUSI 764 Performance Study (Applied Lessons)		Variable
Select variable credits of MUSI 441-MUSI 464 Performing Ensemble		Variable
Total Credits		38

¹ Students will be given the opportunity to test out of MUSI 475 Functional Piano I-MUSI 476 Functional Piano I and MUSI 575 Functional Piano II-MUSI 576 Functional Piano II.

Bachelor of Music in Music Education Curriculum

Degree program has final approval from the National Association of Schools of Music.

Code	Title	Credits
MUED 741	Techniques and Methods in Choral Music	2
MUED 745	Techniques and Methods in String Instruments	2
MUED 747	Techniques and Methods in Woodwind Instruments ¹	2-3
MUED 749	Techniques and Methods in Brass Instruments	2
MUED 751	Techniques and Methods in Percussion Instruments	2
MUED 755	Vocal Pedagogy ²	1-2
MUED 765	Instrumental Music Methods ³	2
MUED 790	Teaching Elementary School Music	3
MUED 791	Teaching Secondary School Music	2
MUSI 520	Diction for Singers I ⁴	2
MUSI 732	Conducting	2
MUSI 779	Orchestration	3
Select 8 credits of MUSI 541-MUSI 564/MUSI 741-MUSI 764 Performance Study (Applied Lessons)		8
Select 8 credits of MUSI 441-MUSI 464 Performing Ensemble ⁵		8
EDUC 500	Exploring Teaching	4
EDUC 700	Educational Structure and Change	4
EDUC 701	Human Development and Learning: Educational Psychology	4
EDUC 705	Contemporary Educational Perspectives	4
EDUC 751B	Educating Exceptional Learners: Secondary	4
EDUC 694	Courses in Supervised Teaching	8
Total Credits		69-71

¹ Vocal track students take 2 credits. Instrumental track students take 3 credits.

² Instrumental track students take 1 credit. Vocal track students take 2 credits.

³ Required for Instrumental track.

⁴ Required for Vocal track.

⁵ Students in the bachelor of music in music education degree program may use a maximum of 8 ensemble credits toward graduation. Of the 8 credits in ensemble performance (MUSI 441 Concert Choir-MUSI 464 Guitar Ensemble) required during the course of study, it is required that at least 4 credits will be from the following: Concert Choir (MUSI 441 Concert Choir), Symphony (MUSI 450 Symphony), Wind Symphony (MUSI 452 Wind Symphony), Symphonic Band (MUSI 453 Symphonic Band), and/or Concert Band (MUSI 451 Concert Band). At least 1 credit of performance in a jazz ensemble (MUSI 460 Jazz Band) and 1 credit of Marching Band (MUSI 454 UNH Marching Band) are highly desirable.

Performance Major (B.M.)

<https://cola.unh.edu/music/program/bm/performance-major>

Description

All bachelor of music students are required to give a public performance during their senior year, which fulfills the Discovery Program capstone requirement:

- For students in the performance option, a full recital is required. Students in the bachelor of music in performance degree program are required to perform a half junior recital.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. B.M. in music majors may use MUSI 502 History and Literature of Music (a required core course for the major) to satisfy the Inquiry Discovery category requirement, and MUSI 515 Music in World Cultures (a required core course for the major) to satisfy the World Cultures Discovery category requirement.

Requirements

Bachelor of Music Core Curriculum

Code	Title	Credits
MUSI 471 & MUSI 472	Theory I and Theory I	6
MUSI 473 & MUSI 474	Ear Training I and Ear Training I	2
MUSI 475 & MUSI 476	Functional Piano I and Functional Piano I ¹	2
MUSI 571 & MUSI 572	Theory II and Theory II	6
MUSI 573 & MUSI 574	Ear Training II and Ear Training II	2
MUSI 575 & MUSI 576	Functional Piano II and Functional Piano II ¹	2
MUSI 501 & MUSI 502	History and Literature of Music and History and Literature of Music	6
MUSI 515	Music in World Cultures	4
MUSI 731	Conducting	2
Select any course between MUSI 703-MUSI 715		3
Select one of the following:		3
MUSI 771	Counterpoint	
MUSI 781W	Analysis: Form and Structure	
MUSI 782W	Analysis: Form and Structure	
Select variable credits of MUSI 541-MUSI 564/MUSI 741-MUSI 764 Performance Study (Applied Lessons)		Variable
Select variable credits of MUSI 441-MUSI 464 Performing Ensemble		Variable
Total Credits		38

¹ Students will be given the opportunity to test out of MUSI 475 Functional Piano I-MUSI 476 Functional Piano I and MUSI 575 Functional Piano II-MUSI 576 Functional Piano II.

Bachelor of Music in Performance (Voice)

Degree program has final approval from the National Association of Schools of Music.

Code	Title	Credits
MUED 741	Techniques and Methods in Choral Music	2
MUED 755	Vocal Pedagogy	2
MUSI 520 & MUSI 521	Diction for Singers I and Diction for Singers II	4
MUSI 713 or MUSI 715	Art Song Survey of Opera	3
MUSI 545/745	Voice (voice lessons) ¹	25
Select 8 credits of the following:		8
MUSI 441	Concert Choir ²	
MUSI 442	Chamber Singers	
MUSI 448	Opera Workshop	
Select one of the following:		8
ITAL 401 & ITAL 402	Elementary Italian I and Elementary Italian II	
GERM 401 & GERM 402	Elementary German I and Elementary German II	
FREN 401 & FREN 402	Elementary French I and Elementary French II	
Total Credits		52

¹ Three credits of lessons each semester until the student's senior recital semester; then it is 4 credits.

² Four credits must be MUSI 441 Concert Choir; the remaining 4 credits must be MUSI 441 Concert Choir, MUSI 442 Chamber Singers, or MUSI 448 Opera Workshop.

Bachelor of Music in Performance (Piano)

Degree program has final approval from the National Association of Schools of Music.

Code	Title	Credits
MUED 743	Materials and Methods in Piano Music	2
Select one of the following: ¹		3
MUSI 771	Counterpoint	
MUSI 781W	Analysis: Form and Structure	
MUSI 782W	Analysis: Form and Structure	
Select 3 credits of the following: ²		3
MUSI 775	Composition	
MUSI 776	Composition	
MUSI 777	Advanced Composition	
MUSI 779	Orchestration	
Any 700-level advanced music history or advanced music theory course ²		3
MUSI 795	Special Studies (Topic V) advanced piano pedagogy)	2
MUSI 795	Special Studies (Topic E) piano literature)	1-2
MUSI 455	Piano Ensemble	4
MUSI 541/741	Piano (piano lessons) ³	25

Select 4 credits of MUSI 441-MUSI 464 Performing Ensemble	4
Total Credits	47-48

¹ A B.M. piano performance major must take a total of two of these three courses: MUSI 771 Counterpoint, MUSI 781W Analysis: Form and Structure, and MUSI 782W Analysis: Form and Structure.

² A B.M. piano performance major must take an additional 700-level music history or music theory course.

³ Three credits of lessons each semester until the semester of the senior recital; then it is 4 credits.

Bachelor of Music in Performance (All other Instruments)

Degree program has final approval from the National Association of Schools of Music.

Code	Title	Credits
Select 2-3 credits of MUED 745-MUED 751 Techniques & Methods	¹	2-3
Select 3 credits of MUSI 700-level Advanced Music History or Advanced Music Theory	²	3
Select 25 credits of MUSI 541-MUSI 546/MUSI 741-MUSI 764 Performance Study	³	25
Select 12 credits of MUSI 441-MUSI 464 Performing Ensemble		12
Total Credits		42-43

¹ B.M. instrumental performance majors take one methods class in the appropriate instrumental family, e.g., a trumpet player would take MUED 749 Techniques and Methods in Brass Instruments, to fulfill this requirement.

² This is in addition to the advanced music history and advanced music theory class already required.

³ Three credits of lessons are taken each semester until the student's senior recital semester; then it is 4 credits.

Pre-Teaching Major (B.M.)

<https://cola.unh.edu/music/program/bm/pre-teaching-major>

Description

The B.M. pre-teaching degree is the program of choice for most students seeking a five-year, combined bachelor's and master's degree program that includes certification to teach music in the public schools. Students will complete all of the skill and knowledge content requirements in this undergraduate program leaving a year-long internship and some advanced study in music and education for the fifth year.

Students applying to the Master of Arts in Teaching program need a cumulative undergraduate grade point average of 3.2 or better to ensure admission to the graduate school. Therefore, students typically apply first to UNH as a B.M. music education major and switch to this B.M. pre-teaching degree in their junior or senior year.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. B.M. in music majors may use MUSI 502 History and Literature of Music (a required core course for the major) to satisfy the Inquiry Discovery category requirement, and MUSI 515 Music in World Cultures (a required core course for the major) to satisfy

the World Cultures Discovery category requirement. Additionally, B.M. music education and pre-teaching majors may use MUSI 501 History and Literature of Music to satisfy the Fine and Performing Arts Discovery category requirement.

All bachelor of music students are required to give a public performance during their senior year, which fulfills the Discovery Program capstone requirement:

- For students in the pre-teaching option, a half recital is required.

Requirements

Bachelor of Music Core Curriculum

Code	Title	Credits
MUSI 471 & MUSI 472	Theory I and Theory I	6
MUSI 473 & MUSI 474	Ear Training I and Ear Training I	2
MUSI 475 & MUSI 476	Functional Piano I and Functional Piano I ¹	2
MUSI 571 & MUSI 572	Theory II and Theory II	6
MUSI 573 & MUSI 574	Ear Training II and Ear Training II	2
MUSI 575 & MUSI 576	Functional Piano II and Functional Piano II ¹	2
MUSI 501 & MUSI 502	History and Literature of Music and History and Literature of Music	6
MUSI 515	Music in World Cultures	4
MUSI 731	Conducting	2
Select any course between MUSI 703-MUSI 715		3
Select one of the following:		3
MUSI 771	Counterpoint	
MUSI 781W	Analysis: Form and Structure	
MUSI 782W	Analysis: Form and Structure	
Select variable credits of MUSI 541-MUSI 564/MUSI 741-MUSI 764	Variable Performance Study (Applied Lessons)	Variable
Select variable credits of MUSI 441-MUSI 464 Performing Ensemble	Variable	Variable
Total Credits		38

¹ Students will be given the opportunity to test out of MUSI 475 Functional Piano I-MUSI 476 Functional Piano I and MUSI 575 Functional Piano II-MUSI 576 Functional Piano II.

Bachelor of Music Pre-Teaching Curriculum

Degree program has plan approval from the National Association of Schools of Music.

Code	Title	Credits
MUED 741	Techniques and Methods in Choral Music	2
MUED 745	Techniques and Methods in String Instruments	2
MUED 747	Techniques and Methods in Woodwind Instruments ¹	2-3
MUED 749	Techniques and Methods in Brass Instruments	2

MUED 751	Techniques and Methods in Percussion Instruments	2
MUED 755	Vocal Pedagogy ²	1-2
MUED 765	Instrumental Music Methods ³	2
MUED 790	Teaching Elementary School Music	3
MUED 791	Teaching Secondary School Music	2
MUSI 520	Diction for Singers I ⁴	2
MUSI 732	Conducting	2
MUSI 779	Orchestration	3
Select 8 credits of the following MUSI 541-MUSI 564/MUSI 741-MUSI 764 Performance Study (Applied Lessons)		8
Select 8 credits of the following MUSI 441-MUSI 464 Performing Ensemble ⁵		8
EDUC 500	Exploring Teaching	4
EDUC 700	Educational Structure and Change	4
EDUC 701	Human Development and Learning: Educational Psychology	4
EDUC 705	Contemporary Educational Perspectives	4
EDUC 751B	Educating Exceptional Learners: Secondary	4
Total Credits		61-63

¹ Vocal track students take 2 credits. Instrumental track students take 3 credits.

² Instrumental track students take 1 credit. Vocal track students take 2 credits.

³ Required for Instrumental track.

⁴ Required for Vocal track.

⁵ Students in the bachelor of music pre-teaching degree program may use a maximum of 8 ensemble credits toward graduation. Of the 8 credits in ensemble performance (MUSI 441 Concert Choir-MUSI 464 Guitar Ensemble) required during the course of study, it is required that at least 4 credits will be from the following: Concert Choir (MUSI 441 Concert Choir), Symphony (MUSI 450 Symphony), Wind Symphony (MUSI 452 Wind Symphony), Symphonic Band (MUSI 453 Symphonic Band), and/or Concert Band (MUSI 451 Concert Band). At least 1 credit of performance in a jazz ensemble (MUSI 460 Jazz Band) and 1 credit of Marching Band (MUSI 454 UNH Marching Band) are highly desirable.

Music Minor

<https://cola.unh.edu/music/program/minor/music>

Description

A music minor is a great option for students who are passionate about the discipline of music but choose to major in another field. The minor includes required coursework in music theory and literature.

Requirements

All students wishing to receive a minor in music must complete a minimum of 20 credits of coursework in music, of which the following are required:

Code	Title	Credits
Select one of the following options:		8
Option A:		
MUSI 471	Theory I	
& MUSI 472	and Theory I	
& MUSI 473	and Ear Training I	
& MUSI 474	and Ear Training I	
Option B:		
MUSI 411	Fundamentals of Music Theory	
& MUSI 412	and Fundamentals of Music Theory	
Select two of the following:		8
MUSI 401	Introduction to Music	
MUSI 402	Survey of Music History	
MUSI 403	Roots of Rock	
MUSI 404	An Introduction to Music, Media, and the Moving Image	
MUSI 405	Survey of Music in America	
MUSI 444	Music and Social Change	
MUSI 501	History and Literature of Music	
MUSI 502	History and Literature of Music	
MUSI 515	Music in World Cultures	
MUSI #610	Popular Music and Rebellion in the 1960's	
Select 4 credits of MUSI electives		4
Total Credits		20

Neuroscience and Behavior (NSB)

Neuroscience is one of the fastest-growing scientific fields, and the discoveries that are being made today are having an immediate and significant impact on our society. The importance of understanding animal behavior is likewise increasing, particularly in the face of a rapidly-changing environment. The B.S. in Neuroscience and Behavior is a great way for students to combine interests in neurobiology and animal behavior. The curriculum prepares students for various post-graduate degrees, including medical, veterinary, and graduate school, and we offer students a variety of opportunities to get hands-on research experience.

<https://cola.unh.edu/psychology/program/bs/neuroscience-behavior-major>

Programs

- Neuroscience and Behavior Major (B.S.) (p. 102)

Neuroscience and Behavior Major (B.S.)

<https://cola.unh.edu/psychology/program/bs/neuroscience-behavior-major>

Description

The major in neuroscience and behavior (NSB) offers an interdisciplinary approach to human and non-human behavior, focusing on the evolution and adaptiveness of certain behaviors, as well as their underlying neural mechanisms. Students who have always been fascinated by how the

brain functions will be well served by this major, as will those who love wild animals and wish to better understand their behavior. The B.S. in neuroscience and behavior is based on a solid foundation in biology, chemistry, physics, statistics, and genetics (foundation courses). These are followed by a two-semester course sequence that covers the fundamentals of neuroscience and behavior. Students can then pick five or more electives focusing on areas of interest.

NSB students are encouraged to take advantage of research experiences in the laboratories of the psychology and biology faculty in the program. This provides valuable experience with cutting-edge equipment and techniques. Some students may share aspects of a larger project, whereas others may be relatively independent and design their own project under supervision. In either case, important skills are gained by the discipline of gathering data, analyzing and interpreting it, and presenting it to a broader audience.

The curriculum provides most of the requirements and recommended courses for students seeking admission to graduate school and to professional schools in medicine and veterinary medicine. Students who might choose not to go on to advanced degrees are well-prepared for employment as skilled technicians in research laboratories or, if their interests are in animal behavior, as field research assistants or animal trainers. With additional courses in education, the B.S. in NSB also qualifies graduates to teach at the elementary, junior high, and high school levels.

Faculty participating in the NSB major combine a love of teaching and student mentoring with a passion for research, and encourage student participation. Research facilities that students can use include the aviary, the confocal imaging center, the Hubbard Center for Genomic Studies, and the many marine, freshwater, and estuarine laboratories associated with UNH programs. Students can also take summer courses at the Shoals Marine Laboratory.

Requirements

Students majoring in NSB are required to take foundation courses in basic science, core courses, and five electives from an extensive list of courses, including some offered by other departments including biochemistry, molecular and cellular biology, and natural resources. Finally, a capstone experience is required. This may be independent research, an advanced seminar, or other special student activity. It is meant to integrate prior experience and take the student to a new level in an area of special interest.

Code	Title	Credits
NSB Foundation courses		
NSB 400	Topics Neuroscience & Behavior	1
BIOL 411 & BIOL 412	Introductory Biology: Molecular and Cellular and Introductory Biology: Evolution, Biodiversity and Ecology (2 semesters)	8
CHEM 403 & CHEM 404	General Chemistry I and General Chemistry II (2 semesters)	8
CHEM 545 & CHEM 546	Organic Chemistry and Organic Chemistry Laboratory	5
BMCB 658 & BMCB 659	General Biochemistry and General Biochemistry Lab	5
PHYS 401	Introduction to Physics I	4
PSYC 402	Statistics in Psychology	4

or BIOL 528	Applied Biostatistics I	
GEN 604	Principles of Genetics	4
NSB 500 & NSB 501	Fundamentals of Neuroscience and Behavior I and Fundamentals of Neuroscience and Behavior I Laboratory	5
NSB 502 & NSB 503	Fundamentals of Neuroscience and Behavior II/ Systems Neuroscience and Fundamentals of Neuroscience and Behavior II Laboratory	5
Electives (Choose 5)		20-22
BIOL 541	General Ecology	
BMCB 605	Eukaryotic Cell and Developmental Biology	
BMS 507 & BMS 508	Human Anatomy and Physiology I and Human Anatomy and Physiology II ¹	
BMS 702	Endocrinology	
BMS 711	Toxicology	
BMS 718	Mammalian Physiology	
GEN 706	Human Genetics	
KIN 706 & KIN 707	Neurology and Neurology Lab ¹	
MEFB 714	Field Animal Behavior (SML, C)	
NSB 705	Molecular and Cellular Neurobiology (C)	
NSB 727	Animal Communication (C)	
NSB 728	Research Methods in Animal Behavior (C)	
PHIL 630	Neuroscience and Philosophy	
PSYC 511	Sensation and Perception	
PSYC 512	Psychology of Primates	
PSYC 513	Cognitive Psychology	
PSYC 521	Behavior Analysis	
PSYC 710	Visual Perception (C)	
PSYC 716	Cognitive Neuroscience (C)	
PSYC 720	Animal Cognition (C)	
PSYC 731	Brain and Behavior (C)	
PSYC 733	Drugs and Behavior (C)	
PSYC 735	Neurobiology of Mood Disorders (C)	
PSYC 736	Attention Disorders (C)	
PSYC 737	Behavioral Medicine (C)	
PSYC 741	Advanced Topics	
PSYC 741W	Advanced Topics (Neuroscience of Memory, Behavioral Neuroscience C)	
ZOOL 613	Animal Behavior	
ZOOL 625 & ZOOL 626	Principles of Animal Physiology and Animal Physiology Laboratory (C) ¹	
ZOOL 690	Evolution (C)	
ZOOL 726	Conservation Behavior (C)	
ZOOL 733	Behavioral Ecology (C)	
ZOOL 736	Genes and Behavior (C)	
ZOOL 777	Neuroethology	
	795/796 or 799 Independent Study, C	
Capstone ²		
Total Credits		69-71

- ¹ Both must be taken to count as one of the 5 required major electives
- ² Courses that are eligible to fulfill the Capstone requirement are indicated with a (C) and must be taken senior year. You can:
- 1) designate a course as a Capstone course, with additional requirements as determined by the instructor;
 - 2) complete one semester of Capstone Research (BIOL 795, PSYC 795, or INCO 790);
 - 3) do an honors thesis in Neuroscience (NSB 799H) or Biology or Psychology (BIOL 799 or PSYC 797/799) or;
 - 4) participate in an advanced graduate seminar.

NSB majors may use BIOL 411, BIOL 412, CHEM 403, CHEM 404, PHYS 401, PHYS 407 and either PSYC 402 or BIOL 528 to fulfill the Biological Sciences, Physical Sciences, Discovery Lab, and Quantitative Reasoning Discovery requirements.

Philosophy (PHIL)

Philosophy has always been at the heart of liberal education, deepening and enriching the lives of those who pursue it. The philosophy major provides students with the opportunity to confront a wide variety of questions, especially those that cannot be dealt with in the framework of other disciplines. Such questions include those about the ultimate nature of reality: Does God exist? Are minds distinct from bodies? Are there more things between heaven and Earth than are dreamed of in science? Other questions probe what it is to know: Do we know that material bodies external to our minds exist? What does it mean to justify a belief? Still other questions are about how we ought to be or act: What is a good person? Are there moral rules? How are they justified? Must we obey them?

Philosophy also concerns itself with other disciplines: What makes something a work of art? What distinguishes a scientific theory from a religious theory or myth? Is capitalism amoral? Is legal authority moral or political?

The Department of Philosophy offers a wide range of courses exposing students to the full scope of philosophical activity. Grappling with major primary texts from the history of philosophy is an important emphasis of the program, for philosophy today is the continuation of a conversation that extends back to the ancient Greeks and the Vedic scriptures. Philosophy also always has wrestled with cutting-edge topics emerging in the current culture. Some recent examples are: What are the prospects for machines with mental lives? What are the implications of new views in cosmology? How do we handle the pressing ethical dilemmas brought on by emerging medical technologies, or by the historically unparalleled rate of destruction of the Earth's environment? Are gender and race socially constructed concepts rather than biological concepts?

Each semester, detailed course descriptions are posted in the department office and on the department web page.

Career Opportunities

Philosophy offers excellent training for a variety of careers by providing a unique combination of lifelong skills: analytic and interpretive skills; critical reasoning skills; the enhanced capacity to detect problems and to solve them; excellence in oral and written presentation and defense of one's ideas; skill at asking probing and central questions about the ideas of others (as well as about one's own ideas); and skill at effectively understanding, organizing, and evaluating complex systems of thought.

Considering these skills, it is not surprising that philosophy majors score in the very top percentiles on the GRE, LSAT, and GMAT standardized

exams. For example, in a recent GRE study, philosophy majors were ranked among the very top majors in their mean scores on the verbal, analytic, and quantitative components of the exam; in a recent LSAT study, philosophy majors had a higher mean score than even prelaw majors; and for recent GMAT tests, the mean score for philosophy majors exceeded that of any type of business major. Virtually no other major does this well on such a wide cross-section of standardized exams.

These results reflect the fact that the unique combination of skills acquired in philosophy, along with the breadth of subject matter, provide the philosophy major with an extremely adaptive and resilient mindset. Philosophy provides superior preparation for a variety of vocational and professional endeavors, and perhaps more importantly, for being a professional.

<https://cola.unh.edu/philosophy>

Programs

- Philosophy Major (B.A.) (p. 104)
- Philosophy Major: Ethics and Social Responsibility Option (B.A.) (p. 106)
- Philosophy Minor (p. 107)

Faculty

<https://cola.unh.edu/philosophy/faculty-staff-directory>

Philosophy Major (B.A.)

<https://cola.unh.edu/philosophy/program/ba/philosophy-major>

Description

UNH philosophy majors acquire the ability to think systematically and imaginatively about fundamental and enduring issues such as morality, justice, happiness, beauty, gender, race, nature, artificial intelligence, space, time, and the meaning of life and death. Our internationally-renowned professors emphasize discussion, debate and writing in our courses. Wrestling with the "big questions" from diverse and global perspectives will prepare you exceptionally well for a variety of fulfilling careers. A lively and nurturing community personally invested in the success of our high achieving students, we take pride in watching our graduates excel in top law and graduate schools, innovative social justice programs, and various positions from Wall Street to Silicon Valley and beyond that seek hard workers who can think rigorously and communicate clearly.

Ethics and Social Responsibility Option

While completing the major, students may select the option in *Ethics and Social Responsibility*. This option provides official recognition for those who choose to emphasize concern with moral responsibility in personal and social contexts, including the political and corporate arenas.

Graduate Preparatory Emphasis

This emphasis is strongly recommended for students who plan to do graduate work in philosophy. Beyond the 10 program courses, such

students should select, with their advisers' approval, two additional philosophy courses above the 400 level, for a total of 12 courses.

Distinction on Senior Thesis

Distinction on Senior Thesis is granted by a unanimous determination of the student's committee that the thesis exceeds A-level work and is worthy of special recognition.

Honors in Philosophy

To graduate "With Honors" in Philosophy, students will be expected to pursue a philosophy curriculum that demands greater depth and rigor than what is required by the major; they will be expected to complete the curriculum at a consistently high level of achievement; they will be expected to have an overall GPA of 3.5 or above; they will engage in independent study and research (under the supervision of a faculty member) beyond the requirements of their coursework; and they will be expected to present and defend a culminating project that synthesizes aspects of their study. Students can demonstrate these expectations in either of two ways: a thesis option or a portfolio option. Consult the Department of Philosophy website for more details.

Requirements

Please note that a single course can satisfy multiple requirements for the major.

Majors must take a total of 10 philosophy courses.

Code	Title	Credits
Core Requirements		
PHIL 412	Beginning Logic	4
PHIL 500	Workshop	4
PHIL 530	Ethics	4
PHIL 570	Ancient Philosophy	4
PHIL 580	Modern Philosophy from Descartes to Kant	4
Select one of the following additional courses in the history of philosophy:		4
PHIL 525	Existentialism	
PHIL 610	Topics in History of Philosophy	
PHIL 620	20th Century European Philosophy	
An approved seminar		
Discovery Capstone Requirement		8
Select two 700-level seminars of the student's choice, at least one of these should be taken in the senior year ¹		
Electives		8
Any two additional philosophy courses		
Total Credits		40

¹ As with all courses counting for the major, a grade of C- or better is required.

PHIL 495 Tutorial Reading and PHIL 795 Independent Study normally do not count toward fulfilling major requirement credits; exceptions may be granted by special permission.

Note that it is in the nature of 700-level seminars to presuppose by default that students have completed the main 400-level and 500-level core requirements (PHIL 412 Beginning Logic, PHIL 500 Workshop,

PHIL 530 Ethics, PHIL 570 Ancient Philosophy, PHIL 580 Modern Philosophy from Descartes to Kant) and so free reference is made to materials, views, techniques, etc. covered in those lower-level core requirements.

Although not required, students are strongly encouraged to consider the possibility of doing honors-in-major (and thus writing a thesis or an honors portfolio), and/or presenting research at the Undergraduate Research Conference, and/or fulfilling an undergraduate research grant in their senior year. This is especially encouraged for students considering graduate school in philosophy.

The required minimum overall GPA in major coursework is 2.0.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

Discovery Requirements

For students majoring in only philosophy: philosophy majors may "double count" any two courses toward the major and also to satisfy Discovery requirements. For example, a philosophy major can count (1) PHIL 412 Beginning Logic toward the major requirement as well as using this course to satisfy the Quantitative Reasoning Discovery Category and (2) they can also count PHIL 421 Philosophy and the Arts toward both the major and the Fine and Performing Arts Discovery Category. Because PHIL 412 Beginning Logic and PHIL 570 Ancient Philosophy are required for the major and also satisfy Quantitative Reasoning and Humanities Categories, respectively, all majors could simply count these two courses toward their Discovery requirements. In various circumstances—for instance if a student already satisfied those Discovery requirements before becoming a philosophy major—one might prefer to count other philosophy courses toward different Discovery Categories, and they are free to do so.

For students double majoring with philosophy: The Department sets no limits on how many courses you can "double count" toward both the philosophy major and Discovery categories if philosophy is your **second** major. A double major with philosophy as your second major could in principle count any of the following courses toward the major while satisfying five Discovery Categories:

- Quantitative Reasoning (QR)** Discovery Category could be satisfied by PHIL 412 Beginning Logic.
- Fine and Performing Arts (FPA)** Discovery Category could be satisfied by PHIL 421 Philosophy and the Arts.
- Humanities (HUMA)** Discovery Category could be satisfied by PHIL 401 Introduction to Philosophy, PHIL 410 Happiness, Well-Being, and a Good Life, PHIL 430 Ethics and Society, PHIL 436 Social and Political Philosophy, PHIL #437 Social and Political Philosophy, PHIL 440 Just Business: The Ethics of Markets and Money, PHIL 440A Honors/Who Are You? Personal Identity and Humanity, PHIL 440B Honors/Humanism and Dehumanization, PHIL 444A Who Am I? Concepts of Self, PHIL 525 Existentialism, or PHIL 570 Ancient Philosophy.
- World Cultures (WC)** Discovery Category could be satisfied by PHIL 520 Introduction to Eastern Philosophy.
- Environment, Technology, and Society (ETS)** Discovery Category could be satisfied by PHIL 424 Science, Technology, and Society, PHIL 435 Human Nature and Evolution, PHIL 444 Remaking Nature/

The Ethics and Politics of Genetic Engineering, PHIL 447 Artificial Intelligence, Robots, and People, or PHIL 450 Environmental Ethics.

Philosophy Major: Ethics and Social Responsibility Option (B.A.)

<https://cola.unh.edu/philosophy/program/ba/philosophy-major-ethics-social-responsibility-option>

Description

While completing the philosophy major, students may select the option in ethics and social responsibility. This option provides official recognition for those who choose to emphasize concern with moral responsibility in personal and social contexts, including the political and corporate arenas.

Requirements

Students must fulfill the requirements of the philosophy major **plus** the requirements of the option.

Major Requirements

Majors must take a total of 10 philosophy courses.

Code	Title	Credits
Core Requirements		
PHIL 412	Beginning Logic	4
PHIL 500	Workshop	4
PHIL 530	Ethics	4
PHIL 570	Ancient Philosophy	4
PHIL 580	Modern Philosophy from Descartes to Kant	4
Select one of the following additional courses in the history of philosophy:		4
PHIL 525	Existentialism	
PHIL 610	Topics in History of Philosophy	
PHIL 620	20th Century European Philosophy	
An approved seminar		
Discovery Capstone Requirement		8
Select two 700-level seminars of the student's choice, at least one of these should be taken in the senior year ¹		
Electives		8
Any two additional philosophy courses		
Total Credits		40

¹ As with all courses counting for the major, a grade of C- or better is required.

Option Requirements

This option requires **four courses (16 credits)** from those listed below, with one PHIL 530 Ethics already strictly required for the major. Some others (PHIL 520, 525, 701, 740) can also be used to satisfy requirements for the major.

Code	Title	Credits
Select four of the following courses:		16
PHIL 410	Happiness, Well-Being, and a Good Life	4

PHIL 424	Science, Technology, and Society	4
PHIL 424H	Honors/Science, Technology and Society	4
PHIL 430	Ethics and Society	4
PHIL 430H	Honors/Ethics and Society	4
PHIL 430W	Ethics and Society	4
PHIL 436	Social and Political Philosophy	4
PHIL 436H	Honors/Social and Political Philosophy	4
PHIL 436W	Social and Political Philosophy	4
PHIL 440	Just Business: The Ethics of Markets and Money	4
PHIL 444	Remaking Nature/The Ethics and Politics of Genetic Engineering	4
PHIL 450	Environmental Ethics	4
PHIL 450H	Honors/Environmental Ethics	4
PHIL 510	Philosophy and Feminism	4
PHIL 520	Introduction to Eastern Philosophy	4
PHIL 525	Existentialism	4
PHIL 525H	Honors/Existentialism	4
PHIL 530	Ethics	4
PHIL 635	Philosophy of Law	4
PHIL 660	Law, Medicine, and Ethics	4
PHIL 701	Topics in Value Theory	4
PHIL 740	Advanced Topics in the Philosophy of Law	4

PHIL 495 Tutorial Reading and PHIL 795 Independent Study normally do not count toward fulfilling major requirement credits; exceptions may be granted by special permission.

Note that it is in the nature of 700-level seminars to presuppose by default that students have completed the main 400-level and 500-level core requirements (PHIL 412 Beginning Logic, PHIL 500 Workshop, PHIL 530 Ethics, PHIL 570 Ancient Philosophy, PHIL 580 Modern Philosophy from Descartes to Kant) and so free reference is made to materials, views, techniques, etc. covered in those lower-level core requirements.

Although not required, students are strongly encouraged to consider the possibility of doing honors-in-major (and thus writing a thesis or an honors portfolio), and/or presenting research at the Undergraduate Research Conference, and/or fulfilling an undergraduate research grant in their senior year. This is especially encouraged for students considering graduate school in philosophy.

The required minimum overall GPA in major coursework is 2.0.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

Discovery Requirements

For students majoring in only philosophy: philosophy majors may "double count" any two courses toward the major and also to satisfy Discovery requirements. For example, a philosophy major can count (1) PHIL 412 Beginning Logic toward the major requirement as well as using this course to satisfy the Quantitative Reasoning Discovery Category and (2) they can also count PHIL 421 Philosophy and the Arts toward both the major and the Fine and Performing Arts Discovery Category. Because PHIL 412 Beginning Logic and PHIL 570 Ancient Philosophy are required for the major and also satisfy Quantitative Reasoning and Humanities

Categories, respectively, all majors could simply count these two courses toward their Discovery requirements. In various circumstances—for instance if a student already satisfied those Discovery requirements before becoming a philosophy major—one might prefer to count other philosophy courses toward different Discovery Categories, and they are free to do so.

For students double majoring with philosophy: The Department sets no limits on how many courses you can “double count” toward both the philosophy major and Discovery categories if philosophy is your **second** major. A double major with philosophy as your second major could in principle count any of the following courses toward the major while satisfying five Discovery Categories:

1. **Quantitative Reasoning (QR)** Discovery Category could be satisfied by PHIL 412 Beginning Logic.
2. **Fine and Performing Arts (FPA)** Discovery Category could be satisfied by PHIL 421 Philosophy and the Arts.
3. **Humanities (HUMA)** Discovery Category could be satisfied by PHIL 401 Introduction to Philosophy, PHIL 410 Happiness, Well-Being, and a Good Life, PHIL 430 Ethics and Society, PHIL 436 Social and Political Philosophy, PHIL #437 Social and Political Philosophy, PHIL 440 Just Business: The Ethics of Markets and Money, PHIL 440A Honors/Who Are You? Personal Identity and Humanity, PHIL 440B Honors/Humanism and Dehumanization, PHIL 444A Who Am I? Concepts of Self, PHIL 525 Existentialism, or PHIL 570 Ancient Philosophy.
4. **World Cultures (WC)** Discovery Category could be satisfied by PHIL 520 Introduction to Eastern Philosophy.
5. **Environment, Technology, and Society (ETS)** Discovery Category could be satisfied by PHIL 424 Science, Technology, and Society, PHIL 435 Human Nature and Evolution, PHIL 444 Remaking Nature/The Ethics and Politics of Genetic Engineering, PHIL 447 Artificial Intelligence, Robots, and People, or PHIL 450 Environmental Ethics.

Philosophy Minor

<https://cola.unh.edu/philosophy/program/minor/philosophy>

Description

UNH philosophy minors acquire the ability to think systematically and imaginatively about fundamental and enduring issues such as morality, justice, happiness, beauty, gender, race, nature, artificial intelligence, space, time, and the meaning of life and death. Our internationally-renowned professors emphasize discussion, debate and writing in our courses. Wrestling with the “big questions” from diverse and global perspectives will prepare you exceptionally well for a variety of fulfilling careers. A lively and nurturing community personally invested in the success of our high achieving students, we take pride in watching our graduates excel in top law and graduate schools, innovative social justice programs, and various positions from Wall Street to Silicon Valley and beyond that seek hard workers who can think rigorously and communicate clearly.

Requirements

A philosophy minor consists of **five philosophy courses with a grade of C- or above**.

Code	Title	Credits
	PHIL course at 500 level or higher	4
	Four elective PHIL courses	16
	Total Credits	20

PHIL 495 Tutorial Reading and PHIL 795 Independent Study may be used towards the minor only with special approval.

You do not need to declare a minor; however, it might be wise to meet with a faculty member from the Philosophy Department to discuss your minor plan.

At the beginning of your final semester of study, you should complete a certification of completion of minor form (<http://www.unh.edu/registrar/forms/minorform.pdf>), obtain the necessary signatures, and submit it to your Dean's Office.

Political Science (POLT)

The study of political science includes the study of politics, power, and governance, from local municipalities to other countries and the international system. Students study both formal and informal institutions of government, political behavior, civil society, the role of the media, individuals, and the factors that shape policy. Political science clarifies political involvement and contributes to informed citizenship. The course of study is particularly valuable to students planning to enter local or national government, the Foreign Service, those who intend to study law and enter the legal profession, as well as careers in the security/intelligence sector. The major also enhances cognitive abilities, writing, public speaking, and analytical skills that translate into careers in journalism, international organizations, public affairs, and the private sector.

Internships and Advanced Study

In addition to the courses regularly offered, the department could have available selected topics, advanced study in political science, and internships. Interested students should check the department's website to learn about the offerings for a given semester.

The department also offers several internship opportunities that give students experience in various aspects of government, policy making, and the legal system at the local, state, and national levels. Student must have taken certain course prerequisites for each kind of internship. In addition, students must have junior or senior standing and normally have a 3.2 average or higher to be eligible for consideration. Students desiring to undertake internships must fully comply with the departmental guidelines as stated on the application forms, which are available on the department website. Applications must be received by the first day of the preregistration period prior to the semester the course will be undertaken. Internships can only fulfill non-subfield requirements at the 500-level. Washington placements are made either through the Department of Political Science or through the Washington Center located in the National Student Exchange Office; major credit must be arranged through the department.

Political Science Language Requirement

The bachelor of arts degree at the University of New Hampshire requires that a student satisfy the foreign language proficiency requirement. The requirement may be met by demonstrating language proficiency equal to a one-year college-level course (401 and 402, 403 and 503, or 503 and

above in spoken language). See University Requirements/Degrees (p. 23) for the full description of this requirement.

The Department of Political Science does not allow American Sign Language (ASL) to count toward the language requirement.

Exceptions to this must be petitioned and approved by the Department of Political Science's undergraduate committee and a student's adviser.

Five-year B.A./M.A. Program

The five-year political science B.A./M.A. program (also known as a "dual degree, early admission" program) aims to

1. improve opportunities for excellent undergraduates to prepare for competitive Ph.D. programs or add an additional credential before entering a competitive job market; and
2. allow students interested in politics to advance and further specialize their political science education in only one additional year at UNH.

Students must fulfill all programmatic requirements for the current master's degree program, as well as fulfill all programmatic requirements for their bachelor's degree.

Interested students must submit a full graduate application by February 15 of their junior year. Minimum GPA required for admission is 3.2.

For additional information you may contact the graduate coordinator, Tama Andrews, (603) 862-2321, tama.andrews@unh.edu. (tama.andrews@unh.edu)

<https://cola.unh.edu/political-science>

Programs

- Political Science Major (B.A.) (p. 108)
- Political Science Minor (p. 108)

Faculty

<https://cola.unh.edu/political-science/faculty-staff-directory>

Political Science Major (B.A.)

<https://cola.unh.edu/political-science/program/ba/political-science-major>

Description

The study of government and politics, to which the courses and seminars of the Department of Political Science are devoted, includes the development of knowledge of political behavior by individuals and groups as well as knowledge about governments: their nature and functions, their problems and behavior, and their interactions—at the national and international levels and at the local, state, and regional levels.

Much of the learning offered by the Department of Political Science also can be regarded as essential for good citizenship, since political knowledge helps to explain the formal and informal institutions by which we are governed and the forces that lead to policy decisions, and also seeks to clarify the issues and principles that encourage people toward political involvement. It contributes to the store of knowledge necessary

for informed citizenship. In addition, such learning is especially valuable to students planning to enter local or national government or other public service, including the Foreign Service, and it will be of great help to those who intend to study law and enter the legal profession. For teaching, particularly at the college level, and for many types of government service, graduate work may be indispensable. An undergraduate major in political science will provide a helpful foundation for any further study of politics and related fields in the social sciences and humanities. Such an emphasis also will be valuable for students seeking careers in journalism, international organizations, and the public affairs and administrative aspects of labor, financial, and business organizations.

Requirements

The major program in political science consists of at least 10 courses (40 credits) and not more than 12 courses (48 credits). The minimum grade requirement is C- per course. Any grade lower will not count toward major. Courses are to be distributed in the following way:

Code	Title	Credits
Three 400-level courses: ¹		
POLT 401	Politics and Society	4
POLT 402	American Politics and Government	4
POLT 403	United States in World Affairs	4
Six 500-level courses ²		24
Discovery Program Capstone Requirement:		
Select any 700-level political science course		4
Total Credits		40

¹ Once they declare the major, students must complete these three courses within the first calendar year. POLT 407 Law and Society and any of the 444's do not count toward the major.

² Of these, at least one shall be chosen from each of the four subfields in which the department's courses are organized: American politics, political thought, comparative politics, and international politics. Students may use a microeconomics course (ECON 402 Principles of Economics (Micro) or ECON 605 Intermediate Microeconomic Analysis) or macroeconomics course (ECON 401 Principles of Economics (Macro) or ECON 611 Intermediate Macroeconomic Analysis) to count as the fifth or sixth electives in this sequence. Additional economics courses will be considered by petition. Only one economics course can count toward this requirement.

The required minimum overall GPA in major coursework is 2.0.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

Major department courses may not be used to satisfy Discovery category requirements except in the case of a second major. If students substitute an economics course for a POLT 500-level course, this economics course cannot be used to satisfy Discovery category requirements.

Political Science Minor

<https://cola.unh.edu/political-science/program/minor/political-science>

Description

The study of government and politics, to which the courses and seminars of the Department of Political Science are devoted, includes the development of knowledge of political behavior by individuals and groups as well as knowledge about governments: their nature and functions; their problems and behavior; and their interactions-at the national and international levels and at the local, state, and regional levels.

Much of the learning offered by the Department of Political Science can also be regarded as essential for good citizenship, since political knowledge helps to explain the formal and informal institutions by which we are governed and the forces which lead to policy decisions, and also seeks to clarify the issues and principles that encourage people toward political involvement. It contributes to the store of knowledge necessary for informed citizenship. In addition, such learning is especially valuable to students planning to enter local or national government or other public service, including the Foreign Service, and it will be of great help to those who intend to study law and enter the legal profession.

Requirements

The political science minor consists of five courses (20 credits total).

Code	Title	Credits
Five elective POLT courses, with no more than two at the 400 level		20
Total Credits		20

- These courses may be taken in any combination of the four subfields and levels (400-700) offered. The fields to choose from are: American politics, political thought, comparative politics, and international politics.
- The minimum grade requirement is C- per course. Any grade lower than a C- will not count toward the minor.

Students wishing to use transfer credits from abroad or other universities should meet with a political science adviser to determine eligibility toward the minor.

Psychology (PSYC)

The Department of Psychology focuses on the scientific study of human and non-human behavior. Our bachelor of arts program in psychology is broad, with an emphasis on technical skills and the opportunity to specialize in areas that interest you. Courses cover such topics as clinical and counseling, social psychology, personality, psychological development, cognition in humans and non-humans, neuroscience, sensory psychology and the history of psychology. Opportunities abound to work informally in laboratories or to participate in both clinically-oriented and non-clinical internships.

The program in neuroscience and behavior, shared between Liberal Arts and Life Sciences and Agriculture, focuses on the scientific study of the brain and its relationship to behavior. This Bachelor of Science program is structured around a rigorous core sequence of courses that incorporates an extensive laboratory experience, with the opportunity for specialization. Courses include such topics as endocrinology, genetics, neurology, animal behavior, neuroscience and philosophy, drugs, sensory systems, mood disorders and ecology. A large number of laboratories are available that routinely incorporate undergraduate students.

Advising System

Undergraduate advising in the department is conducted jointly by the department coordinator and the full-time faculty. The department coordinator has primary responsibility for advising freshman and sophomore psychology majors and is the initial contact for all majors in a state of transition including readmitted, transfer, and newly declared students. The department coordinator assists students in all phases of educational planning and decision making, including registration, long-range academic planning, degree and program requirements, and career selection and planning. Continuing junior and senior psychology majors are assigned to a faculty adviser with appropriate consideration for student preferences. The advising relationship with a faculty member is designed to encourage refining career and educational decisions.

Undergraduate Awards for Majors

Each year the faculty chooses psychology undergraduates as the recipients of the following awards: the Herbert A. Carroll Award for an outstanding senior in psychology, the George M. Haslerud Award for an outstanding junior in psychology, and the Fuller Foundation Scholarship for an outstanding junior in psychology with demonstrated interests in clinical psychology. Psychology majors with at least a 3.2 grade-point average are eligible for these awards. Faculty nominate students from the eligibility list and final selection of recipients is made by vote of the full-time psychology faculty.

Honors Program in Psychology

The Department of Psychology sponsors an honors program for outstanding students in the major. Students may apply to the honors program in psychology in their sophomore or junior year.

Eligibility criteria include

1. Overall grade-point average of 3.5 or above and 3.5 in major courses
2. Completion of PSYC 401 Introduction to Psychology, PSYC 402 Statistics in Psychology and PSYC 502 Research Methods in Psychology with a grade of B or above in each.

Requirements of the program include

1. Designate three of the four 700-level psychology courses as honors or equivalent
2. PSYC 797 Senior Honors Tutorial (fall of senior year)
3. PSYC 799 Senior Honors Thesis (spring of senior year)

Students interested in applying to the honors program should contact the department coordinator by the end of their sophomore year.

Undergraduate Research Conference

The Department of Psychology sponsors the annual George M. Haslerud Undergraduate Research Conference each spring. Undergraduate honors students present their theses at the conference. Contact the department coordinator for more information.

<https://cola.unh.edu/psychology>

Programs

- Neuroscience and Behavior Major (B.S.) (p. 102)
- Psychology Major (B.A.) (p. 110)
- Psychology Minor (p. 111)

Faculty

<https://cola.unh.edu/psychology/faculty-staff-directory>

Psychology Major (B.A.)

<https://cola.unh.edu/psychology/program/ba/psychology-major>

Description

The psychology major provides students with a broad education, while also allowing some specialization. The program exposes students to the scientific study of behavior and encourages an increased understanding of the behavior of humans and animals.

Students who wish to declare psychology as a major after enrolling in the University should consult with the department's academic counselor for application procedures and criteria.

Requirements

Students majoring in psychology must complete 44 credits with a minimum grade of C- in each course and a 2.0 overall average in all major requirements.

Code	Title	Credits
Core Courses		
PSYC 401	Introduction to Psychology	4
PSYC 402	Statistics in Psychology	4
PSYC 502	Research Methods in Psychology	4
Breadth (500-level) courses		
Select two of the following courses from Group I:		8
PSYC 511	Sensation and Perception	
PSYC 512	Psychology of Primates	
PSYC 513	Cognitive Psychology	
PSYC 521	Behavior Analysis	
PSYC 522	Behaviorism (offered in Manchester only)	
PSYC 531	Psychobiology	
Select two of the following courses from Group II:		8
PSYC 552	Social Psychology	
PSYC 553	Personality	
PSYC 561	Abnormal Behavior	
PSYC 571	Pioneers of Psychology	
PSYC 581	Child Development	
PSYC #582	Adult Development and Aging (offered in Manchester only)	
Depth (700-level) courses		
Select two of the following courses from Group I:		8
PSYC #702	Advanced Statistics and Research Methodology ¹	

PSYC 705	Tests and Measurement ¹	
PSYC 710	Visual Perception	
PSYC 712	Psychology of Language (or PSYC 712W)	
PSYC 713	Psychology of Consciousness	
PSYC 716	Cognitive Neuroscience	
PSYC 720	Animal Cognition	
PSYC 722	Behaviorism, Culture, and Contemporary Society	
PSYC 731	Brain and Behavior	
PSYC 733	Drugs and Behavior	
PSYC 735	Neurobiology of Mood Disorders	
PSYC 736	Attention Disorders	
PSYC 737	Behavioral Medicine	
PSYC 741	Advanced Topics (examples: Behavioral Neuroscience, ReShaping People: A History)	
	or PSYC 741W Advanced Topics	
Select two of the following courses from Group II:		8
PSYC #702	Advanced Statistics and Research Methodology ¹	
PSYC 705	Tests and Measurement ¹	
PSYC 755	Psychology and Law	
PSYC 756	Psychology of Crime and Justice	
PSYC 757	Psychology of Happiness	
PSYC 758	Health Psychology	
PSYC 762	Counseling	
PSYC 763	Community Psychology	
PSYC 775	Madness in America	
PSYC 780	Prenatal Development and Infancy	
PSYC 783	Cognitive Development	
PSYC 785	Social Development	
PSYC 791	Advanced Topics (examples: Culture and Human Development, Psychology and Race, Psychology for Sustainability, Autobiographical Memory, Adolescence)	
	or PSYC 791W Advanced Topics	
PSYC 793	Internship	
Total Credits		44

¹ PSYC #702 Advanced Statistics and Research Methodology & PSYC 705 Tests and Measurement can be used for group I or group II but cannot be used for the same group.

Note: Most offerings have one or more prerequisite courses. Students (with the help of their advisers) are expected to select breadth courses that will later enable them to select depth courses appropriate to their interests and career goals.

The Discovery Program capstone requirement, taken during the senior year, may be fulfilled by completing one of the following options:

1. The honors-in-major program with an honors project; honors seminar, and research presentation;
2. a 4-credit capstone designated independent study project (PSYC 795 Independent Study);
3. PSYC 793 Internship;
4. Capstone-designated 700-level course.

The psychology department does not accept other departments' statistics courses toward the psychology major. Students who have taken

a statistics course other than PSYC 402 Statistics in Psychology must pass a competency exam in order to declare the major and/or register for PSYC 402 Statistics in Psychology.

Major department courses may not be used to satisfy Discovery category requirements except for PSYC 402 Statistics in Psychology, which may be applied to the QR Discovery or to the major, but not both, and except in the case of psychology being the second major (PSYC 401 Introduction to Psychology cannot be used to fulfill a Social Science; PSYC 571 Pioneers of Psychology cannot be used to fulfill a Historical Perspective). Students who use PSYC 402 Statistics in Psychology for the QR Discovery requirement must take an additional psychology course that is eligible for major credit to replace PSYC 402 Statistics in Psychology in the major. (PSYC 595 Applications of Psychology or PSYC 440A Honors/Understanding the Human Brain may not be used for this purpose.)

Transfer Students

Transfer students who elect to major in psychology must complete at least 24 credits in the program at UNH to qualify for the degree in psychology. Transfer students must earn a total of 44 approved credits for completion of the psychology major. The distribution of these credits will be determined by the department's academic counselor. Transfer students should note that courses are allotted only the number of credits granted by the original institution (after adjustments for semester-hour equivalents). Thus, students transferring from an institution at which courses carry less than four credits each must make up for any credit deficit created by acceptance of transfer credits into the psychology major. Only courses taken in a psychology department can be transferred into the psychology major. Of the four 700-level courses required for the major, at least three must be taken at UNH.

Additional Notes

Specific course selections should be discussed with advisers. Exceptions to the requirements for the major require compelling circumstances and a petition to the department.

Psychology majors planning to go on to graduate study in psychology are advised to include PSYC #702 Advanced Statistics and Research Methodology and/or PSYC 705 Tests and Measurement among their courses.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

Psychology Minor

<https://cola.unh.edu/psychology/program/minor/psychology>

Description

See the department coordinator for details on the minor in psychology.

Requirements

Code	Title	Credits
PSYC 401	Introduction to Psychology	4
Two courses at the 500 level or higher		8

Two additional PSYC courses	8
Total Credits	20

- No more than 4 credits of PSYC 795 Independent Study may be applied to the minor.
- A maximum of 9 approved psychology transfer credits can be applied to the UNH psychology minor.
- Transfer courses must be evaluated for their equivalency. Only courses taken in a psychology department can be applied towards the minor.
- Three credit transfer courses can be applied as only three credits. Students must make up the credit deficit created by acceptance of transfer courses, with one exception: one three-credit course accepted in transfer may be applied for a total of 19 credits.
- AP Psychology transferred into UNH is equivalent as PSYC 401.

Queer Studies

Programs

- Queer Studies Minor (p. 111)

Queer Studies Minor

<https://cola.unh.edu/womens-studies/program/minor/queer-studies>

Description

The queer studies minor provides students with opportunities to research and understand a rapidly growing field whose focus is the study of lesbian, gay, bisexual, trans, and allied peoples, their histories, and cultures. Queer studies is a method of inquiry that explores the role of same-sex desire and constructions of gender across and among cultures and histories. In these classes, students will consider sexualities and genders as identities and social statuses, as categories of knowledge, and as lenses that help to frame how we understand our world. The minor consists of interdisciplinary coursework in queer studies and is open to all students. Students who wish to pursue the queer studies minor should consult with Holly Cashman at holly.cashman@unh.edu or (603) 862-3123.

Requirements

The queer studies minor requires 5 courses (20 credits) from the queer studies course offerings list below. A grade of **C- or better** is required in all queer studies courses. One pre-approved elective from the electives list below may count toward the minor. Courses taken Pass/Fail may not be used for the minor. No more than 8 credits used to satisfy the requirements for a major may be used for the queer studies minor. If you wish to substitute a different course, consult with a queer studies faculty advisor.

Queer Studies Course Offerings

Please note that additional courses may count. Please visit the program's website for the most up-to-date information.

Code	Title	Credits
ANTH 625	Sexuality in Cross-Cultural Perspectives	4
ANTH 685	Gender, Sexuality and HIV/AIDS in Sub-Saharan Africa	4
CMN 697	Seminar in Rhetorical Study	4
ENGL 693	Special Topics in Literature	4
ENGL 746	Studies in American Drama	4
ENGL 785	Fabulous Feminists, Women Warriors, Women Worriers	4
HDFS 746	Human Sexuality	4
HDFS 757/857	Race, Class, Gender, and Families	4
HIST 497	Explorations in Historical Perspectives	4
HIST 595	Explorations (Only topics Gender and Sexuality in Pre-Modern Europe; Sex and Sexuality in Islamic History)	1-4
HIST 596	Explorations (Only topic Introduction to Gay and Lesbian History)	1-4
HIST 665	Themes in Women's History	4
HUMA 401	Introduction to the Humanities	4
POLT #525	Multicultural Theory	4
PSYC 595	Applications of Psychology (Research, Field, or Academic Experience)	1-4
SOC 520	Family	4
SOC 570	Sexual Behavior	4
SOC 630	Sociology of Gender	4
SW 715/815	Practice with Gay, Lesbian, Bisexual, and Transgender People	4
WS 405	Gender, Power and Privilege	4
WS 444	Trans/Forming Gender	4
WS #444B	Score!: Gender and Diversity in Sports	4
WS 505	Survey in Women's Studies (Only topics Violence Against Women; Gender, Race and Sexuality in Visual Culture)	4
WS 632	Feminist Thought (depending on instructor)	4
WS 795	Independent Study (or other departmental designation)	1-4
WS 798	Colloquium (Only topics Race, Gender, and Representation; Gay Marriage and Kinship; Women in Prison)	4

Electives (require program approval and may vary by instructor)

Code	Title	Credits
CMN 567	Gender, Race, and Class in the Media	4
CMN 697	Seminar in Rhetorical Study	4
EDUC #507	Mentoring Adolescents	2
EDUC 705/805	Contemporary Educational Perspectives	4
ENGL 618	Film Theory	4
ENGL #685	Women's Literary Traditions	4
HDFS 545	Intimate Relationships and Families	4
HUMA 401	Introduction to the Humanities	4
INCO #450	Introduction to Race, Culture and Power	4
POLT #522	Dissent and the Political Community	4
POLT 721/821	Feminist Political Theory	4

PSYC 763	Community Psychology	4
SOC 630	Sociology of Gender	4
SOC 570	Sexual Behavior	4
SOC 697	Special Topics (Only topic Women, Health, and Illness)	4
SW 840	Implications of Race, Culture, and Oppression for Social Work Practice	3
WS 401	Introduction to Women's Studies	4
WS 444A	Race Matters	4
WS 595	Special Topics (Only topics Feminisms and Global Perspectives; Activism: VAW, Poverty, Repro Rights)	1-4
WS 632	Feminist Thought	4
WS 796	Advanced Topics	4
WS 797	Internship	4
WS 798	Colloquium (Only topic Violence Against Women/Activism)	4

Race and Ethnic Studies

Programs

- Race and Ethnic Studies Minor (p. 112)

Race and Ethnic Studies Minor

<https://cola.unh.edu/interdisciplinary-studies/program/minor/race-ethnic-studies>

Description

The race and ethnic studies (RES) minor examines how racial and ethnic categories are created and maintained—politically, socially, and culturally. RES uses critical, interdisciplinary, and comparative approaches to study race relations as they intersect with factors including gender and sexuality, class, religion, and immigration status. The minor prepares students for life and work in a world increasingly characterized by difference derived from racial and ethnic identities.

Learning Outcomes

Facilitate understanding of how the social constructions of race affect the social fabric of our historical and contemporary world; Enhance students' abilities to appreciate differences and to actively and critically engage in civic responsibilities, especially with respect to social justice; Prepare students to negotiate an increasingly interconnected world and apply their education in a wide range of occupations; Gain exposure to the theories and methods of ethnic studies; Compare representations of borderlands, hybridity, migration, and diaspora from different cultures to comprehend how national boundaries, as well as local, national, and transnational cultures and politics, affect the constitution of racial and ethnic categories.

Classes for the RES minor are housed in a variety of departments in the College of Liberal Arts, offering students a truly interdisciplinary experience.

Requirements

The race and ethnic studies minor consists of five courses or 20 credits. To complete a minor, students are required to:

1. Enroll in an introductory-level course. (These are listed on the minor website each semester.)
2. Enroll in at least one course at the 600/700-level.
3. Understand that no more than 8 credits used to satisfy the requirements for a major may be used for a minor.
4. Earn a C- or better in each course and maintain a 2.0 grade-point average in courses taken for the minor.

List of Courses Approved for the Minor

Code	Title	Credits
AMST #444B	New Orleans: Place, Meaning, and Context	4
ANTH 500	Peoples and Cultures of the World (when focus is Latin America, SubSaharan Africa or Middle East/ North Africa)	4
ANTH 610	Medical Anthropology: Illness and Healing	4
ANTH 616	Religion, Culture, and Society	4
ANTH 625	Sexuality in Cross-Cultural Perspectives	4
ANTH 680		4
ANTH 697/ ENGL 693	Special Topics (American Roots Music)	4
ANTH #740	Teaching Race	4
ANTH 750	Islam and Gender: Gendered Lives of Muslims	4
CMN 515	Analysis of News	4
CMN 567	Gender, Race, and Class in the Media	4
CMN 696	Seminar in Media Studies (Topics in Film/Race, Class, Gender)	4
EDUC 717	Growing up Male in America	4
ENGL 444G	Ethnic America: Readings in African American, Asian American, Native American and Latino/a Literature	4
ENGL 517	Introduction to African American Literature and Culture	4
ENGL 550	Introduction to the Literature and Culture of Race	4
ENGL 581	Introduction to Postcolonial Literatures in English	4
ENGL 585	Introduction to Women in Literature	4
ENGL 595	Literary Topics (Intro/Caribbean Lit in English ONLINE)	1-4
ENGL 606	Languages of the World	4
ENGL #609	Ethnicity in America: The African American Experience in the 20th Century	4
ENGL 619	Critical Approaches to Literature (Special Topic: "On Race")	4
ENGL 650	Studies in American Literature and Culture (Latino/A Literature, Comics & Graphic Narratives, Consumer Culture)	4
ENGL 739	American Indian Literature	4
ENGL 750	Special Studies in American Literature (Latin Literature)	4
ENGL 778/ WS 798	Race and Gender in Film and Popular Culture	4

HDFS 444	We Don't All Play the Violin: Stories and Stereotypes of Asians in America	4
HIST 505	African American History	4
HIST 506	African American History	4
HIST 532	Modern Latin America	4
HIST 588	History of Modern Africa: 1870 to the Present	4
HIST #589	Islam in Africa	4
HIST #625	Southern History and Literature since the Civil War	4
HIST 632	Latin American History: Topics	4
HUMA 730	Special Studies (Race Theory)	4
POLT 546	Wealth and Politics in Asia	4
POLT #565	United States Policy in Latin America	4
POLT 725	Politics and Literature	4
PSYC 571	Pioneers of Psychology	4
PSYC 791	Advanced Topics (Psychology and Race)	4
SPAN 526	Introduction to Latin American Cultures	4
SPAN 798	Topics in Hispanic Linguistics and Cultural Studies (Language & Id in Spanish)	4
SW 697	Special Topics in Social Welfare (Exploring Social Justice)	4
WS 401	Introduction to Women's Studies	4
WS 405	Gender, Power and Privilege	4
WS 444A	Race Matters	4
WS 444C	On the Roads to Equality	4
WS 444D	Cyborgs, Avatars, and Feminists: Gender in the Virtual World	4
WS 505	Survey in Women's Studies (Only topics: Leadership for Social Change, Queer Cinema, Queer Sustainability, Global Sex Industry, Race, Gender and Environmental Justice, Feminist Perspectives on Media)	4
WS 632	Feminist Thought	4
WS 798	Colloquium (Women in Prison)	4

Additional Information

Courses taken pass/fail may not be used toward a minor. A relevant internship may be substituted for one of the electives.

After completing the 20-credit sequence, the student submits the Certification of Completion of Minor form, available online or from the RES coordinator. Once this certification is approved by the RES coordinator and major adviser, the form goes to the college dean and the registrar to be recorded on the transcript. The certification form must be completed by the beginning of the student's final semester at the University.

Russian (RUSS)

The Russian program provides students with an opportunity to study one of the world's most important languages, its literature, and its culture. In addition to the intrinsic value of Russian language, literature, and culture as a liberal arts experience, the Russian major leads to a number of careers, such as teaching, translation and interpreting, government, and the Foreign Service. It is also a valuable asset in preparing for careers in law, economics, and international trade, and it can serve as a double major with business administration, international affairs, the natural and physical sciences, and other liberal arts fields such as English,

history, political science, sociology, philosophy, theatre, communication, linguistics, and other foreign languages.

<https://cola.unh.edu/languages-literatures-cultures>

Programs

- Russian Major (B.A.) (p. 114)
- Russian Minor (p. 114)
- Russian Studies Minor (p. 115)

Faculty

<https://cola.unh.edu/languages-literatures-cultures/faculty-staff-directory>

Russian Major (B.A.)

<https://cola.unh.edu/languages-literatures-cultures/program/ba/russian-major>

Description

The Russian program provides students with an opportunity to study one of the world's most important languages, its literature, and its culture. In addition to the intrinsic value of Russian language, literature, and culture as a liberal arts experience, majoring in Russian leads to a number of careers, such as teaching, translation and interpreting, government, and the Foreign Service. The knowledge of the language and cultural proficiency is also a valuable asset in preparing you for careers in law, economics, and international trade. All Russian majors are strongly encouraged to double major or include a relevant minor in their studies.

If you would like more information please contact the program coordinator Arna.Bronstein@unh.edu. (Arna.Bronstein@unh.edu)

Requirements

New students will be assigned to the proper course after consultation with the Russian faculty. A student may not receive UNH credit for elementary Russian courses if he or she has had two or more years of secondary school Russian; however, a student may petition the Russian program to be admitted to the 400-level courses for credit. In the 503-790 range, a grade of C or better is required to advance to the next course in the language series (503, 504, 631, 632, 790).

The Russian major consists of a minimum of 40 credits above RUSS 402 Elementary Russian II. Specific course requirements are:

Code	Title	Credits
Language Courses		
RUSS 503	Intermediate Russian I	4
RUSS 504	Intermediate Russian II	4
RUSS 601	Russian Conversation and Phonetics	4
RUSS 631	Advanced Russian Conversation and Composition	4
RUSS 632	Advanced Russian Conversation and Composition	4
RUSS 790	Advanced Language and Style	4
One Culture Course		

Select one of the following: 4

RUSS #425	Introduction to Russia: Contemporary Society and Culture	
RUSS 425M	Topics in Russian Culture and Society in Moscow	
RUSS 525	Russia: Mythology and Propaganda	
RUSS 525M	Russia: Mythology and Propaganda in Moscow	

Two Literature Courses

RUSS 691 Readings in Russian Literature 4

Select one of the following: 4

RUSS 500	Selected Topics in World Literature	
RUSS #521	Devils, Deities, and Madness in Russian Literature	
RUSS #522W	Morality, Sex and Revolution in Russian Literature	

Capstone Course

Select one of the following: 4

RUSS 721	Topics in Contemporary Russian Literature: From Chekhov to Post-Modernism	
RUSS 725	Topics in Russian Culture and Society	
RUSS 733	History of Slavic Languages and Culture	

Study Abroad

Majors are required to spend a semester or summer on an approved study abroad program in Russia, RUSS 685 or RUSS 686

Total Credits 40

Majors are required to take RUSS 631 Advanced Russian Conversation and Composition-RUSS 632 Advanced Russian Conversation and Composition and at least one 700-level Russian course at the Durham campus.

Transfer students must earn a minimum of 12 major credits at the Durham campus.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

Russian majors may use two major-required courses to satisfy two Discovery category requirements. In addition, Russian majors may take RUSS #521 Devils, Deities, and Madness in Russian Literature to satisfy both a Discovery Inquiry requirement and a major requirement.

The required minimum overall GPA in major coursework is 2.0.

Russian Minor

<https://cola.unh.edu/languages-literatures-cultures/program/minor/russian>

Description

The Russian program provides you the opportunity to minor. The minor consist of 5 courses where students develop language proficiency and knowledge of Russian culture while also concentrating in another field of study such as social service, law, nursing, education and business. Foreign language skills and cultural competencies will open doors for you that you would not have had access to without the minor in Russian.

Requirements

The minor in Russian consists of a minimum of 20 credits above RUSS 402 Elementary Russian II; it must include:

Code	Title	Credits
RUSS 503 & RUSS 504	Intermediate Russian I and Intermediate Russian II	8
Select at least one of the following:		4
RUSS 631	Advanced Russian Conversation and Composition	
RUSS 632	Advanced Russian Conversation and Composition	
RUSS 691	Readings in Russian Literature	
RUSS 721	Topics in Contemporary Russian Literature: From Chekhov to Post-Modernism	
RUSS 725	Topics in Russian Culture and Society	
RUSS 790	Advanced Language and Style	
Select two elective RUSS courses above RUSS 402		8
Total Credits		20

Russian Studies Minor

<https://cola.unh.edu/languages-literatures-cultures/program/minor/russian-studies>

Description

The Russian studies minor offers students an opportunity to pursue area study of Russia and the new states through an interdisciplinary program.

Students wishing to minor in Russian studies should consult with any faculty member in Russian studies.

Requirements

The minor consists of a minimum of 20 credits (five courses) with a minimum grade of C.

Code	Title	Credits
Select five courses in RUSS or other subjects with approval from advisor		20
Total Credits		20

In addition to the required courses, students must demonstrate a Russian language proficiency at the level of RUSS 504 Intermediate Russian II or an equivalent.

Security Studies

Programs

- Security Studies Minor (p. 115)

Security Studies Minor

<https://cola.unh.edu/political-science/program/minor/security-studies>

Description

The security studies minor will provide students with the opportunity to explore the many dimensions of security through the interdisciplinary study of political science, anthropology, communication, geography, history, humanities, justice studies, sociology, women's studies, economics, and aerospace studies. This well-rounded curriculum will enable students to build upon their interest in political science by specializing in an area of increasing importance—domestic and global security.

The field of security studies has always been important within the discipline of political science, but the concept of security has broadened and become more problematized in recent years. Following the terrorist attacks of 9/11, federal, state, and local governments created thousands of jobs that require knowledge of security issues and the ability to conduct research. Leaders at all levels count on staff with analytical skills to design and conduct research to support decision-making, and communicate the results of this research effectively to policy-makers. Individuals who understand the national security environment and have the ability to design and conduct research are in critical demand in the public sector, private sector, and not-for-profit entities.

For more information, contact Mary Malone, mary.malone@unh.edu, (603) 862-1406.

Requirements

1. Five courses (20 credits)
2. Students must receive a grade of C or better for a course to count toward the minor requirements.
3. No more than 8 credits may double count between majors and minors. Thus, political science majors pursuing the security studies minor can only double count up to two of the three required political science courses below. The third required course must be taken in addition to courses taken to fulfill major requirements.

Code	Title	Credits
Required Courses		
Select one core POLT course of the following:		4
POLT 560	World Politics	
POLT 562	Strategy and National Security Policy	
POLT 568	Introduction to Intelligence	
Select two intermediate POLT courses of the following:		8
POLT 513	Civil Rights and Liberties	
POLT 548	Drug Wars	
POLT 559	Comparative Politics of the Middle East	
POLT 560	World Politics ¹	
POLT 562	Strategy and National Security Policy ¹	
POLT 563	The Global Information Grid's Disruptive Impact on Government, Politics, and Society	
POLT #565	United States Policy in Latin America	
POLT 567	Politics of Global Resources	
POLT 568	Introduction to Intelligence ¹	
POLT 570	Counterterrorism: Nation states' responses to terrorist activity	
POLT 595	Smart Politics	

POLT 765	Security Intelligence Study	
POLT 778	International Organization	

Electives

Select two electives from other disciplines (at least one must be in a humanities department or program) 8

Total Credits 20

¹ If not counted for core requirement.

Electives within humanities departments and programs:

Code	Title	Credits
ANTH 411	Global Perspectives on the Human Condition: An Introduction to Anthropology	4
ANTH 680		4
GEOG 402	Regional Geography of the Non-Western World	4
HIST #444C	World War Propaganda in Britain and the United States	4
HIST #444E	American at War: Society, Culture, and the Home Front	4
HIST 537	Espionage and History	4
HIST #613	American Ways of War	4
HIST 620	Foreign Relations of the United States	4
HIST #679	Rights Revolution	4
HIST #680	Historical Geography	4
PHIL 430	Ethics and Society	4
PHIL 436	Social and Political Philosophy	4
or PHIL #437	Social and Political Philosophy	4
PHIL 635	Philosophy of Law	4
WS 405	Gender, Power and Privilege	4
WS 798	Colloquium	4

Electives outside humanities departments and programs:

Code	Title	Credits
AERO 681	National Security Affairs/Preparation for Active Duty I	4
AERO 682	National Security Affairs/Preparation for Active Duty II	4
CMN 456	Propaganda and Persuasion	4
CMN 772	Seminar in Media Theory	4
JUST 405	Technology, Crime, and Society: A Forensic Exploration of High-Tech and Digital Crime	4
PSYC 756	Psychology of Crime and Justice	4
SOC 515	Introductory Criminology	4
SOC 540	Contemporary Social Problems	4
SOC 656	Terrorism	4
SOC 693	Global Social Change	4

Other POLT courses can be approved by the core faculty upon request.

Once students have declared the minor, they are required to meet with the coordinator or appropriate affiliated faculty adviser at least once per semester for regular review and assessment of their program, learning outcomes, and progress toward the degree.

Transfer credits may be approved by the coordinator to count toward the minor. If the transfer credit is accepted by the University and fits within the scope of the minor, it will be considered.

Sociology (SOC)

Sociology is the study of social life, social change, and the social causes and consequences of human behavior. Sociologists investigate the structure of groups, organizations, and societies, and how people interact within these contexts.

Since human behavior is shaped by social factors, the subject matter of sociology ranges from the intimate family to the hostile mob; from organized crime to religious cults; from the divisions of race, gender, and social class to the shared beliefs of a common culture.

<https://cola.unh.edu/sociology>

Programs

- Sociology Major (B.A.) (p. 116)
- Sociology Minor (p. 117)

Faculty

<https://cola.unh.edu/sociology/people>

Sociology Major (B.A.)

<https://cola.unh.edu/sociology/program/ba/sociology>

Description

Majoring in sociology provides a solid, multifaceted foundation in the liberal arts, including analytical thinking and writing, and skills in collecting and analyzing data. Students learn diverse theoretical approaches to the social world and acquire tools for conducting and understanding social science research. The wide range of substantive areas taught in the UNH Department of Sociology include courses concentrating on family and work; environmental sociology; social policy; inequalities of race, class, and gender; criminology, social control, and deviant behavior; medical sociology; and religion.

Undergraduate training in sociology is an excellent background for a variety of careers, including the business world, where majors might work in marketing and sales or human resources; government and nonprofit services, where majors might work in education, health services, social welfare, or criminal justice; and research. An undergraduate degree in sociology is also excellent preparation for graduate work in law, social work, criminal justice, counseling, public administration, public health, business administration, urban planning, or further studies in sociology.

To declare a major in sociology, students must have completed at least one introductory-level sociology course with a grade of C or better. New students who declare the major upon admission to UNH must enroll in SOC 400 Introductory Sociology during their first semester and earn a grade of C to maintain status in the program.

Conjoint minors (allowing double-counting of one or two courses) are available for justice studies; gerontology; American studies; race, culture, and power; women's studies; and other approved minors. Students also

have the opportunity to pursue a second major, including justice studies. Students interested in social work or teaching can develop programs in conjunction with the appropriate departments. The departmental honors program is recommended for students with cumulative grade-point averages over 3.4, and especially for those anticipating graduate study.

Requirements

Majors must complete a minimum of 40 semester credits in sociology courses with grades of C- or better in each course and a GPA of 2.0 or better in sociology courses.

Code	Title	Credits
SOC 400	Introductory Sociology	4
SOC 502	Statistics	4
SOC 599	Sociological Analysis ¹	4
SOC 601	Methods of Social Research ²	4
Discovery Program Capstone Requirement:		
SOC 611	Sociological Theory ³	4
Select five additional major courses, at least two must be at the 600 or 700 level (upper-level electives)		20
Total Credits		40

¹ SOC 599 Sociological Analysis must be completed no later than the junior year and is a prerequisite for majors taking 600- and 700-level courses.

² Both SOC 502 Statistics and SOC 599 Sociological Analysis are prerequisites for SOC 601 Methods of Social Research

³ Complete SOC 611 Sociological Theory during senior year.

SOC 595 Independent Reading and Research can be used to fulfill one lower-level elective or SOC 699 Senior Thesis can be used to fulfill one upper-level elective. Sociology majors may use two major-required courses to satisfy two Discovery category requirements. In addition, SOC 599 Sociological Analysis can be used to satisfy both a major requirement and the Inquiry Discovery requirement. (Statistics courses taken in other disciplines are generally not acceptable as a substitute for SOC 502 Statistics.)

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. B.A. candidates must also satisfy the foreign language proficiency requirement.

Students interested in majoring in sociology should consult with the chair of the undergraduate committee in the sociology department for guidance. It is the responsibility of all sociology majors to obtain the latest information from the department office.

Sociology Language Requirement

The bachelor of arts degree at the University of New Hampshire requires that students satisfy the foreign language proficiency requirement. The requirement may be met by demonstrating language proficiency equal to a one-year college-level course (401 and 402, 403 and 503, 501 [Latin only], or 503 and above in a spoken language). American Sign Language courses do not meet the foreign language requirement for sociology majors.

The Department of Sociology requires all students declaring the major after fall 2006 to choose from one of the following languages: Arabic, Chinese, French, German, Greek, Italian, Japanese, Latin, Portuguese,

Russian, and Spanish. Exceptions to this list must be petitioned and approved by the Department of Sociology's Undergraduate Committee and a student's adviser.

Sociology Minor

<https://cola.unh.edu/sociology/program/minor/sociology>

Description

Sociology is the study of social life, social change, and the social causes and consequences of human behavior. Sociologists investigate the structure of groups, organizations, and societies, and how people interact within these contexts.

Since human behavior is shaped by social factors, the subject matter of sociology ranges from the intimate family to the hostile mob; from organized crime to religious cults; from the divisions of race, gender, and social class to the shared beliefs of a common culture.

Requirements

A minor consists of any five 4-credit courses in sociology with a C- or better in each course and a grade-point average of 2.0 or better in these courses.

Code	Title	Credits
Select five elective SOC courses		20
Total Credits		20

Spanish (SPAN)

The Spanish program major and minor in the Department of Languages, Literatures, and Cultures helps students develop Spanish language proficiency and an enhanced knowledge of the cultural and literary achievements of Hispanic societies around the globe. This dual emphasis on communication and cultural analysis prepares students to live in communities where Spanish is increasingly important professionally and personally.

In addition, the program offers courses in Portuguese. Students also have the option to complete honors in the major providing they complete the necessary classes and a senior thesis in Spanish.

The UNH study abroad program in Granada, Spain, open to majors and nonmajors, offers students the opportunity to live and study abroad for a spring semester. A six-week summer immersion program in Costa Rica also is available to students. Financial aid is available for eligible students. Visit cola.unh.edu/llc/program/spain-granada (<http://www.cola.unh.edu/llc/program/spain-granada>), [cola.unh.edu/llc/program/costa-rica-san-joaquin-de-flores](http://www.cola.unh.edu/llc/program/costa-rica-san-joaquin-de-flores) (<http://www.cola.unh.edu/llc/program/costa-rica-san-joaquin-de-flores>), or contact the departmental program directors for further information.

Accelerated B.A./M.A. Program

The dual-degree B.A./M.A. program in Spanish in the Department of Languages, Literatures and Cultures offers high-achieving students the opportunity to earn both an undergraduate and a graduate degree during their time at UNH. Qualified students may be accepted into the program late in the first semester of their junior year and begin to take graduate

courses in the spring of their senior year. Students graduate with a B.A. upon completion of 128 credits (including all University, College and Program requirements), and then complete graduate work (30 credits) the following year. After only five years of study, students earn both degrees.

<https://cola.unh.edu/languages-literatures-cultures>

Programs

- Spanish Major (B.A.) (p. 118)
- Spanish Minor (p. 118)

Faculty

<https://cola.unh.edu/languages-literatures-cultures/faculty-staff-directory>

Spanish Major (B.A.)

<https://cola.unh.edu/languages-literatures-cultures/program/ba/spanish-major>

Description

When you major in Spanish you are opening your opportunities to a variety of fields in which proficiency in the Spanish language and knowledge of Hispanic cultures are desirable or required. Such fields might include international relations, business administration, government, social service, and communications. In addition, students can prepare to teach Spanish at the elementary and secondary levels and in bilingual education programs through UNH's foreign language teacher education program. The undergraduate major also provides a basis for graduate study in preparation for scholarly research and teaching at the college level. When combined with coursework or a dual major in other disciplines, the major prepares students for work in Spanish-speaking areas of the world as well as in bilingual regions of the United States.

Requirements

The major consists of a minimum of 40 credits. All coursework required for the Spanish major must be completed with a grade of C or better. Specific course requirements are:

Code	Title	Credits
SPAN 631 & SPAN 632	Advanced Conversation and Composition I and Advanced Conversation and Composition II	8
Select five of the following culture, linguistics, and literature electives 20 or equivalent:		
SPAN 641	Spanish Phonetics	
SPAN #645	Intro to Spanish Linguistics	
SPAN 647	Hispanic Cultural Studies	
SPAN 648	The Hispanic World Today	
SPAN 650	Hispanic Literature and Popular Culture	
SPAN 651	Introduction to Spanish Literature and Thought	
SPAN 652	Introduction to Spanish Literature and Thought	
SPAN #653	Introduction to Latin American Literature and Thought	

SPAN 654	Introduction to Latin American Literature and Thought	
SPAN 525	Introduction to Spanish Cultures ¹ or SPAN 526 Introduction to Latin American Cultures	
Select three courses taught in Spanish at the 700 level		12
Total Credits		40

¹ SPAN 525 Introduction to Spanish Cultures or SPAN 526 Introduction to Latin American Cultures may be used to satisfy one of these electives, but students are strongly encouraged to select courses taught in Spanish to meet their major requirements. Only one course taught in English may be counted toward the Spanish major.

An approved foreign study experience in a Spanish-speaking country of a minimum of one semester is required; a full academic year is highly recommended. The Discovery Program capstone requirement may be fulfilled by completing SPAN 797 Topics in Hispanic Literary and Cultural Studies (topic R only) in the fall semester or any 700-level Spanish course in the spring semester. Students completing their Discovery capstone in the spring semester must designate one class as their capstone and present their final work in that class at the Undergraduate Research Conference that semester.

The required minimum overall GPA in major coursework is 2.0.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

Spanish majors may use two major-required courses to satisfy two Discovery category requirements.

Spanish Minor

<https://cola.unh.edu/languages-literatures-cultures/program/minor/spanish>

Description

When you minor in Spanish you are expanding upon opportunities and opening doors to careers in your field of interest. Many other disciplines such as social service, nursing, teaching, and business require Spanish as a second language since Spanish is the second most spoken language in the United States. Increasingly, employers in government at municipal, state and federal levels and business as well as related careers, are viewing such experience and language skills favorably.

Requirements

At least three courses must be taken in residence at UNH. All coursework required for the Spanish minor must be completed with a grade of C or better and may not be taken pass/fail.

Code	Title	Credits
5 courses (20 credits) in SPAN 503 or above, which must include:		
SPAN 631	Advanced Conversation and Composition I	
SPAN 632	Advanced Conversation and Composition II	
Total Credits		20

Theatre and Dance (THDA)

There is no area of human endeavor that theatre does not touch. To study theatre is to learn a great deal about yourself and about the world in which you will live. No course of study will prepare you better for life in a rapidly changing world.

The award-winning faculty at the University of New Hampshire provide theatre and dance majors with superlative training within a broad liberal arts context. Students may take courses in acting; voice and movement; dialects; directing; choreography; design and theatre technology; the history, theory, and criticism of drama and theatre; youth drama; secondary theatre education; playwriting; storytelling; puppetry; ballet; theatre dance (jazz and tap); aerial dance; and musical theatre. Students interested in performance, technical, and historical aspects are trained to step into professional careers while still broadening the scope of their preparation through a rich liberal arts education. The program encourages students to explore their interests through independent studies and internships, special projects, and active personal involvement in lecture and laboratory classes, with the possibility for integration with other departments. To assist with financial needs, the department awards scholarships to selected majors each spring.

The Department of Theatre and Dance offers over 25 performance opportunities every year in either musicals, plays or dance concerts. In addition to performing, students are given the opportunity to direct, stage manage, design, choreograph or write scripts for the work done in our department. We offer jazz, tap, and ballet studies. In addition, UNH was the first university to add Aerial Dance to course offerings. Students study with faculty who have worked locally, nationally and internationally, and we offer the opportunity to interview for a technical assistant scholarship wherein students take on important backstage roles to build up their resumes and experience. In return, students receive half off of in-state tuition.

In addition to general liberal arts preparation, six specific course sequences are available within the theatre major:

1. courses leading to a theatre major with an option in acting & directing;
2. courses leading to a theatre major with an option in dance: ballet, theatre dance (tap and jazz), and aerial dance. Students also have the option of pursuing dance education leading to K-12 dance teacher certification. To achieve certification, the dance education option should be combined with requirements of the Department of Education, in conjunction with a fifth year master of arts in teaching (M.A.T.) or master of education (M.Ed.) program;
3. courses leading to a theatre major with an option in design & theatre technology;
4. courses leading to a theatre major with an option in musical theatre;
5. courses leading to a theatre major that, if desired, may be combined with requirements of the Department of Education, in conjunction with a fifth year master of arts in teaching (M.A.T.) or master of education (M. Ed.) program, to prepare students for secondary school certification with an undergraduate option in secondary theatre education;
6. courses leading to a theatre major that, if desired, may be combined with requirements of the Department of Education, in conjunction with a fifth year master of education (M.Ed.) program, to prepare students for elementary school certification with an undergraduate option in youth drama.

Auditions are required for the acting, dance and musical theatre options. Interviews are strongly encouraged for all other areas. The audition session will last approximately two and a half hours. In addition to the audition, students will have an opportunity to ask questions during a comprehensive department overview. Please note that entrance into Department of Theatre and Dance options is contingent upon acceptance into the University of New Hampshire. Prospective students who live more than 250 miles away may contact the department to discuss other audition options. Audition dates, as well as detailed entrance requirements, can be found at the Department of Theatre and Dance website.

Minoring in Theatre and Dance

A minor acknowledges a level of competence and academic focus without the depth a major requires. Students may pursue a minor while majoring in another subject when the demands of that major prevent the possibility of a double major.

<https://cola.unh.edu/theatre-dance>

Programs

- Theatre Major (B.A.) (p. 119)
- Theatre Major: Acting and Directing Option (B.A.) (p. 120)
- Theatre Major: Dance Option (B.A.) (p. 121)
- Theatre Major: Design & Theatre Technology Option (B.A.) (p. 122)
- Theatre Major: Musical Theatre Option (B.A.) (p. 123)
- Theatre Major: Secondary Theatre Education Option (B.A.) (p. 124)
- Theatre Major: Youth Drama Option (B.A.) (p. 125)
- Arts Administration Minor (p. 126)
- Dance Minor (p. 126)
- Musical Theatre Minor (p. 127)
- Theatre Minor (p. 127)
- Youth Drama Minor (p. 127)

Faculty

<https://cola.unh.edu/theatre-dance/faculty-staff-directory>

Theatre Major (B.A.)

<https://cola.unh.edu/theatre-dance/program/ba/theatre-major>

Description

The general theatre major provides a well-rounded course of study which encourages inquisitive students who have a wide range of theatre/dance interests to tailor a program that will challenge but also broaden their intellectual horizons. Its lower required credit load also makes it ideally suited to students who want to combine their theatre studies with another major, such as business administration, international studies, or social work. Contact David Richman, Paul Creative Arts Center, (603) 862-2218, david.richman@unh.edu.

Requirements

In the freshman and sophomore years, students should enroll for at least two major and two Discovery courses per semester. The minimum grade requirement for major courses is C- per course. Any grade lower than C- will not count toward the major. Under department policy, students who complete both COMM 401 American Sign Language I and COMM 502 American Sign Language II satisfy the bachelor of arts language proficiency requirement. All majors must take courses in the following areas: performance, design/theatre technology, and theory/history as well as fulfill between four and eight practicums and complete a capstone course. Although timing will vary with each option, it is strongly suggested that all introductory courses be taken prior to the end of the student's sophomore year.

The required minimum overall GPA in major coursework is 2.0.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

Theatre department majors may use one major-required course to satisfy one Discovery category requirement.

All UNH B.A. degrees require a minimum of 128 credit hours.

Code	Title	Credits
Required Courses		
THDA 436 or THDA 438	History of Theatre I History of Theatre II	4
THDA 459	Stagecraft	4
THDA 460	Elements of Design	4
THDA 462 or THDA 463	Ballet I Theatre Dance I	4
THDA 551	Acting I	4
THDA 589	Practicum (A - D) ¹	4-8
THDA 798 or THDA 799	Senior Thesis Capstone Project	2
Theory/History		
Select 4 credits of the following:		4
THDA 436 or THDA 438	History of Theatre I History of Theatre II	
THDA #444A	What's Old Becomes New: Threading Theatrical Themes into Societal Truths	
THDA 444B	Famous Dancers of the 20th Century	
THDA 450	History of Musical Theatre in America	
THDA 520	Creative Drama	
THDA 541	Art and Theatre Administration	
THDA 632	Interpretation of Shakespeare in Theatre	
THDA 638	American Theatre: 1920-1970	
THDA 640	Playwriting	
THDA 657	Play Reading	
THDA 721	Arts Integration	
THDA 727	Methods of Teaching Theatre	
Design/Theatre		
Select 4 credits of the following:		4

THDA 458	Costume Construction	
THDA 475	Stage Makeup	
THDA 546	Costume Design for the Theatre	
THDA 547	Stage Properties	
THDA 548	Stage Lighting Design and Execution	
THDA 583	Introduction to Puppetry	
THDA 641	Stage Management	
THDA 650	Scene Painting for the Theatre	
THDA 651	Rendering for the Theatre	
THDA 652	Scene Design	
THDA 683	Advanced Puppetry	
Performance		
Select 4 credits of the following:		4
THDA 462	Ballet I	
THDA 463	Theatre Dance I	
THDA 470	Movement and Vocal Production	
THDA 522	Storytelling, Story Theatre, and Involvement Dramatics	
THDA 532	The London Experience	
THDA 552	Acting II	
THDA 555	Musical Theatre I	
THDA 592A	Special Topics	
THDA 624	Theatre for Young Audiences	
THDA 655	Musical Theatre Scene Study	
THDA 741	Directing	
THDA 755	Advanced Musical Theatre	
THDA 758	Acting III	
Elective 600-799 Level Courses ²		8
Total Credits		46-50

¹ The practicum ensures a breadth of experience in the major, including sets, costumes, lighting, props, box office, marketing, and performing. Students must register for practicum every semester. They are notified of their practicum assignment at the beginning of each semester.

² Includes those in Sections II, III, and IV

Theatre Major: Acting and Directing Option (B.A.)

<https://cola.unh.edu/theatre-dance/program/ba/theatre-major-acting-directing-option>

Description

Created for students with a passion for acting and/or directing, this option is designed to develop the actor and the director as an interpretive, creative, and self-sufficient artist. Award-winning faculty working in the profession challenge students to strive for excellence in the art and craft of acting and directing through highly challenging coursework, performance projects, and productions, as well as special workshops with acclaimed guest artists.

Contact Deb Kinghorn, Paul Creative Arts Center, (603) 862-1963, deb.kinghorn@unh.edu.

Requirements

In the freshman and sophomore years, students should enroll for at least two major and two Discovery courses per semester. The minimum grade requirement for major courses is C- per course. Any grade lower than C- will not count toward the major. Under department policy, students who complete both COMM 401 American Sign Language I and COMM 502 American Sign Language II satisfy the bachelor of arts language proficiency requirement. All majors must take courses in the following areas: performance, design/theatre technology, and theory/history as well as fulfill between four and eight practicums and complete a capstone course. Although timing will vary with each option, it is strongly suggested that all introductory courses be taken prior to the end of the student's sophomore year.

The required minimum overall GPA in major coursework is 2.0.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

Theatre department majors may use one major-required course to satisfy one Discovery category requirement.

All UNH B.A. degrees require a minimum of 128 credit hours.

Code	Title	Credits
Required Courses		
THDA 436	History of Theatre I	4
THDA 438	History of Theatre II	4
THDA 459	Stagecraft	4
THDA 460	Elements of Design	4
THDA 462	Ballet I	4
or THDA 463	Theatre Dance I	
THDA 470	Movement and Vocal Production	4
THDA 551	Acting I	4
THDA 552	Acting II	4
THDA 589	Practicum (A - D) ¹	4-8
THDA 741	Directing	4
THDA 742	Directing II	4
THDA 758	Acting III	4
THDA 759	Acting: Period and Style	4
THDA 799	Capstone Project	2
Theory/History		
Select 4 credits of the following:		4
THDA 450	History of Musical Theatre in America	
THDA 632	Interpretation of Shakespeare in Theatre	
THDA 638	American Theatre: 1920-1970	
THDA 640	Playwriting	
THDA 657	Play Reading	
Total Credits		58-62

¹ The practicum ensures a breadth of experience in the major, including sets, costumes, lighting, props, box office, marketing, and performing. Students must register for practicum every semester. They are notified of their practicum assignment at the beginning of each semester.

Theatre Major: Dance Option (B.A.)

<https://cola.unh.edu/theatre-dance/program/ba/theatre-major-dance-option>

Description

The dance option offers a diverse program that is designed to give the dance teacher, choreographer, and/or performer the skills needed to embark on a successful career. Technique courses in ballet, pointe, tap, jazz, and the aerial arts are at the core of this program. Courses in history of dance, composition, choreography and dance pedagogy aid dancers in preparing for a variety of employment opportunities in the dance field. In addition, dancers are introduced to the technical aspects involved in staging a full-scale performance. Performance opportunities include yearly faculty-directed dance concerts and student-created dance showcases each semester. Dancers may focus on one or all dance forms.

Students may choose to combine the dance option with requirements of the UNH Department of Education, in conjunction with a fifth year Master of Arts in Teaching (M.A.T.) or Masters in Education (M.Ed.) program. This path will prepare students for dance teaching certification or elementary school teaching certification with an undergraduate specialization in dance. They also have the option of pursuing dance education leading to K-12 dance teacher certification.

Contact Gay Nardone, Newman Dance Studio, (603) 862-1728, gay.nardone@unh.edu.

Requirements

In the freshman and sophomore years, students should enroll for at least two major and two Discovery courses per semester. The minimum grade requirement for major courses is C- per course. Any grade lower than C- will not count toward the major. Under department policy, students who complete both COMM 401 American Sign Language I and COMM 502 American Sign Language II satisfy the bachelor of arts language proficiency requirement. All majors must take courses in the following areas: performance, design/theatre technology, and theory/history as well as fulfill between four and eight practicums and complete a capstone course. Although timing will vary with each option, it is strongly suggested that all introductory courses be taken prior to the end of the student's sophomore year.

The required minimum overall GPA in major coursework is 2.0.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

Theatre department majors may use one major-required course to satisfy one Discovery category requirement.

All UNH B.A. degrees require a minimum of 128 credit hours.

Code	Title	Credits
Required Courses		
THDA 459 or THDA 460	Stagecraft Elements of Design	4
THDA 487	History of Dance	4
THDA 551	Acting I	4
THDA 589	Practicum (A - D) ¹	4-8
THDA 795W & THDA 796W	Independent Study and Independent Study (Writing Intensive)	2
THDA 799 or THDA 798	Capstone Project Senior Thesis	2
Theory Courses		
THDA 633	Dance Composition	4
THDA 732	Choreography	4
THDA 786	Dance Pedagogy	4
Fine Arts		
Select 8 credits of the following:		8
THDA 444B	Famous Dancers of the 20th Century	
THDA 459	Stagecraft	
THDA 460	Elements of Design	
THDA 546	Costume Design for the Theatre	
THDA 548	Stage Lighting Design and Execution	
THDA 555	Musical Theatre I	
THDA #564	Compocinema	
THDA 655	Musical Theatre Scene Study	
Performance		
Select 16 credits of the following:		16
THDA 462	Ballet I	
THDA 463	Theatre Dance I	
THDA 562	Ballet II (May be repeated to 16 cr)	
THDA 563	Theatre Dance II (May be repeated to 16 cr)	
THDA 576	Pointe	
THDA 597	Dance Theatre Performance (Repeatable to 16 cr)	
THDA 662	Ballet III (May be repeated to 16 cr)	
THDA 663	Theatre Dance III (May be repeated to 16 cr)	
THDA 665	Aerial Dance (May be repeated to 16 cr)	
THDA 684	Special Topics	
Total Credits		56-60

¹ The practicum ensures a breadth of experience in the major, including sets, costumes, lighting, props, box office, marketing, and performing. Students must register for practicum every semester. They are notified of their practicum assignment at the beginning of each semester.

Theatre Major: Design & Theatre Technology Option (B.A.)

<https://cola.unh.edu/theatre-dance/program/ba/theatre-major-design-theatre-technology-option>

Description

Design and theatre technology students who show significant progress and ability may earn the opportunity to demonstrate practical application of their studies through the department's main stage production design assignments. Through classwork, production assignments and problem-solving, this option prepares students for both practical skills and aesthetic sensibilities needed for the creation of visual and technical elements for the performing arts. The challenging coursework provides both fundamental knowledge and critical thinking practice, which are skills that help students pursue a successful profession in theatre and related fields; the core principles of hard work, problem-solving and creativity are transferable to other career paths as well. UNH-trained graduates hold careers across the nation as designers, technical directors, stage managers, property masters, head electricians, and scenic artists.

Contact Szu-Feng Chen, Paul Creative Arts Center, (603) 862-4445, szu-feng.chen@unh.edu.

Requirements

In the freshman and sophomore years, students should enroll for at least two major and two Discovery courses per semester. The minimum grade requirement for major courses is C- per course. Any grade lower than C- will not count toward the major. Under department policy, students who complete both COMM 401 American Sign Language I and COMM 502 American Sign Language II satisfy the bachelor of arts language proficiency requirement. All majors must take courses in the following areas: performance, design/theatre technology, and theory/history as well as fulfill between four and eight practicums and complete a capstone course. Although timing will vary with each option, it is strongly suggested that all introductory courses be taken prior to the end of the student's sophomore year.

The required minimum overall GPA in major coursework is 2.0.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

Theatre department majors may use one major-required course to satisfy one Discovery category requirement.

All UNH B.A. degrees require a minimum of 128 credit hours.

Code	Title	Credits
Required Courses		
THDA 436 or THDA 438	History of Theatre I History of Theatre II	4
THDA 459	Stagecraft	4
THDA 460	Elements of Design	4
THDA 462 or THDA 463	Ballet I Theatre Dance I	4
THDA 551	Acting I	4
THDA 589	Practicum (A - D) ¹	4-8
THDA 799	Capstone Project	2
Select 12 credits of the following:		12

THDA 546	Costume Design for the Theatre
THDA 548	Stage Lighting Design and Execution
THDA 641	Stage Management
THDA 652	Scene Design
Select 12 credits of the following:	12
THDA 458	Costume Construction
THDA 475	Stage Makeup
THDA 541	Art and Theatre Administration
THDA 546	Costume Design for the Theatre
THDA 547	Stage Properties
THDA 548	Stage Lighting Design and Execution
THDA 641	Stage Management
THDA 650	Scene Painting for the Theatre
THDA 651	Rendering for the Theatre
THDA 652	Scene Design
THDA 741	Directing
Select 8 credits of the following:	8
ARTS 455	Architectural Design Studio
ARTS 525	Introductory Woodworking
ARTS 532	Introductory Drawing
ARTS 546	Painting Design I: Perceptual Painting and Color Theory
THDA 532	The London Experience
THDA 583	Introduction to Puppetry
THDA 691 & THDA 791	Internship and Internship in Theatre and Dance
THDA 795 & THDA 796	Independent Study and Independent Study
ENGL #531	Introduction to Drama: How to Read a Play
ENGL 657	Shakespeare
ENGL 746	Studies in American Drama
ENGL 758	Advanced Shakespeare
ENGL #781	English Drama, 1660-1800
ENGL 782	
Total Credits	58-62

¹ The practicum ensures a breadth of experience in the major, including sets, costumes, lighting, props, box office, marketing, and performing. Students must register for practicum every semester. They are notified of their practicum assignment at the beginning of each semester.

Theatre Major: Musical Theatre Option (B.A.)

<https://cola.unh.edu/theatre-dance/program/ba/theatre-major-musical-theatre-option>

Description

The musical theatre option is designed to cultivate and nurture the creative artistry of those highly motivated students who wish to develop their combined talent as singers, actors, and dancers. Students in the musical theatre option will thrive in this intense and dynamic program of coursework, practical application, performance-based projects, faculty-

and student-directed productions, and special workshops with guest artists and instructors. Students will be expected to fully integrate their rigorous training as actors, dancers, and singers with the outstanding liberal arts education they will receive at UNH to become well-rounded and marketable musical theatre artists.

Contact John Berst, Paul Creative Arts Center, (603) 862-3288, john.berst@unh.edu.

Requirements

In the freshman and sophomore years, students should enroll for at least two major and two Discovery courses per semester. The minimum grade requirement for major courses is C- per course. Any grade lower than C- will not count toward the major. Under department policy, students who complete both COMM 401 American Sign Language I and COMM 502 American Sign Language II satisfy the bachelor of arts language proficiency requirement. All majors must take courses in the following areas: performance, design/theatre technology, and theory/history as well as fulfill between four and eight practicums and complete a capstone course. Although timing will vary with each option, it is strongly suggested that all introductory courses be taken prior to the end of the student's sophomore year.

The required minimum overall GPA in major coursework is 2.0.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

Theatre department majors may use one major-required course to satisfy one Discovery category requirement.

All UNH B.A. degrees require a minimum of 128 credit hours.

Code	Title	Credits
Required Courses		
THDA 436 or THDA 438	History of Theatre I History of Theatre II	4
THDA 459	Stagecraft	4
THDA 460	Elements of Design	4
THDA 462 or THDA 562	Ballet I Ballet II	2-4
THDA 463 or THDA 563	Theatre Dance I Theatre Dance II	2-4
THDA 470	Movement and Vocal Production	4
THDA 551	Acting I	4
THDA 589	Practicum (A - D) ¹	4-8
THDA 799	Capstone Project	2
THDA 450	History of Musical Theatre in America	4
THDA 555	Musical Theatre I	4
THDA 655	Musical Theatre Scene Study	4
THDA 755	Advanced Musical Theatre	4
MUSI 411	Fundamentals of Music Theory	4
THDA/MUSI credits ²		4
THDA 500	Musical Theatre Voice I	1
THDA 600	Musical Theatre Voice II	1

THDA 700	Musical Theatre Voice III (repeatable)	1
Total Credits		57-65

- ¹ The practicum ensures a breadth of experience in the major, including sets, costumes, lighting, props, box office, marketing, and performing. Students must register for practicum every semester. They are notified of their practicum assignment at the beginning of each semester.
- ² Choose four credits of any THDA course or any MUSI course that involves vocal training/performance, music theory, ear training, or piano.

Theatre Major: Secondary Theatre Education Option (B.A.)

<https://cola.unh.edu/theatre-dance/program/ba/theatre-major-secondary-theatre-education-option>

Description

Candidates interested in passing on their love of theatre to future generations will find that the secondary theatre education option offers practical and theoretical training for teachers. As one of a few programs in the country, UNH's Secondary Theatre Education option boasts a robust offering with six courses specifically focused on how to teach theatre. Through comprehensive course and laboratory work, students obtain hands-on theatre teaching experience, so that by the time they reach graduation, they have spent significant hours working with the K-12 age group. Students are provided with extensive training and practical teaching experience specifically geared towards the goal of being a theatre teacher, either in a traditional classroom or as a teaching artist. Whether pursuing the fifth year graduate certification program or entering the professional theatre education world directly after the undergraduate degree, students can expect to leave UNH prepared for the rigorous task of teaching.

Contact Raina Ames, Paul Creative Arts Center, (603) 862-3044, raina.ames@unh.edu.

Requirements

In the freshman and sophomore years, students should enroll for at least two major and two Discovery courses per semester. The minimum grade requirement for major courses is C- per course. Any grade lower than C- will not count toward the major. Under department policy, students who complete both COMM 401 American Sign Language I and COMM 502 American Sign Language II satisfy the bachelor of arts language proficiency requirement. All majors must take courses in the following areas: performance, design/theatre technology, and theory/history as well as fulfill between four and eight practicums and complete a capstone course. Although timing will vary with each option, it is strongly suggested that all introductory courses be taken prior to the end of the student's sophomore year.

The required minimum overall GPA in major coursework is 2.0.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each

individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

Theatre department majors may use one major-required course to satisfy one Discovery category requirement.

All UNH B.A. degrees require a minimum of 128 credit hours.

Code	Title	Credits
Required Courses		
THDA 436	History of Theatre I	4
THDA 438	History of Theatre II	4
THDA 459	Stagecraft	4
THDA 460	Elements of Design	4
THDA 463	Theatre Dance I	4
THDA 475	Stage Makeup	2
THDA 551	Acting I	4
THDA 589	Practicum (A - D) ¹	4-8
THDA 624	Theatre for Young Audiences	4
THDA 721	Arts Integration	4
THDA 727	Methods of Teaching Theatre ²	4
THDA 729	Community Oriented Drama Programs	4
THDA 741	Directing	4
THDA 760	Teacher Planning for Theatre	4
THDA 799	Capstone Project (must be taken in senior year)	2
Design/Theatre Technology		
Select 4 credits of the following:		4
THDA 458	Costume Construction	
THDA 546	Costume Design for the Theatre	
THDA 548	Stage Lighting Design and Execution	
Education		
EDUC 500	Exploring Teaching ²	4
Total Credits		64-68

- ¹ Students are required to take at least one practicum for every semester they are a major in the Department of Theatre and Dance. In addition, each student must take each type of practicum at least once (Technical, Costume, Performance, Marketing and Promotion).
- ² May be taken at the undergraduate level or the graduate level.

NOTE: It is understood that students will fulfill 20 internship contact hours with theatre students in their option area: elementary, middle, or high school. Projects for THDA 729 Community Oriented Drama Programs cannot count as internship hours. Students may fulfill this requirement through a variety of teaching opportunities with the department's outreach program (both during the school year and in the summer), or they may work with local schools teaching, coaching actors, assistant directing, choreographing, or in some other capacity as specifically arranged with their theatre adviser.

It also is understood that students involved in the above course curriculum in order to get state theatre arts certification must apply to either the UNH Department of Education or another university for acceptance into a fifth-year master of arts in teaching (M.A.T.) or master of education (M.Ed.) degree program that fulfills state requirements for certification.

State K-12 Teacher Certification

In order to obtain state theatre arts certification, students must apply to either the UNH Department of Education or another university for acceptance into a fifth-year master of arts in teaching (M.A.T.) or masters of education (M.Ed.) degree program, which fulfills state requirements for certification. Students who are accepted into early graduate admission may take up to 12 credits toward the 32 credit masters while finishing their undergraduate degree. For further clarification regarding fifth-year certification options, contact Raina Ames, Paul Creative Arts Center, (603) 862-3044, raina.ames@unh.edu.

Code	Title	Credits
Education Courses Required for Certification ¹		
EDUC 700/800	Educational Structure and Change	4
EDUC 701/801	Human Development and Learning: Educational Psychology	4
EDUC 705/805	Contemporary Educational Perspectives	4
EDUC 751B/851B	Educating Exceptional Learners: Secondary	4
Total Credits		16

¹ May be taken at the undergraduate level or the graduate level.

Theatre Major: Youth Drama Option (B.A.)

<https://cola.unh.edu/theatre-dance/program/ba/theatre-major-youth-drama-option>

Description

Anyone interested in teaching elementary-aged students would benefit from the youth drama option. Consider pairing this with family studies or early childhood education. Youth drama is for those students who wish to use dramatic arts as a teaching tool, either in the elementary classroom or as a teaching artist. Our comprehensive curriculum is specifically designed to train teachers to use storytelling and creative drama to enrich the classroom. Work with our master puppeteer to take Introduction to Puppetry as well as Advanced Puppetry. Through comprehensive class and laboratory work, students obtain hands-on theatrical teaching experience so that, by the time they reach graduation, they have spent significant hours teaching children. Whether pursuing the fifth year graduate certification program or entering the professional theatre education world directly after the undergraduate degree, students will leave UNH with sound theoretical training in addition to practical instruction on how to use drama to enhance learning outcomes, address classroom discipline issues, and, of course, bring the arts to life in the classroom.

Contact Raina Ames, Paul Creative Arts Center, (603) 862-3044, raina.ames@unh.edu.

Requirements

In the freshman and sophomore years, students should enroll for at least two major and two Discovery courses per semester. The minimum grade requirement for major courses is C- per course. Any grade lower than C- will not count toward the major. Under department policy, students who complete both COMM 401 American Sign Language I

and COMM 502 American Sign Language II satisfy the bachelor of arts language proficiency requirement. All majors must take courses in the following areas: performance, design/theatre technology, and theory/history as well as fulfill between four and eight practicums and complete a capstone course. Although timing will vary with each option, it is strongly suggested that all introductory courses be taken prior to the end of the student's sophomore year.

The required minimum overall GPA in major coursework is 2.0.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

Theatre department majors may use one major-required course to satisfy one Discovery category requirement.

All UNH B.A. degrees require a minimum of 128 credit hours.

Code	Title	Credits
Required Courses		
THDA 459	Stagecraft	4
THDA 460	Elements of Design	4
THDA 463	Theatre Dance I	4
THDA 520	Creative Drama	4
THDA 522	Storytelling, Story Theatre, and Involvement Dramatics	4
THDA 583	Introduction to Puppetry	4
THDA 589	Practicum (A - D) ¹	4-8
THDA 624	Theatre for Young Audiences	4
THDA 683	Advanced Puppetry	4
THDA 721	Arts Integration	4
THDA 727	Methods of Teaching Theatre	4
THDA 729	Community Oriented Drama Programs	4
THDA 760	Teacher Planning for Theatre	4
THDA 799	Capstone Project (must be taken in senior year)	2
Education		
EDUC 500	Exploring Teaching ²	4
Total Credits		58-62

¹ The practicum ensures a breadth of experience in the major, including sets, costumes, lighting, props, box office, marketing, and performing. Students must register for practicum every semester. They are notified of their practicum assignment at the beginning of each semester.

² Must be taken before student teaching internship.

State Teacher Certification

Youth Drama options often pursue elementary education certification. In order to obtain state licensure, students must apply to either the UNH Department of Education or another university for acceptance into a fifth year masters of education (M.Ed.) degree program, which fulfills state requirements for certification. Students who are accepted into early graduate admission may take up to 12 credits toward the 32 credit masters while finishing their undergraduate degree. For further clarification regarding fifth-year certification options, contact Raina Ames, Paul Creative Arts Center, (603) 862-3044, raina.ames@unh.edu.

Code	Title	Credits
Education Courses Required for Certification ¹		
EDUC 700/800	Educational Structure and Change	4
EDUC 701/801	Human Development and Learning: Educational Psychology	4
EDUC 703F/803F	Teaching Elementary School Science	4
EDUC 703M/803M	Teaching Elementary Social Studies	4
EDUC 705/805	Contemporary Educational Perspectives ²	4
EDUC 706/806	Introduction to Reading in the Elementary School ²	4
EDUC 751A/851A	Educating Exceptional Learners: Elementary	4
Required Math Education Course		
Select 4 credits of the following: ²		4
MATH 601	Exploring Mathematics for Teachers I	
MATH 621	Number Systems for Teachers	
MATH 622	Geometry for Teachers	
MATH 623	Probability and Statistics for Teachers	
MATH 703	Teaching of Mathematics in Grades K-5	
MATH 910	Selected Topics in Mathematics Education for Teachers	
EDUC 741/841	Exploring Mathematics with Young Children	
Total Credits		32

¹ May be taken at undergraduate or graduate level.

² Must be taken before student teaching internship.

Arts Administration Minor

<https://cola.unh.edu/theatre-dance/program/minor/arts-administration>

Description

The minor in arts administration is designed to give students in the fine and performing arts a base knowledge and skill set that can be applied to a wide range of job opportunities related to arts management and administration. It has also been created for students enrolled in the Peter T. Paul School of Business, as well as majors in other disciplines, to expand their knowledge base in the fine and performing arts area of their greatest interest. These courses are combined with specific classes in arts administration to prepare students for opportunities within the non-profit and for-profit arts sectors. Students who major in theatre or one of its theatre or dance options may minor in arts administration provided no more than 8 credits are used to satisfy both major and minor requirements.

Contact Michael Wood, (603) 862-3038, mike.wood@unh.edu.

Requirements

Code	Title	Credits
Required Courses		
ACFI 501	Survey of Accounting	4
or ADMN 502	Financial Accounting	
MKTG 550	Survey of Marketing	4
or ADMN 585	Marketing	
THDA 541	Art and Theatre Administration	4

Elective Courses

For students pursuing majors in The Peter T Paul School of Business or the fine and performing arts division of COLA: Two elective courses from the following list (electives must be taken outside your home college). For all other students, two elective courses from the following list. At least one elective course must be in the fine or performing arts.

ARTS 552	Introductory Digital Photography
ARTS 696	Special Topics in Studio Art (Intro to Graphic Design)
MGT 598	Topics (Thinking Like an Entrepreneur, Developing Leaders for the 21st Century, Negotiations, Human Resource Management)
MKTG 557	Promotion and Advertising
MKTG 559	Foundations of Personal Selling
MKTG 598	Topics in Marketing (Understanding Your Customer)
PAUL 450	Personal Finance
THDA 442	Introduction to the Art of Acting
THDA 459	Stagecraft
THDA 462	Ballet I
THDA 463	Theatre Dance I
THDA 547	Stage Properties
THDA 548	Stage Lighting Design and Execution
THDA 555	Musical Theatre I
THDA 641	Stage Management

Total Credits 20

Dance Minor

<https://cola.unh.edu/theatre-dance/program/minor/dance>

Description

Students minoring in dance keep open the option of pursuing a career in dance by cultivating and maintaining a high level of dance skill while still having the opportunity to major in another area of interest outside the Department of Theatre and Dance. Minors are encouraged to audition for all performance opportunities including faculty-directed dance concerts as well as student-created dance showcases. In addition, students who major in theatre or one of its theatre options may minor in dance provided no more than 8 credits are used to satisfy both major and minor requirements.

Contact Michael Wood, (603) 862-3038, mike.wood@unh.edu.

Requirements

Code	Title	Credits
Select up to 16 credits of the following:		16
THDA 462	Ballet I	
THDA 562	Ballet II	
THDA 662	Ballet III	
THDA 463	Theatre Dance I	
THDA 563	Theatre Dance II	
THDA 663	Theatre Dance III	

THDA 665	Aerial Dance	
THDA 597	Dance Theatre Performance	
THDA 576	Pointe	
Select at least 4 credits of the following:		4
THDA 487	History of Dance	
THDA #564	Compocinema	
THDA 633	Dance Composition	
THDA 684	Special Topics	
THDA 732	Choreography	
THDA 786	Dance Pedagogy	
Total Credits		20

Musical Theatre Minor

<https://cola.unh.edu/theatre-dance/program/minor/musical-theatre>

Description

The musical theatre minor offers the student basic knowledge of the history and canon of this uniquely American art form while providing for hands-on experience in both singing and dancing. Students who major in theatre or one of its theatre or dance options may minor in musical theatre provided no more than 8 credits are used to satisfy both major and minor requirements.

Contact Michael Wood, (603) 862-3038, mike.wood@unh.edu.

Requirements

Code	Title	Credits
Required Courses		
THDA 441	Exploring Musical Theatre	4
or THDA 450	History of Musical Theatre in America	
THDA 442	Introduction to the Art of Acting	4
or THDA 551	Acting I	
THDA 463	Theatre Dance I	4
THDA 555	Musical Theatre I	4
Select one THDA course ¹		4
Total Credits		20

¹ Excluding THDA 500 Musical Theatre Voice I, THDA 600 Musical Theatre Voice II, and THDA 700 Musical Theatre Voice III

Theatre Minor

<https://cola.unh.edu/theatre-dance/program/minor/theatre>

Description

The theatre minor provides the broadest overview of the discipline, allowing students to create their course of study by exploring theory and technique classes from acting, design and theatre technology, and history. Students who major in theatre or one of its theatre or dance options may minor in theatre provided no more than 8 credits are used to satisfy both major and minor requirements.

Contact Michael Wood, (603) 862-3038, mike.wood@unh.edu.

Requirements

Code	Title	Credits
THDA 442	Introduction to the Art of Acting	4
or THDA 460	Elements of Design	
Select 4 credits of the Theory/History courses in the General Theatre Major Requirements		4
Select 4 credits of the Design/Theatre Technology courses in the General Theatre Major Requirements		4
Select 8 credits of any THDA course		8
Total Credits		20

Youth Drama Minor

<https://cola.unh.edu/theatre-dance/program/minor/youth-drama>

Description

Anyone with an interest in theatre for young audiences, either in acting or as a way to augment teaching strategies, will benefit from this minor, which utilizes activated and arts-infused methodology to enliven work with K-12 students. The youth drama minor is ideal for those who wish to explore the dramatic arts through an educational lens.

Contact Michael Wood, (603) 862-3038, mike.wood@unh.edu.

Requirements

Code	Title	Credits
Required Courses		
THDA 520	Creative Drama	4
THDA 522	Storytelling, Story Theatre, and Involvement Dramatics	4
THDA 583	Introduction to Puppetry	4
THDA 624	Theatre for Young Audiences	4
THDA 683	Advanced Puppetry	4
THDA 721	Arts Integration	4
Total Credits		24

Women's Studies (WS)

Women's studies provides students with an understanding of the status of women in various cultures and historical eras, in the nexus of race, class, sexuality, religious and disability studies. Students learn the use of gender as a category of analysis and increase their knowledge of women's contributions to many fields. Women's studies courses offer students critical perspectives on such basic questions of the social order as assumptions about gender roles and gender identity.

As a relatively small program in the College of Liberal Arts, we provide students with a sense of community and opportunities to contribute directly to changing the campus climate. In a rigorous academic environment, women's studies offers students a springboard for activism. Our internship program enables students to gain first-hand work experience across many fields.

A major or minor in women's studies prepares students for careers where the changing roles of women are having a perceptible impact. Women's studies graduates go on to law school and graduate school in a variety of disciplines. Some have taken positions with social change or family service agencies, while others have found work in such fields as health care, journalism, education, human rights, social and environmental justice, and the arts.

<https://cola.unh.edu/womens-studies>

Programs

- Women's Studies Major (B.A.) (p. 128)
- Social Justice Leadership Minor (p. 129)
- Women's Studies Minor (p. 130)

Faculty

<https://cola.unh.edu/womens-studies/faculty-staff-directory>

Women's Studies Major (B.A.)

<https://cola.unh.edu/womens-studies/program/ba/womens-studies>

Description

A major or minor in women's studies prepares students for careers where the changing roles of women, and gender more broadly, have a perceptible impact. Many women's studies graduates go on to law school and graduate school in a variety of disciplines. With a women's studies degree, students often take positions with social change or family service agencies, and in fields such as politics, communications, community organizing, education, affirmative action, healthcare, and human resources.

Students who wish to major in women's studies should consult with the coordinator or academic/student services assistant, 203 Huddleston Hall, (603) 862-2194.

Requirements

The women's studies major requires students to complete 40 credits of major-approved coursework with grades of C- or better and an overall grade point average in major courses of 2.00 or higher.

Code	Title	Credits
WS 401 or WS 405	Introduction to Women's Studies Gender, Power and Privilege	4
WS 632	Feminist Thought	4
Discovery Program Capstone Requirement:		
WS 798 or WS 799	Colloquium Honors Thesis	4
Select seven additional courses chosen in consultation with a WS academic advisor ¹		28
Total Credits		40

¹ At least two of the courses must be WS courses. The remaining courses may be either WS courses or WS-faculty-approved courses offered in departments or programs outside of WS (cross-counted courses). A list of cross-counted courses can be found each semester at: <http://cola.unh.edu/womens-studies/courses>.

At least five courses for the major must be taken at the 600 level or above. Only two 400-level courses may be used to satisfy major requirements.

WS topic courses include WS 444s, WS 505s, WS 510, WS 515, and WS 798s:

444 Inquiry Courses

Code	Title	Credits
WS 444	Trans/Forming Gender	4
WS 444A	Race Matters	4
WS #444B	Score!: Gender and Diversity in Sports	4
WS 444C	On the Roads to Equality	4
WS 444D	Cyborgs, Avatars, and Feminists: Gender in the Virtual World	4

505 Surveys

WS 505 Survey in Women's Studies

Examples of course topics include:

- Sustainability & Spirituality
- Fashion This!
- Race, Gender, and Environmental Justice
- Intro to LGBTQ+ Studies
- The Care Economy
- Queer Cinema
- Queer Sustainability

WS 510 Framing Feminism: Gender Politics in Film

WS 515 Game Girl: The Social Construction of Gender Identities in Video Games

798 Colloquiums

WS 798 Colloquium

Examples of course topics include:

- Feminist Studies in Film
- Jewish Feminism, Politics, and Culture
- Global Feminist Issues
- Transgender Feminism
- Theater as a Provocative Act
- Native and Indigenous Women
- Queer Sustainability

For a list of currently-approved cross-counted offerings from other departments, please check: <http://cola.unh.edu/womens-studies/courses>

A practicum, internship course, and/or research with faculty is strongly recommended.

Major department courses may not be used to satisfy Discovery category requirements, unless women's studies is your second major. First and second majors may double count no more than two courses between the WS major and another major or minor.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement. ASL: COMM 401 American Sign Language I and COMM 502 American Sign Language II may be used to satisfy the language competency requirement.

Social Justice Leadership Minor

<https://cola.unh.edu/womens-studies/program/minor/social-justice-leadership>

Description

The minor in social justice leadership engages students in an exploration of policies, power dynamics, institutions, and structures that promote and hinder equity and processes of change required for social justice. Students will examine various forms of injustice such as sexism, racism, classism, ableism, and environmental degradation. The minor is grounded in three pillars — a theory component, a leadership component, and experiential learning activities. The minor is interdisciplinary in nature, drawing on disciplines such as anthropology, education, English, history, philosophy, political science, social work, and sociology. After completing the curriculum, students will have gained a historical perspective, theoretical understanding, and applied leadership skills. The minor certifies students' knowledge regarding, and commitment to, social justice leadership, which will be useful in postgraduate pursuits.

Requirements

Code	Title	Credits
THEORY		
WS 401 or WS 405	Introduction to Women's Studies Gender, Power and Privilege	4
LEADERSHIP		
WS 505 or WS 796	Survey in Women's Studies (Leadership Part I) Advanced Topics	4
APPLIED		
Choose one capstone course from the following (normally taken at the end of the course sequence):		4
WS 795	Independent Study	
WS 796	Advanced Topics	
WS 797	Internship	
WS 798	Colloquium	
or other relevant approved capstone dealing with social justice leadership issues		
Choose two electives in Social Justice and/or Leadership (see list below)		8
Total Credits		20

Approved Electives

Code	Title	Credits
Courses in the Women's Studies Program		
WS 444	Trans/Forming Gender	4
WS 444A	Race Matters	4
WS #444B	Score!: Gender and Diversity in Sports	4
WS 444C	On the Roads to Equality	4
WS 444D	Cyborgs, Avatars, and Feminists: Gender in the Virtual World	4
WS 505	Survey in Women's Studies (Leadership in the Real World)	4
WS 510	Framing Feminism: Gender Politics in Film	4
WS 515	Game Girl: The Social Construction of Gender Identities in Video Games	4
WS 632	Feminist Thought	4
WS 795	Independent Study	1-4
WS 796	Advanced Topics	4
WS 797	Internship	4
WS 798	Colloquium (such as Women in Prison)	4
Courses in Other College of Liberal Arts Departments		
ANTH 500	Peoples and Cultures of the World (Sub-Saharan Africa)	4
ANTH 625	Sexuality in Cross-Cultural Perspectives	4
ANTH 680		4
ANTH 685	Gender, Sexuality and HIV/AIDS in Sub-Saharan Africa	4
ANTH #740	Teaching Race	4
ANTH 750	Islam and Gender: Gendered Lives of Muslims	4
CMN 505	Analysis of Popular Culture	4
CMN 567	Gender, Race, and Class in the Media	4
CMN 757	Public Address and the American Experience (Social Protest: Rhetoric of Resistance)	4
EDUC 444B	Be the Change You Want to See: Active Citizenship in a Multicultural World	4
EDUC 500	Exploring Teaching	4
EDUC 717	Growing up Male in America	4
ENGL 585	Introduction to Women in Literature (Dreamgirls: Studies in Beautiful Blackness)	4
ENGL 650	Studies in American Literature and Culture (Latina/o Literature, Playing in the Dark: Race & Sex in American Literature, American Literature & Consumer Culture)	4
ENGL 693	Special Topics in Literature (Literary Responses to the Holocaust)	4
ENGL 733	Special Studies in Film (Race & Gender)	4
ENGL 738	Topics in Asian American Studies (Beauty Queens & Silver Screens)	4
ENGL 739	American Indian Literature	4
ENGL 785	Fabulous Feminists, Women Warriors, Women Worriers	4
HIST 566	Comparative Revolutions: How to Make a Revolution in the World before Marx	4
HIST 624	Topics in Modern US History (Reform Movements & Popular Protest)	4

HIST 665	Themes in Women's History (Gender & Politics)	4
HIST 690	Seminar: Historical Expl (Gay & Lesbian History: From the Victorian Era to Stonewall)	4
HIST 797	Colloquium (Citizenship & Inequality in the Americas)	4
HUMA 592	Special Topics in the Humanities (Women in Western Religion: Goddesses, Witches, Saints & Sinners)	2-8
HUMA 700	Seminar (Love & Ethics)	4
PHIL 430	Ethics and Society	4
PHIL 436	Social and Political Philosophy	4
PHIL 450	Environmental Ethics	4
PHIL 510	Philosophy and Feminism	4
POLT 548	Drug Wars	4
POLT 721	Feminist Political Theory	4
POLT 725	Politics and Literature	4
POLT 762	International Political Economy	4

Courses in the College of Health and Human Services

HDFS 746	Human Sexuality	4
NURS 450	Making Babies: Technology, Nature, and Social Context	4
NURS #595	Women's Health	4
OT 513	Stressed Out: The Science and Nature of Human Stress	4
SW 697	Special Topics in Social Welfare (Exploring Social Justice & Cultural Competency)	4
SW 715	Practice with Gay, Lesbian, Bisexual, and Transgender People	4

Courses in the Paul College of Business and Economics

ECON #669	Women and Economic Development	4
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The WS core faculty will consider approving other courses that include more than 50% of content related to social justice leadership.

Once students have declared the minor, they are required to meet with the coordinator or appropriate affiliated faculty advisor at least once per semester for regular review of progress towards the degree.

Transfer credits may be approved by the coordinator to count towards the minor. If the transfer credit is accepted by the university and fits within the scope of the minor, it will be considered.

Women's Studies Minor

<https://cola.unh.edu/womens-studies/program/minor/womens-studies>

Description

Women's studies provides students with an understanding of the status of women in various cultures and historical eras, in the nexus of race, class, sexuality, religious and disability studies. Students learn the use of gender as a category of analysis and increase their knowledge of women's contributions to many fields. Women's studies courses offer students critical perspectives on such basic questions of the social order as assumptions about gender roles and gender identity.

As a relatively small program in the College of Liberal Arts, we provide students with a sense of community and opportunities to contribute

directly to changing the campus climate. In a rigorous academic environment, women's studies offers students a springboard for activism. Our internship program enables students to gain first-hand work experience across many fields.

A major or minor in women's studies prepares students for careers where the changing roles of women are having a perceptible impact. Women's studies graduates go on to law school and graduate school in a variety of disciplines. Some have taken positions with social change or family service agencies, while others have found work in such fields as health care, journalism, education, human rights, social and environmental justice, and the arts.

Students who wish to minor in women's studies should consult with the coordinator or academic/student services assistant, 203 Huddleston Hall, (603) 862-2194.

Requirements

For the women's studies minor, students must complete 20 credits of women's studies courses with a grade of C- or better. Courses taken pass/fail may not be used toward the minor. No more than eight credits used to satisfy the requirements for another major may be used for the women's studies minor. Students electing the women's studies minor must complete:

Code	Title	Credits
Select one of the following:		4
WS 401	Introduction to Women's Studies	4
or WS 405	Gender, Power and Privilege	
WS 798	Colloquium (normally taken at the end of the course sequence) ¹	4
Complete three other women's studies courses, either program courses or those that are cross-counted with other departments		12
Total Credits		20

¹ It may be possible to substitute WS 795 Independent Study, WS 796 Advanced Topics, WS 797 Internship, and WS 799 Honors Thesis for WS 798 Colloquium with permission from a women's studies adviser.

College of Engineering and Physical Sciences

Charles K. Zercher , Dean

Sharon McCrone, Associate Dean for Academic Affairs

The College of Engineering and Physical Sciences (CEPS) provides an opportunity for students to achieve educational objectives appropriate to their interests in engineering, computer science, information technology, mathematics, the physical sciences, and the teaching of mathematics and physical sciences. The college offers an education in each of its primary disciplines leading to the bachelor of science, as well as bachelor of art degrees with majors in mathematics and each of the three physical sciences. All programs include an opportunity for study in the arts, humanities, and social sciences.

The key to an undergraduate program in the college is flexibility, with a strong emphasis on personal and individualized education. In addition to specific programs, a wide range of options within several majors are available. Special programs can be developed to meet the specific interests of individual students.

Degree Requirement

MATH 425 Calculus I and MATH 426 Calculus II or the equivalent in transfer credits or advanced placement approved by the Department of Mathematics and Statistics are required by all departments of the college. The exception is the information technology major, which only requires MATH 425 Calculus I. The prerequisites for calculus are three years of college-preparatory mathematics, including a half-year of trigonometry. Before students can register for MATH 425 Calculus I, they are required to take the Mathematics Placement Test or to have taken MATH 418 Analysis and Applications of Functions (or its equivalent) and received a grade of C or better.

Mathematics Placement

First-year students arrive with a wide range of mathematical skills based upon their high school preparation. The college wants students to have a solid mathematics foundation so that they will enjoy an enriched first-semester experience. A student's mathematics development will be assessed as part of the June orientation program. Based upon the Mathematics Placement Test, students are enrolled in the mathematics class that will allow them to continue that development. The initial mathematics entry course is MATH 418 Analysis and Applications of Functions. However, a student is placed into MATH 425 Calculus I if he or she demonstrated a certain level of proficiency in algebra and precalculus through the Mathematics Placement Test. Students with AP credit for Calculus I and/or Calculus II may elect to accept those credits and continue with a math course at the next level.

Accreditation

The baccalaureate-level programs in chemical, civil, computer, electrical, environmental, and mechanical engineering are accredited by the Engineering Accreditation Commission of ABET, Inc. The baccalaureate-level program in computer science and bioinformatics is accredited by the Computing Accreditation Commission of ABET, Inc. ABET contact information:

111 Market Place
Suite 1050
Baltimore, MD 21202-401

(410) 347-7700.

The Department of Chemistry's undergraduate bachelor of science program is approved by the American Chemical Society.

Degrees

Bachelor of Arts

Programs leading to a bachelor of arts degree are offered in the departments of chemistry, earth sciences, mathematics, and physics. These programs provide a broad liberal education along with a major in one of these fields.

Bachelor of Science

The programs leading to the bachelor of science degree, offered in each of the departments of the college, emphasize students' preparation for a professional career and continuing or graduate education.

The degree requirements for the bachelor of science include the University Academic Requirements and the specific departmental requirements for graduation. A minimum grade-point average of 2.0 must be achieved. Graduation credit requirements established by the departments range from 128 to 134. There are entrance requirements in some programs, and it is not possible to guarantee all change-of-major requests.

Interdisciplinary Programs

Bachelor of Science in Environmental Sciences

The environmental sciences program is offered jointly with the College of Life Sciences and Agriculture (COLSA).

Minors

Interdisciplinary minors enable students to obtain experience in a specialized area and to retain identification with their major professional area.

Other Programs

Independent Study and Projects

All departments within the college offer independent study opportunities and projects. The content of these courses varies and is based upon current scientific and technological needs in addition to the interests of the student and faculty involved.

Permission of the faculty member and/or department chairperson is required. One should review the course descriptions for the independent study and project courses for specific requirements. Students interested in working with a faculty member on a project or independent study should discuss this with the faculty member and their academic adviser prior to registering for the course.

Research Opportunities

The talents and expertise of the faculty in all departments are reflected in the number of ongoing research projects. Undergraduates are included in many of these research projects with the intent that they will discover and foster their creative talents. When involved with a funded research project, students may have an opportunity to receive pay while learning about the research area.

The college has world-class laboratories and computer facilities in many areas. A few of these are coastal and ocean mapping, space science, environmental engineering and science, fluid dynamics, wind turbulence,

information systems, materials science, nanotechnology, sustainability, and medical imaging. These and other ongoing research areas within the college are described on the college's website: <https://ceps.unh.edu/research-facilities>.

Students have the opportunity to acquire applied experience by working with faculty members who undertake sponsored professional projects in technical and managerial areas for business, industry, and federal, state, and local governments.

Special Provisions

The requirement of a given topic/course prescribed to meet the requirements of major curriculum may be waived by the faculty of a student's department. This rule offers students the opportunity to develop a somewhat individualized plan of study with intellectual incentives and opportunities in addition to those found in a regular curriculum. The student's petition must be approved by his/her major adviser and the dean of the college. This power usually will be delegated by the faculty to the dean or to a committee (Senate Rule 05.21(s): Waiver of Requirements in a Prescribed Curriculum).

A student with senior status and a grade point average of 3.2 may petition to take a graduate course for undergraduate credit. In addition, upon the recommendation of the department chairperson, a superior student may be allowed to count credits from up to two 800-level courses toward both a bachelor's degree and a master's degree, provided that the student has been admitted to the master's program.

Study Abroad Programs

Scotland, Heriot-Watt University Exchange Program

College of Engineering and Physical Sciences students are eligible to participate in a spring semester exchange with Heriot-Watt University in Edinburgh, Scotland. The current program is designed for civil and environmental engineering majors. For more information, contact Ray Cook at (603) 862-1411 or the Center for International Education, Hood House.

Global E3 Exchange Programs

Engineering and computer science majors are eligible to participate in international exchange programs through the Global E3 program. Programs are offered in the fall, spring, and summer, as well as for the full academic year. For more information on Global E3, please refer to www.iie.org/programs/globale3 (<http://www.iie.org/programs/globale3>). For more information on eligibility as student in the College of Engineering and Physical Sciences, contact Caitlin Baldwin at caitlin.baldwin@unh.edu.

Preparing for Teaching

Students interested in mathematics education (elementary, middle/junior high, or secondary) or Earth science teaching should refer to the appropriate department for a description of the program requirements.

Combined Programs of Study

In addition to pursuing a single major, students may combine programs of study as follows:

Minors: See University Academic Requirements; see also Degrees and Major Programs of Study and Departmental Programs of Study.

Second majors: See University Academic Requirements.

Interdisciplinary majors: Many departments in the college offer programs that combine a major with another field of interest. See the descriptions that follow.

Dual-degree programs: See University Academic Requirements.

Student-designed majors: See Special University Programs.

Other combined and interdisciplinary opportunities: See Special University Programs.

<https://ceps.unh.edu/>

Departments

- Chemical Engineering (p. 134)
- Chemistry (p. 139)
- Civil and Environmental Engineering (p. 142)
- Computer Science (p. 149)
- Earth Sciences (p. 157)
- Electrical and Computer Engineering (p. 164)
- Mathematics & Statistics (p. 170)
- Mechanical Engineering (p. 177)
- Physics (p. 184)

Programs of Study

- Bioengineering (BENG) (p. 132)
- Chemical Engineering (CHE) (p. 134)
- Chemistry (CHEM) (p. 139)
- Civil and Environmental Engineering (CEE) (p. 142)
- Computer Science (CS) (p. 149)
- Earth Sciences (ESCI) (p. 157)
- Electrical and Computer Engineering (ECE) (p. 164)
- Environmental Sciences (p. 168)
- Materials Science (MS) (p. 169)
- Mathematics and Statistics (MATH) (p. 170)
- Mechanical Engineering (ME) (p. 177)
- Ocean Engineering (OE) (p. 181)
- Physics (PHYS) (p. 184)

Bioengineering (BENG)

Bioengineering, as defined by the NIH, is "the application of life sciences, mathematics, and engineering principles to define and solve problems in biology, medicine, health care, and other fields."

Mission

Our Bioengineering program empowers students with broad preparation for pursuing careers related to biotechnology, biomedical and engineering fields.

Program Educational Objectives

The bioengineering program seeks to provide an environment and opportunities that enable students to pursue their goals in an innovative program with a diversity of offerings that is rigorous and challenging.

The program has the following major educational objectives with the expectation that our alumni will have successful careers in the many diverse areas of bioengineering profession. Within a few years of obtaining a bachelor's degree in bioengineering, we expect our graduates to have the following attributes:

Depth: To be effective in applying life science concepts and bioengineering principles in engineering practice or for advanced study.

Breadth: To have productive careers in the many diverse areas of bioengineering or in pursuit of graduate studies in engineering, law, medicine or business.

Professionalism: To function effectively in the complex modern work environment with the ability to assume professional leadership roles.

<https://ceps.unh.edu/chemical-engineering>

Programs

- Bioengineering Major (B.S.) (p. 133)

Faculty

<https://ceps.unh.edu/chemical-engineering/people>

Bioengineering Major (B.S.)

<https://ceps.unh.edu/chemical-engineering/bioengineering-bs>

Description

Bioengineering, as defined by the NIH, is "the application of life sciences, mathematics, and engineering principles to define and solve problems in biology, medicine, health care, and other fields."

The bioengineering program will train graduates in biology and physiology as well as engineering. The program will provide graduates with capabilities in advanced mathematics (including differential equations and statics), science, and engineering. Graduates will be conversant with solving problems at the interface of biology and engineering that may arise in the fields of biotechnology and pharmaceuticals, as well as medicine and biofuels. By graduation, students will have experience measuring and interpreting data from living systems and addressing the interactions between living and non-living materials.

Students are required to obtain a minimum 2.0 grade-point average in CHE 501 Introduction to Chemical Engineering I/CHE 502 Introduction to Chemical Engineering II and in overall standing at the end of the sophomore year in order to continue in the major. Study abroad (Exchange) students are required to have a cumulative GPA of 3.0 or better in math, physics, chemistry, and other required courses at the end of the semester prior to their exchange semester.

For more information on the bioengineering program, please contact Russell Carr, professor and chair, Russell.Carr@unh.edu.

Requirements

Major Requirements

Code	Title	Credits
BENG 763	Bioengineering Design I	2
BENG 764	Bioengineering Design II	4
BENG 766	Biomaterials	4
BMCB 658 & BMCB 659	General Biochemistry and General Biochemistry Lab	5
BMS 503	General Microbiology	3
BMS 504	General Microbiology Laboratory	2
BIOL 410	Principles of Molecular and Cellular Biology	3
CHE 400	Chemical Engineering Lectures	1
CHE 501	Introduction to Chemical Engineering I	3
CHE 502	Introduction to Chemical Engineering II	3
CHE 601	Fluid Mechanics and Unit Operations	3
CHE 604	Chemical Engineering Thermodynamics	3
CHE 614	Separation Processes	3
CHE 761	Biochemical Engineering	4
CHE 762	Biomedical Engineering	4
CHEM 405	Chemical Principles for Engineers	4
CHEM 545 & CHEM 546	Organic Chemistry and Organic Chemistry Laboratory	5
GEN 604	Principles of Genetics	4
MATH 425	Calculus I	4
MATH 426	Calculus II	4
MATH 527	Differential Equations with Linear Algebra	4
MATH 644	Statistics for Engineers and Scientists	4
PHYS 407	General Physics I	4
BMS 508	Human Anatomy and Physiology II	4

Electives

Select five courses from the following: ¹

BENG 620	Tissue Engineering Cell Culture Laboratory ¹
BENG 755	Computational Molecular Bioengineering ¹
BMCB 753	Cell Culture ¹
BMS 702	Endocrinology
BMS 704	Pathologic Basis of Disease
BMS 706 & BMS 708	Virology and Virology Laboratory
CEE 502	Project Engineering ¹
CEE 724	Environmental Engineering Microbiology ¹
CHE 602	Heat Transfer and Unit Operations ¹
CHE 603	Applied Mathematics for Chemical Engineers ¹
CHE 651	Biotech Experience/Biomanufacturing ¹
CHE 703	Mass Transfer and Stagewise Operations ¹
CHE 722	Introduction to Microfluidics ¹
CHE 752	Process Dynamics and Control ¹
ECE 537	Introduction to Electrical Engineering ¹
ECE 784	Biomedical Instrumentation ¹
GEN 711	Genomics and Bioinformatics
	or GEN 711W Genomics and Bioinformatics
GEN 712	Programming for Bioinformatics

GEN 717	Molecular Microbiology	
GEN 771	Molecular Genetics	
GEN 774	Techniques in Plant Genetic Engineering and Biotechnology ¹	
Total Credits		84

¹ At least four of the elective courses must be engineering.

Degree Plan

Course	Title	Credits
First Year		
Fall		
CHE 400	Chemical Engineering Lectures	1
MATH 425	Calculus I ¹	4
CHEM 405	Chemical Principles for Engineers ²	4
BIOL 410	Principles of Molecular and Cellular Biology	3
Discovery Program Elective (1)		4
Credits		16
Spring		
MATH 426	Calculus II	4
GEN 604	Principles of Genetics	4
PHYS 407	General Physics I	4
ENGL 401	First-Year Writing ³	4
Credits		16
Second Year		
Fall		
CHE 501	Introduction to Chemical Engineering I	3
MATH 527	Differential Equations with Linear Algebra	4
CHEM 545	Organic Chemistry	3
CHEM 546	Organic Chemistry Laboratory	2
Discovery Program Elective (1)		4
Credits		16
Spring		
CHE 502	Introduction to Chemical Engineering II	3
MATH 644	Statistics for Engineers and Scientists	4
Discovery Program Elective (1)		4
BMS 503	General Microbiology	3
BMS 504	General Microbiology Laboratory	2
Credits		16
Third Year		
Fall		
CHE 601	Fluid Mechanics and Unit Operations	3
BENG 766	Biomaterials	4
BMCB 658	General Biochemistry	3
BMCB 659	General Biochemistry Lab	2
Bioengineering Program Elective		4
Credits		16
Spring		
CHE 604	Chemical Engineering Thermodynamics	3
CHE 761	Biochemical Engineering	4
BMS 508	Human Anatomy and Physiology II	4

Bioengineering Program Elective	4
Credits	15

Fourth Year

Fall

BENG 763	Bioengineering Design I	2
BENG 762	Biomedical Engineering	4
Discovery Program Elective (1)		4
Bioengineering Program Electives (2)		8
Credits		18

Spring

BENG 764	Bioengineering Design II	4
CHE 614	Separation Processes	3
Discovery Program Elective (1)		4
Bioengineering Program Elective (1)		4
Credits		15
Total Credits		128

¹ MATH 425 Calculus I satisfies the Discovery Foundation Quantitative Reasoning category.

² CHEM 405 Chemical Principles for Engineers satisfies the Discovery Physical Science (with lab) category.

³ ENGL 401 First-Year Writing satisfies the Discovery Foundation Writing Skills category.

34 credits engineering, 16 credits math, 14 credits chemistry, 16 credits life science

Five electives: 15 to 16 credits engineering; 4 credits science, math, or engineering

Chemical Engineering (CHE)

The Department of Chemical Engineering currently offers the undergraduate degree program in chemical engineering with options in bioengineering, energy engineering, and environmental engineering.

The B.S. program in chemical engineering is accredited by the:

Engineering Accreditation Commission of ABET
111 Market Place
Suite 1050
Baltimore, MD 21202-4012
(410) 347-7700

Chemical engineering is concerned with the analysis and design of processes that deal with the transfer and transformation of energy and material into products of high value.

The practice of chemical engineering includes the conception, development, design, and application of physicochemical processes and their products; the development, design, construction, operation, control, and management of plants for these processes; and activities relating to public service, education, and research.

The curriculum prepares students for productive careers in industry or government and provides a foundation for graduate studies. The college's program emphasizes chemical engineering fundamentals while offering opportunities for focused study in energy, environmental, or bio-engineering.

Traditional employment areas in the chemical process industries include industrial chemicals, petroleum and petrochemicals, plastics, pharmaceuticals, metals, textiles, and food. Chemical engineers are also working in increasing numbers in the areas of energy engineering, pollution abatement, and biochemical and biomedical engineering; in addition, they are employed by many government laboratories and agencies as well as private industries and institutions.

Mission

The department strives to prepare students for productive careers in industry or government as well as to provide a foundation for graduate studies. The program emphasizes chemical engineering fundamentals while offering opportunities for focused study in energy, environmental, or bio-engineering.

Program Educational Objectives

The chemical engineering program seeks to provide an environment that enables students to pursue their goals in an innovative, rigorous, and challenging program with a diversity of offerings.

The program has the following major educational objectives with the expectation that our alumni will have successful careers in the many diverse areas of the chemical engineering profession. Within a few years of obtaining a bachelor's degree in chemical engineering, we expect our graduates to have the following attributes:

Depth. To be effective in applying chemical engineering principles in engineering practice or for advanced study in chemical engineering.

Breadth. To have a productive career in the many diverse fields of chemical engineering such as bio-engineering, energy, and the environment, or in the pursuit of graduate education in disciplines such as chemical engineering, medicine, law, or business.

Professionalism. To function effectively in the complex modern work environment with the ability to assume professional leadership roles.

<https://ceps.unh.edu/chemical-engineering>

Programs

- Chemical Engineering Major (B.S.) (p. 135)
- Chemical Engineering Major: Bioengineering Option (B.S.) (p. 137)
- Chemical Engineering Major: Energy Option (B.S.) (p. 137)
- Chemical Engineering Major: Environmental Engineering Option (B.S.) (p. 138)

Faculty

<https://ceps.unh.edu/chemical-engineering/people>

Chemical Engineering Major (B.S.)

<https://ceps.unh.edu/chemical-engineering/chemical-engineering-bs>

Description

Chemical engineering is concerned with the analysis and design of processes that deal with the transfer and transformation of energy and material.

The practice of chemical engineering includes the conception, development, design, and application of physicochemical processes and their products; the development, design, construction, operation, control, and management of plants for these processes; and activities relating to public service, education, and research.

The curriculum prepares students for productive careers in industry or government and provides a foundation for graduate studies. The program emphasizes chemical engineering fundamentals while offering opportunities for focused study in energy, environmental, or bioengineering.

Traditional employment areas in the chemical process industries include industrial chemicals, petroleum and petrochemicals, plastics, pharmaceuticals, metals, textiles, and food. Chemical engineers also are working in increasing numbers in the areas of energy engineering, pollution abatement, and biochemical and biomedical engineering; in addition, they are employed by many government laboratories and agencies as well as private industries and institutions.

Graduates from the program have the ability to apply knowledge of mathematics, science, and engineering to identify, formulate, and solve chemical engineering problems as well as to design and conduct experiments safely and analyze and interpret data. They are prepared to pursue advanced studies in chemical engineering. Program graduates gain a sense of professional and ethical responsibility with the ability to apply environmental, safety, economic, and ethical criteria in the design of engineering processes. They learn to function in individual and group working environments, and learn skills in written and oral communication and the effective use of computers for engineering practice, including information search in the library and on the Internet. They also understand the need for lifelong learning and the significance of societal and global issues relevant to chemical engineering.

A minimum of 129 credits is required for graduation with the degree of bachelor of science in chemical engineering. There are ten electives in the chemical engineering curriculum. Six of these are for the Discovery Program requirements. The remaining four electives should consist of three chemical engineering electives and one additional technical elective.

Students are required to obtain a minimum 2.0 grade-point average in CHE 501 Introduction to Chemical Engineering I-CHE 502 Introduction to Chemical Engineering II and in overall standing at the end of the sophomore year in order to continue in the major. Study abroad (Exchange) chemical engineering students are required to have a cumulative GPA of 3.0 or better in math, physics, chemistry, and CHE courses at the end of the semester prior to their exchange semester.

Requirements

Required Courses

Code	Title	Credits
CHE 400	Chemical Engineering Lectures	1
CHE 501	Introduction to Chemical Engineering I	3
CHE 502	Introduction to Chemical Engineering II	3
CHE 601	Fluid Mechanics and Unit Operations	3
CHE 602	Heat Transfer and Unit Operations	3
CHE 603	Applied Mathematics for Chemical Engineers	4
CHE 604	Chemical Engineering Thermodynamics	3
CHE 612	Chemical Engineering Laboratory I	3
CHE 614	Separation Processes	3
CHE 703	Mass Transfer and Stagewise Operations	3
CHE 707	Chemical Engineering Kinetics	3
CHE 708	Chemical Engineering Design	4
CHE 713	Chemical Engineering Laboratory II	3
CHE 752	Process Dynamics and Control	4
CHEM 405	Chemical Principles for Engineers	4
CHEM 683	Physical Chemistry I	3
CHEM 684	Physical Chemistry II	3
CHEM 685	Physical Chemistry Laboratory	2
CHEM 686	Physical Chemistry Laboratory	2
CHEM 651	Organic Chemistry I	3
CHEM 653	Organic Chemistry Laboratory	2
CHEM 652A	Organic Chemistry II	3
MATH 425	Calculus I	4
MATH 426	Calculus II	4
MATH 527	Differential Equations with Linear Algebra	4
MATH 644	Statistics for Engineers and Scientists	4
PHYS 407	General Physics I	4
PHYS 408	General Physics II	4

Elective Courses

Select three of the following:

Code	Title	Credits
CHE 651	Biotech Experience/Biomufacturing	4
CHE 705	Fossil Fuels and Renewable Energy Sources	4
CHE 706	Electrochemical Methods for Energy Applications	4
CHE 709	Fundamentals of Air Pollution and Its Control	4
CHE 712	Introduction to Nuclear Engineering	4
CHE 722	Introduction to Microfluidics	4
CHE 744	Corrosion	4
CHE 762	Biomedical Engineering	4
CHE 766	Biomaterials	4
BENG 620	Tissue Engineering Cell Culture Laboratory	4
BENG 755	Computational Molecular Bioengineering	4

Degree Plan

Course	Title	Credits
First Year		
Fall		
ENGL 401	First-Year Writing ¹	4

MATH 425	Calculus I ²	4
CHEM 405	Chemical Principles for Engineers ³	4
CHE 400	Chemical Engineering Lectures	1
Discovery Program Electives ⁷		4
Credits		17

Spring

MATH 426	Calculus II	4
PHYS 407	General Physics I ³	4
Discovery Program Electives (2) ⁷		8
Credits		16

Second Year**Fall**

CHEM 683	Physical Chemistry I	3
CHEM 685	Physical Chemistry Laboratory	2
MATH 527	Differential Equations with Linear Algebra	4
PHYS 408	General Physics II	4
CHE 501	Introduction to Chemical Engineering I ⁴	3
Credits		16

Spring

CHEM 684	Physical Chemistry II	3
CHEM 686	Physical Chemistry Laboratory	2
CHE 502	Introduction to Chemical Engineering II	3
MATH 740	Design of Experiments I ⁵	4
or MATH 644	or Statistics for Engineers and Scientists	
Discovery Program Elective ⁷		4
Credits		16

Third Year**Fall**

CHEM 651	Organic Chemistry I	3
CHEM 653	Organic Chemistry Laboratory	2
CHE 601	Fluid Mechanics and Unit Operations	3
CHE 603	Applied Mathematics for Chemical Engineers	4
CHE Elective		4
Credits		16

Spring

CHEM 652A	Organic Chemistry II	3
CHE 602	Heat Transfer and Unit Operations	3
CHE 604	Chemical Engineering Thermodynamics	3
CHE 612	Chemical Engineering Laboratory I	3
Discovery Program Elective ⁷		4
Credits		16

Fourth Year**Fall**

CHE 703	Mass Transfer and Stagewise Operations	3
CHE 707	Chemical Engineering Kinetics	3
CHE 713	Chemical Engineering Laboratory II	3
CHE 752	Process Dynamics and Control	4
CHE Elective		4
Credits		17

Spring

CHE 614	Separation Processes	3
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CHE 708	Chemical Engineering Design ⁶	4
CHE Electives		4
Discovery Elective ⁷		4
	Credits	15
	Total Credits	129

¹ ENGL 401 First-Year Writing satisfies the Discovery Foundation Writing Skills category.

² MATH 425 Calculus I satisfies the Discovery Foundation Quantitative Reasoning category.

³ PHYS 407 General Physics I or CHEM 405 Chemical Principles for Engineers satisfies the Discovery Physical Science (with lab) category.

⁴ CHE 502 Introduction to Chemical Engineering II satisfies the Discovery Inquiry requirement.

⁵ MATH 740 Design of Experiments I or MATH 644 Statistics for Engineers and Scientists is the recommended technical elective.

⁶ CHE 708 Chemical Engineering Design satisfies the Discovery Capstone Experience/Course.

⁷ CHE students do not have to take a course in the Discovery ETS category since they satisfy this requirement through a combination of courses in the CHE curriculum.

Chemical Engineering Major: Bioengineering Option (B.S.)

<https://ceps.unh.edu/chemical-engineering/bioengineering-option>

Description

Under this option, the required courses deal with the application of basic biological sciences and chemical engineering principles to the design and operation of large-scale bioprocesses for the production of high-value medicinal, food and beverage, pharmaceutical, biomedical, genetic engineering, and health care products. The elective courses permit the student to study topics of special interest in more depth or gain a broader perspective in bioengineering or some closely related subjects such as biochemistry or biotechnology experience in manufacturing or research. Three courses are required, and a minimum of two additional courses of at least three credits each should be selected from the electives list. Students interested in the bioengineering option should declare their intention to the department faculty during the sophomore year. They may consult with Russell Carr, (603) 862-1429.

Requirements

Code	Title	Credits
Required Courses		
CHE 400	Chemical Engineering Lectures	1
CHE 501	Introduction to Chemical Engineering I	3
CHE 502	Introduction to Chemical Engineering II	3
CHE 601	Fluid Mechanics and Unit Operations	3
CHE 602	Heat Transfer and Unit Operations	3
CHE 603	Applied Mathematics for Chemical Engineers	4
CHE 604	Chemical Engineering Thermodynamics	3
CHE 612	Chemical Engineering Laboratory I	3

CHE 614	Separation Processes	3
CHE 703	Mass Transfer and Stagewise Operations	3
CHE 707	Chemical Engineering Kinetics	3
CHE 708	Chemical Engineering Design	4
CHE 713	Chemical Engineering Laboratory II	3
CHE 752	Process Dynamics and Control	4
CHEM 405	Chemical Principles for Engineers	4
CHEM 683	Physical Chemistry I	3
CHEM 684	Physical Chemistry II	3
CHEM 685	Physical Chemistry Laboratory	2
CHEM 686	Physical Chemistry Laboratory	2
CHEM 651	Organic Chemistry I	3
CHEM 653	Organic Chemistry Laboratory	2
CHEM 652A	Organic Chemistry II	3
MATH 425	Calculus I	4
MATH 426	Calculus II	4
MATH 527	Differential Equations with Linear Algebra	4
MATH 644	Statistics for Engineers and Scientists	4
PHYS 407	General Physics I	4
PHYS 408	General Physics II	4
CHE 651	Biotech Experience/Biomufacturing	4
CHE 761	Biochemical Engineering	4
CHE 766	Biomaterials	4
	or BENG 620 Tissue Engineering Cell Culture Laboratory	

Elective Courses

Select one of the following:	3-4
BENG 755	Computational Molecular Bioengineering
CHE 695	Chemical Engineering Project
CHE 696	Independent Study
CHE 762	Biomedical Engineering
BMCB 750	Physical Biochemistry
BMCB 751	Principles of Biochemistry
BMCB 752	Principles of Biochemistry

Total Credits 104-105

Chemical Engineering Major: Energy Option (B.S.)

<https://ceps.unh.edu/chemical-engineering/energy-option>

Description

This option covers the major areas of current interest in the energy field. The required courses provide students with a general background knowledge of fossil fuels, nuclear power, solar energy, and other alternative energy resources. The elective courses will permit the student to study topics of special interest in more depth or gain a broader perspective on energy and some closely related subjects. Three courses are required, and a minimum of two additional courses of at least three credits each should be selected from the electives list. Students interested in the energy option should declare their intention to the department faculty during the sophomore year. They may consult with Russell Carr, (603) 862-1429.

Requirements

Code	Title	Credits
Required Courses		
CHE 400	Chemical Engineering Lectures	1
CHE 501	Introduction to Chemical Engineering I	3
CHE 502	Introduction to Chemical Engineering II	3
CHE 601	Fluid Mechanics and Unit Operations	3
CHE 602	Heat Transfer and Unit Operations	3
CHE 603	Applied Mathematics for Chemical Engineers	4
CHE 604	Chemical Engineering Thermodynamics	3
CHE 612	Chemical Engineering Laboratory I	3
CHE 614	Separation Processes	3
CHE 703	Mass Transfer and Stagewise Operations	3
CHE 707	Chemical Engineering Kinetics	3
CHE 708	Chemical Engineering Design	4
CHE 713	Chemical Engineering Laboratory II	3
CHE 752	Process Dynamics and Control	4
CHEM 405	Chemical Principles for Engineers	4
CHEM 683	Physical Chemistry I	3
CHEM 684	Physical Chemistry II	3
CHEM 685	Physical Chemistry Laboratory	2
CHEM 686	Physical Chemistry Laboratory	2
CHEM 651	Organic Chemistry I	3
CHEM 653	Organic Chemistry Laboratory	2
CHEM 652A	Organic Chemistry II	3
MATH 425	Calculus I	4
MATH 426	Calculus II	4
MATH 527	Differential Equations with Linear Algebra	4
MATH 644	Statistics for Engineers and Scientists	4
PHYS 407	General Physics I	4
PHYS 408	General Physics II	4
CHE 705	Fossil Fuels and Renewable Energy Sources	4
CHE 706	Electrochemical Methods for Energy Applications	4
CHE 712	Introduction to Nuclear Engineering	4
Elective Courses		
Select one of the following:		3-4
CHE 695	Chemical Engineering Project	
CHE 696	Independent Study	
CHE 761	Biochemical Engineering	
ME 705	Thermal System Analysis and Design	
Special Topics on Energy ¹		
Total Credits		104-105

¹ This requires approval of the department; students should check with their advisor. Courses offered in the past include Renewable Electrical Power, Renewable Energy, and Peak Oil.

Chemical Engineering Major: Environmental Engineering Option (B.S.)

<https://ceps.unh.edu/chemical-engineering/environmental-engineering-option>

Description

The chemical engineering program, with its substantial requirements in chemistry, fluid dynamics, heat transfer, mass transfer, unit operations, and reaction kinetics, provides students with a unique preparation to deal with many aspects of environmental pollution problems. The option gives students a special focus on the application of chemical engineering principles and processes to the solution of problems relating to air pollution, water pollution, and the disposal of solid and hazardous waste. Three required courses must be selected, plus two electives from the electives list. Each course must carry a minimum of three credits. Students interested in the environmental engineering option should declare their intention to the department faculty during the sophomore year. They may consult with Russell Carr, (603) 862-1429.

Requirements

Code	Title	Credits
Required Courses		
CHE 400	Chemical Engineering Lectures	1
CHE 501	Introduction to Chemical Engineering I	3
CHE 502	Introduction to Chemical Engineering II	3
CHE 601	Fluid Mechanics and Unit Operations	3
CHE 602	Heat Transfer and Unit Operations	3
CHE 603	Applied Mathematics for Chemical Engineers	4
CHE 604	Chemical Engineering Thermodynamics	3
CHE 612	Chemical Engineering Laboratory I	3
CHE 614	Separation Processes	3
CHE 703	Mass Transfer and Stagewise Operations	3
CHE 707	Chemical Engineering Kinetics	3
CHE 708	Chemical Engineering Design	4
CHE 713	Chemical Engineering Laboratory II	3
CHE 752	Process Dynamics and Control	4
CHEM 405	Chemical Principles for Engineers	4
CHEM 683	Physical Chemistry I	3
CHEM 684	Physical Chemistry II	3
CHEM 685	Physical Chemistry Laboratory	2
CHEM 686	Physical Chemistry Laboratory	2
CHEM 651	Organic Chemistry I	3
CHEM 653	Organic Chemistry Laboratory	2
CHEM 652A	Organic Chemistry II	3
MATH 425	Calculus I	4
MATH 426	Calculus II	4
MATH 527	Differential Equations with Linear Algebra	4
MATH 644	Statistics for Engineers and Scientists	4
PHYS 407	General Physics I	4

PHYS 408	General Physics II	4
CHE 709	Fundamentals of Air Pollution and Its Control	4
CEE 720	Solid and Hazardous Waste Engineering	3
ESCI 654	Fate and Transport in the Environment	4

Elective Courses

Select one of the following:		3-4
CHE 695	Chemical Engineering Project	
CHE 696	Independent Study	
CHE 744	Corrosion	
CEE 724	Environmental Engineering Microbiology	
CEE 723	Environmental Water Chemistry	

Total Credits 103-104

Chemistry (CHEM)

Chemistry is a dynamic, an extremely creative, and yet also a practical discipline. Chemists *analyze* and *quantitate*, like when testing environmental or forensic samples; they *measure* specific characteristics of substances, like the defects present in a material, or the optical properties of atmospheric particles; they *design* and *synthesize* new substances, like antibiotics, catalysts for hydrogen production, and polymers for flexible electronics; they also generate *models* and *theories* that can explain what happens in the laboratory or in Nature. Chemistry is integral to modern science and, ultimately, most phenomena in biology, engineering, environmental science, geology, materials science, and medicine can be described in terms of the chemical and physical behavior of atoms and molecules—because of this, chemistry is often called “The Central Science”. Chemists are vital members of the interdisciplinary teams tackling the complicated problems facing our world, including issues in energy, health, security, and defense. Chemists are essential in developing the technologies and materials that support modern life!

The study of chemistry provides students with the critical thinking and problem-solving skills necessary to be successful in a wide variety of careers. You’ll find chemists in many industries, including agricultural/food products, biotechnology, coatings, materials, paper, personal care products, petrochemicals, pharmaceuticals, plastics, renewable energy, semiconductors, and solar cells. Chemists are also involved in environmental and health-related sciences, making public policies, patent law and intellectual property, and educating future generations of scientists.

Students are also well-prepared for graduate-level work in chemistry, chemical biology, chemical physics, biochemistry, biophysics, materials chemistry, and other related fields. Students who excel in undergraduate chemistry coursework are often able to obtain funding for their graduate work through teaching or research assistantships and fellowships. Chemistry majors have also been successful in a variety of professional programs where they have studied medicine, pharmacy, dentistry, veterinary medicine, business, or law.

The chemistry program at The University of New Hampshire is small enough to be personal, but broad enough to provide excellent opportunities for challenge and growth. Students interested in pursuing chemistry as an undergraduate degree have two options available to them. These are the Bachelor of Science in Chemistry (B.S.) degree and a Bachelor of Arts (B.A.) degree. The B.S. Chemistry degree is certified by the American Chemical Society (<https://www.acs.org/content/acs/en/about/governance/committees/training/acsapproved.html>); the B.A.

degree may also lead to ACS certification, depending on program plan. Since the required courses for each degree program are very similar in the first and second years, it is easy to change from one program to another. A chemistry faculty adviser is assigned to a student once she/he enters the program. The student’s adviser provides academic guidance concerning the choice of courses to meet both major and university requirements.

<https://ceps.unh.edu/chemistry>

Programs

- Chemistry Major (B.A.) (p. 139)
- Chemistry Major (B.S.) (p. 141)
- Chemistry Minor (p. 142)

Faculty

<https://ceps.unh.edu/chemistry/people>

Chemistry Major (B.A.)

<https://ceps.unh.edu/chemistry/program/ba/chemistry-major>

Description

Chemistry Major (B.A.) Description

The B.A. degree exposes students to the major fields of chemistry but provides more flexibility in course selection than the B.S. degree. The curriculum offers a comprehensive introduction to chemistry’s traditional subdisciplines (analytical, inorganic, organic, and physical chemistry) via foundational classroom and laboratory experiences. Undergraduate research is an option, but not a requirement for this degree. The B.A. degree is directed towards students who have interdisciplinary interests and are not planning to either attend a traditional graduate program in chemistry or find immediate employment in the chemical industry. Instead, this degree is geared toward students who plan to attend graduate school in an interdisciplinary field where chemical knowledge will be beneficial, and students who are interested in chemistry but plan to pursue post-graduate degrees in the health sciences, education, business, or other pre-professional programs. With careful selection of elective courses, the B.A. degree may also lead to American Chemical Society certification (<https://www.acs.org/content/acs/en/about/governance/committees/training/acsapproved.html>).

Requirements

Required Courses

Code	Title	Credits
CHEM 400	Freshman Seminar	1
CHEM 403	General Chemistry I	4
CHEM 404	General Chemistry II	4
CHEM 517 & CHEM 518	Quantitative Analysis and Quantitative Analysis Laboratory	5
CHEM 547 & CHEM 549	Organic Chemistry I and Organic Chemistry Laboratory	5

CHEM 548 & CHEM 550	Organic Chemistry II and Organic Chemistry Laboratory	5
CHEM 574 & CHEM 576	Chemistry Across the Periodic Table and Experimental Inorganic Chemistry	6
CHEM 683 & CHEM 685	Physical Chemistry I and Physical Chemistry Laboratory	5
CHEM 684 & CHEM 686	Physical Chemistry II and Physical Chemistry Laboratory	5
CHEM 762 & CHEM 763	Instrumental Methods of Chemical Analysis and Instrumental Methods of Chemical Analysis Laboratory	5
CHEM 798	Senior Seminar ¹	1
MATH 425	Calculus I	4
MATH 426	Calculus II	4
PHYS 407 or PHYS 401 & PHYS 402	General Physics I Introduction to Physics I and Introduction to Physics II	4
Total Credits		58

¹ CHEM 798 satisfies the Discovery Capstone experience requirement. Students work with the instructor to prepare presentations based on a research project or chemistry-related professional engagement. This is a Writing Intensive course.

CHEM 547	Organic Chemistry I	3
CHEM 549	Organic Chemistry Laboratory	2
Language 1 (first semester of an elementary foreign language sequence)		4
The B.A. requires either 2 semesters of elementary foreign language or 1 semester of intermediate (or higher).		
Discovery Course		4
Credits		18
Total Credits		18

Course	Title	Credits
Second Year		
Spring		
CHEM 548	Organic Chemistry II	3
CHEM 550	Organic Chemistry Laboratory	2
CHEM 574	Chemistry Across the Periodic Table	4
CHEM 576	Experimental Inorganic Chemistry	2
Language 2 (second semester of an elementary foreign language sequence)		4
Credits		15
Total Credits		15

Course	Title	Credits
Third Year		
Fall		
CHEM 683	Physical Chemistry I	3
CHEM 685	Physical Chemistry Laboratory	2
Advanced Chemistry Elective (can be CHEM 696, 708, 774, 755, 776, 795 or 799)		3
Discovery Course		4
Discovery Course		4
Credits		16
Total Credits		16

Course	Title	Credits
Third Year		
Spring		
CHEM 684	Physical Chemistry II	3
CHEM 685	Physical Chemistry Laboratory	2
CHEM 762	Instrumental Methods of Chemical Analysis	3
CHEM 763	Instrumental Methods of Chemical Analysis Laboratory	2
Discovery Course		4
Credits		14
Total Credits		14

Course	Title	Credits
Fourth Year		
Fall		
Discovery Course		4
Elective Course		4
Elective Course		4

Degree Plan

This is the suggested degree plan for B.A. Chemistry majors. A student can alter this plan in consultation with an academic adviser.

Course	Title	Credits
First Year		
Fall		
CHEM 400	Freshman Seminar	1
CHEM 403	General Chemistry I	4
MATH 425	Calculus I	4
Discovery Course		4
Discovery Course		4
Credits		17

Total Credits		17
Course	Title	Credits
First Year		
Spring		
CHEM 404	General Chemistry II	4
MATH 426	Calculus II	4
ENGL 401	First-Year Writing	4
PHYS 407	General Physics I	4
Credits		16
Total Credits		16

Course	Title	Credits
Second Year		
Fall		
CHEM 517	Quantitative Analysis	4
CHEM 518	Quantitative Analysis Laboratory	1

Elective Course	4
Credits	16
Total Credits	16

Course	Title	Credits
Fourth Year		
Spring		
CHEM 798	Senior Seminar	1
Elective Course		4
Elective Course		4
Elective Course		4
Elective Course		4
Credits		17
Total Credits		17

CHEM 755 & CHEM 756	Advanced Organic Chemistry and Advanced Organic Chemistry Laboratory	5-6
CHEM 762 & CHEM 763	Instrumental Methods of Chemical Analysis and Instrumental Methods of Chemical Analysis Laboratory	5
CHEM 774 & CHEM 775	Inorganic Chemistry and Inorganic Chemistry Laboratory	5
CHEM 776	Physical Chemistry III	3
CHEM 777	Advanced Synthesis and Characterization	3
CHEM 798	Senior Seminar	1
CHEM 799	Senior Thesis ²	8
MATH 425	Calculus I	4
MATH 426	Calculus II	4
PHYS 407	General Physics I	4
PHYS 408	General Physics II	4
Total Credits		89-90

Chemistry Major (B.S.)

<https://ceps.unh.edu/chemistry/program/bs/chemistry-major>

Description

Chemistry Major (B.S.) Description

The B.S. Chemistry degree is certified by the American Chemical Society (<https://www.acs.org/content/acs/en/about/governance/committees/training/acsapproved.html>) and provides a deep, rigorous experience that prepares students for graduate work or a career in chemical industry and related fields. The curriculum offers thorough training in the major fields of chemistry, covering analytical, inorganic, organic, and physical chemistry, as well as biochemistry. Students gain laboratory experience in molecular synthesis and characterization, analytical and instrumental methods, physical chemical measurements and data analysis, and spectroscopy. At the same time, the program requires students to participate in scientific inquiry, via both advanced laboratory experiences and independent research.

Requirements

Required Courses

Code	Title	Credits
CHEM 400	Freshman Seminar	1
CHEM 403	General Chemistry I	4
CHEM 404	General Chemistry II	4
CHEM 517 & CHEM 518	Quantitative Analysis and Quantitative Analysis Laboratory	5
CHEM 547 & CHEM 549	Organic Chemistry I and Organic Chemistry Laboratory	5
CHEM 548 & CHEM 550	Organic Chemistry II and Organic Chemistry Laboratory	5
CHEM 574 & CHEM 576	Chemistry Across the Periodic Table and Experimental Inorganic Chemistry	6
BMCB 658	General Biochemistry ¹	3
CHEM 683 & CHEM 685	Physical Chemistry I and Physical Chemistry Laboratory	5
CHEM 684 & CHEM 686	Physical Chemistry II and Physical Chemistry Laboratory	5

¹ BMCB 658 satisfies the Discovery Biological Sciences requirement (for BS Chem majors only).

² CHEM 799 is a year-long experience of 4 credits per semester and satisfies the Discovery Capstone Experience requirement.

Degree Plan

This is the suggested degree plan for B.S. Chemistry majors. A student can alter this plan in consultation with an academic adviser.

Course	Title	Credits
First Year		
Fall		
CHEM 400	Freshman Seminar	1
CHEM 403	General Chemistry I	4
MATH 425	Calculus I	4
PHYS 407	General Physics I	4
Discovery Course		4
Credits		17
Total Credits		17

Course	Title	Credits
First Year		
Spring		
CHEM 404	General Chemistry II	4
MATH 426	Calculus II	4
ENGL 401	First-Year Writing	4
PHYS 408	General Physics II	4
Credits		16
Total Credits		16

Course	Title	Credits
Second Year		
Fall		
CHEM 517	Quantitative Analysis	4
CHEM 518	Quantitative Analysis Laboratory	1
CHEM 547	Organic Chemistry I	3
CHEM 549	Organic Chemistry Laboratory	2

Discovery Courses (2 courses at 4 credits each)	8
Credits	18
Total Credits	18

Course	Title	Credits
Second Year		
Spring		
CHEM 548	Organic Chemistry II	3
CHEM 550	Organic Chemistry Laboratory	2
CHEM 574	Chemistry Across the Periodic Table	4
CHEM 576	Experimental Inorganic Chemistry	2
Discovery Course		4
Credits		15
Total Credits		15

Course	Title	Credits
Third Year		
Fall		
CHEM 683	Physical Chemistry I	3
CHEM 685	Physical Chemistry Laboratory	2
CHEM 755	Advanced Organic Chemistry	3
CHEM 774	Inorganic Chemistry	3
CHEM 777	Advanced Synthesis and Characterization	3
Discovery Course		4
Credits		18
Total Credits		18

Course	Title	Credits
Third Year		
Spring		
CHEM 684	Physical Chemistry II	3
CHEM 686	Physical Chemistry Laboratory	2
CHEM 762	Instrumental Methods of Chemical Analysis	3
CHEM 763	Instrumental Methods of Chemical Analysis Laboratory	2
Elective Course		4
Discovery Course		4
Credits		18
Total Credits		18

Course	Title	Credits
Fourth Year		
Fall		
CHEM 776	Physical Chemistry III	3
CHEM 799	Senior Thesis ((first semester of a yearlong experience))	4
BMCB 658	General Biochemistry	3
Elective Course		4
Credits		14
Total Credits		14

Course	Title	Credits
Fourth Year		
Spring		
CHEM 798	Senior Seminar	1
CHEM 799	Senior Thesis ((second semester of a yearlong experience))	4
Elective Courses (2 courses at 4 credits each)		8
Credits		13
Total Credits		13

Chemistry Minor

<https://ceps.unh.edu/chemistry/chemistry-minor>

Description

If you are interested in obtaining a Chemistry Minor, please contact the Undergraduate Coordinator in the Chemistry Department Office at (603) 862-1550. He/she will meet with you to discuss your plans to minor in Chemistry.

Requirements

1. Complete a total of 20 credit hours in Chemistry (CHEM) courses.¹
2. Chemistry courses for the minor cannot be completed on a pass/fail basis.
3. Grade of C- or better is required in all chemistry minor coursework.
4. A cumulative GPA of 2.00 is required for all chemistry minor coursework.
5. Biochemistry (BMCB) courses do not count toward a chemistry minor.
6. Transfer credits can only be applied to the minor with permission of the Chemistry Department Undergraduate Coordinator or Chair. Maximum of 8 transfer credit hours. Transfer courses must meet minimum grade requirements.

¹ Student's who have completed CHEM 683 Physical Chemistry I and CHEM 685 Physical Chemistry Laboratory, may complete the minor with a total of 18 credit hours. No more than 10 credit hours of chemistry coursework required by the student's major may be counted toward the chemistry minor. Any remaining credits must come from CHEM courses that are not required for the student's major.

Civil and Environmental Engineering (CEE)

<https://ceps.unh.edu/civil-environmental-engineering>

Overview

Civil and Environmental Engineering involves the sustainable planning, design, and construction of public works for the benefit of society while minimizing environmental impact. Civil Engineering concerns the design of buildings, bridges, roads, dams, water transmission systems, water treatment systems, tunnels, and more. Environmental Engineering specializes in environmental cleanup, drinking water systems, wastewater treatment systems, and solid and hazardous waste

disposal systems, environmental remediation, all with consideration of the triple bottom line. Resulting infrastructure facilities must provide efficient service, be cost effective, and be compatible with the environment. Moreover, civil and environmental engineers work under a code of ethics in which their primary, overriding responsibility, is to uphold the public's trust by working to plan, design, build, and restore safe, sustainable, and environmentally responsible public works.

The Department of Civil and Environmental Engineering has two degree programs: one resulting in a Bachelor of Science in Civil Engineering (the BSCIVE) and another resulting in a Bachelor of Science in Environmental Engineering (the BSENE). Both programs are accredited by ABET.

As civil engineering is such a broad field, it is traditionally divided into sub-disciplines. At the University of New Hampshire, multiple courses are offered in six: civil engineering materials, environmental engineering, geotechnical engineering, structural engineering, sustainable engineering, and water resources engineering.

Environmental engineering focuses on environmental pollution and public health protection; water, wastewater, reuse and stormwater technology; solid and hazardous waste engineering and remediation; engineering sustainability; environmental microbiology and chemistry; contaminant transport and fate, hydraulics, and hydrology.

Students may readily transfer between the BSCIVE and BSENE programs within the first three semesters. Transferring between the two programs is also possible later on in the programs, but additional courses may be necessary.

Both engineering degrees provide a firm base in mathematics and engineering, and all majors are expected to develop excellent communication and computer skills. Graduates are prepared to enter the profession and to pursue advanced study. Because of the broad technical background attained, some graduates also successfully pursue further education in business, architecture, education, and law.

Mission

The mission of the Department of Civil and Environmental Engineering at the University of New Hampshire is fourfold:

- To pursue and disseminate knowledge through teaching, scholarship, and public service.
- To provide excellent undergraduate and graduate education.
- To conduct research and engagement activities, advancing the state of the art in science and engineering.
- To enhance the quality of life for people in New Hampshire and beyond.

BSCIVE Program Overview

Civil engineers work as private consultants, for large contracting firms, and for government agencies in a wide variety of indoor and outdoor settings around the world. There is a strong and constant market for civil engineers due to the demands placed on the profession to construct, maintain, and repair the infrastructure.

Educational Objectives

In accordance with its University, College, and Department missions, the faculty of the Department of Civil & Environmental Engineering has established clear educational objectives for our BSCIVE graduates, five years after obtaining the degree:

1. Professional employment, primarily in the civil and environmental engineering disciplines.
2. Commitment to continuous learning through graduate and post-graduate education, coursework, and research.
3. Resourcefulness in finding solutions, and retaining ownership and accountability for their work.
4. Positions of leadership, directing the work of others.
5. Professional licensure or certification in civil and environmental engineering disciplines and other professions.
6. Positions and active participation in community, public, and professional service.

Student Outcomes

To enable our graduates to achieve our educational objectives, the BSCIVE program is designed to provide the following student outcomes at the time of graduation:

1. To have obtained a working knowledge¹ in the civil engineering areas of materials, environmental, geotechnical, structural, sustainability, and water resources.
2. To be able to locate, assess, and compile data, to design and perform experiments to gather data, and analyze data to draw conclusions.
3. To have an ability to use and learn techniques, skills, or software necessary for engineering practice.
4. To be able to contribute as a member of multi-disciplinary teams.
5. To be able to effectively communicate and support ideas in documents and presentations to a variety of audiences.
6. To be able to apply principles of mathematics, science, and engineering to identify, formulate, and solve problems.
7. To have been prepared for the Fundamentals of Engineering examination.²
8. To have the broad education necessary to have an understanding of contemporary issues and the interaction between sustainable and ethical engineering practice and global, social, economic, political, and environmental issues.
9. To have a recognition of the need for leadership, and an ability to engage in life-long learning and to understand the importance of professional licensure.
10. Given realistic economic, environmental, social, political, and ethical constraints, to be able to critically analyze and design equipment, structures, systems, or processes to meet society's current needs without compromising the ability of future generations to meet theirs.

¹ A "working knowledge" is defined as understanding and being able to apply a sub-discipline in analysis and design as demonstrated by successful completion of two or more courses with a substantial focus in that sub-discipline.

² A specific Departmental goal is to have 85% of BSCE students take the exam before graduation with an 80% pass rate.

BSENE Program Overview

Environmental engineers work as private consultants, in industry and for government agencies in a wide variety of indoor and outdoor settings around the world. There is a strong and constant market for environmental engineers due to the demands placed on the profession to construct, maintain, and repair the drinking water, wastewater, water reuse and stormwater, and solid and hazardous waste management infrastructure. The curriculum prepares students to plan, using triple

bottom line considerations, and design systems to minimize the impact of human activity on the environment and protect human health.

Educational Objectives

In accordance with its University, College, and Department missions, the faculty of the Department of Civil & Environmental Engineering has established clear educational objectives for our BSENVE graduates, five years after obtaining the degree:

1. Professional employment, primarily in the environmental engineering discipline.
2. Commitment to continuous learning through graduate and post-graduate education, coursework, and research.
3. Being resourceful in finding solutions, and retaining ownership and accountability for their work.
4. Positions of leadership, directing the work of others.
5. Professional licensure or certification in environmental engineering discipline and other professions.
6. Positions and active participation in community, public, and professional service.

Student Outcomes

To enable our graduates to achieve our educational objectives, the BSENVE program is designed to provide the following student outcomes at the time of graduation:

1. To have obtained a working knowledge[1] in environmental engineering areas of water and wastewater treatment, environmental health and safety, solid and hazardous waste management, sustainability, and water resources.
2. To be able to locate, assess, and compile data, to design and perform experiments to gather data, and analyze data to draw conclusions.
3. To have an ability to use and learn techniques, skills, or software necessary for engineering practice.
4. To be able to contribute as a member of multi-disciplinary teams.
5. To be able to effectively communicate and support ideas in documents and presentations to a variety of audiences.
6. To be able to apply principles of mathematics, science, and engineering to identify, formulate, and solve problems.
7. To have been prepared for the Fundamentals of Engineering examination.
8. To have the broad education necessary to have an understanding of contemporary issues and the interaction between sustainable and ethical engineering practice and global, social, economic, political, and environmental issues.
9. To have a recognition of the need for leadership, and an ability to engage in life-long learning and to understand the importance of professional licensure.
10. Given realistic economic, environmental, social, political, and ethical constraints, to be able to critically analyze and design systems or

processes to meet society's current needs without compromising the ability of future generations to meet theirs.

[1] Approved by the CEE Department Faculty on 12 December 2016.

[2] Approved by the EnvE Faculty on 2 March 2018 and by the CEE Department Faculty on 20 March 2018.

[3] Approved by the EnvE Faculty on 2 March 2018 and by the CEE Department Faculty on 20 March 2018.

[4] A "working knowledge" is defined as understanding and being able to apply a sub-discipline in analysis and design as demonstrated by successful completion of two or more courses with a substantial focus in that sub-discipline.

Programs

- Civil Engineering Major (B.S) (p. 144)
- Environmental Engineering Major (B.S.) (p. 147)
- Environmental Engineering Minor (p. 149)

Faculty

<https://ceps.unh.edu/cee/faculty-staff-directory>

Civil Engineering Major (B.S)

<https://ceps.unh.edu/cee/civil-engineering-bs>

Description

Matriculating students should have strong aptitudes in mathematics and science along with imagination, spatial and graphic abilities, communication skills, and creativity. Students then follow a four-year program that conforms to the guidelines of, and is accredited by the Engineering Accreditation Commission of ABET, the global accreditor of college and university programs in applied and natural science, computing, engineering and engineering technology. ABET accreditation assures that programs meet standards to produce graduates ready to enter critical technical fields that are leading the way in innovation and emerging technologies, and anticipating the welfare and safety needs of the public.

The first two years of the program provide the necessary technical knowledge in mathematics, chemistry, and physics, while introducing and developing problem-solving techniques in eight courses tailored to civil engineering students. The junior year provides courses in each of the civil engineering sub-disciplines, providing students with skills in each and allowing students to determine which they wish to pursue further. The senior year is flexible, allowing students to choose where to focus attention by selecting from more than forty elective courses in civil and environmental engineering.

The required curriculum includes seven writing-intensive courses, thereby not only satisfying but exceeding the University's writing requirement. (See University Academic Requirements.)

Additional opportunities exist for study abroad, cognates, minors, and dual majors, a three-year accelerated track, and early admission into two masters of science degree programs.

Requirements

More than half of the major's total credits and nearly all of the senior-level courses are elected by the student. Of these, there are Discovery Program electives required by the University and other electives required by the department in order to satisfy departmental objectives and accreditation requirements.

The Discovery Program is described in University Academic Requirements. Courses required by the BSCIVE program fulfill Discovery requirements in Inquiry and Environment, Technology, and Society, Writing Skills, Quantitative Reasoning, Physical Sciences and Discovery Lab and Capstone.

To graduate with a bachelor of science in civil engineering, a student must achieve the following: 129 or more credits, credit for the civil engineering program's major and elective courses, satisfaction of the University's Discovery Program requirements, satisfaction of the University's writing-intensive course requirements, a cumulative grade-point average of 2.0 or better for all courses, and a cumulative grade-point average of 2.0 or better in all CEE courses.

Code	Title	Credits
Major Requirements		
CHEM 403 & CHEM 404 or CHEM 405	General Chemistry I and General Chemistry II Chemical Principles for Engineers	4
CEE 400	Introduction to Civil Engineering	4
CEE 404 or NR 658 or FORT 581 or ANTH 674 or CT 423 & CT 425	Surveying and Mapping Introduction to Geographic Information Systems Applied Geographic Information Systems (GIS) Techniques Archaeological Survey and Mapping in Belize Introduction to Surveying and Mapping and Surveying and Mapping Lab	4
CEE 500	Statics for Civil Engineers	3
CEE 501	Strength of Materials	3
CEE 502	Project Engineering	3
CEE 520	Environmental Pollution and Protection: A Global Context	4
CEE 620	Fundamental Aspects of Environmental Engineering	4
CEE 635	Engineering Materials	4
CEE 650	Fluid Mechanics	4
CEE 665	Soil Mechanics	4
CEE 680	Classical Structural Analysis	3
ENGL 502 or ENGL 602	Professional and Technical Writing Advanced Professional and Technical Writing	4
MATH 425	Calculus I	4
MATH 426	Calculus II	4
MATH 527	Differential Equations with Linear Algebra	4
MATH 539 or MATH 644	Introduction to Statistical Analysis Statistics for Engineers and Scientists	4

PHYS 407	General Physics I	4
PHYS 408	General Physics II	4
CEE 797	Introduction to Project Planning and Design	1
CEE 798	Project Planning and Design (Capstone Experience)	3

Electives

Choose seven courses from the '700-level CEE Electives Course List' below with the following restrictions:

1. Courses must be taken in four of six different areas (structural, geotechnical, materials, water resources, environmental, sustainability).
2. At least three design courses; including one Project-based Design Elective PDE course.
3. One of the seven 700-level courses is a senior technical elective.

Design/Area Elective (Project-based Design Elective PDE)	3-4
Design/Area Elective	3-4
Design/Area Elective	3-4
Area Elective	3-4
CEE Elective	3-4
CEE Elective	3-4
Senior Technical Elective (choose a course from the '700-level CEE Electives Course List' below, CEPS 700-level course, GEOG 757, NR 757, or TECH 750).	3-4

700-Level CEE Electives Course List

Project-based Design Elective (PDE) courses:	
CEE 733	Public Infrastructure Asset Management
CEE 734	Bioenvironmental Engineering Design
CEE 749 & CEE 748	Pavement Design and Analysis and Pavement Design Project
CEE 755	Design of Pressurized Water Transmission Systems
CEE 758	Stormwater Management Designs
CEE 759	Stream Restoration
CEE 778	Foundation Design I
CEE 791	Reinforced Concrete Design
CEE 793	Structural Design in Steel
Additional Design courses:	
CEE 719	Green Building Design
CEE 730	Public Health Engineering for Rural and Developing Communities
CEE 731	Advanced Water Treatment Processes
CEE 732	Solid and Hazardous Waste Design
CEE 779	Foundation Design II
CEE 789	Timber Design
CEE 790	Structural Design in Masonry
CEE 792	Pre-stressed Concrete
CEE 794	Bridge Design
Structural Engineering (STR) area courses:	
CEE 780	Matrix Structural Analysis and Modeling
CEE 781	Dynamics of Structures
CEE 789	Timber Design
CEE 790	Structural Design in Masonry
CEE 791	Reinforced Concrete Design
CEE 792	Pre-stressed Concrete

CEE 793	Structural Design in Steel
CEE 794	Bridge Design
Geotechnical Engineering (GEO) area courses:	
CEE 765	Engineering Behavior of Soils
CEE 766	Introduction to Geotechnical Earthquake Engineering
CEE 767	Geological Engineering
CEE 768	Geo-Environmental Engineering
CEE 778	Foundation Design I
CEE 779	Foundation Design II
Civil Engineering Materials (MAT) area courses:	
CEE 735	Properties and Production of Concrete
CEE 736	Asphalt Mixtures and Construction
CEE 748	Pavement Design Project
Water Resources WAT area courses:	
CEE 750	Ecohydrology
CEE 751	Open Channel Flow
CEE 754	Engineering Hydrology
CEE 755	Design of Pressurized Water Transmission Systems
CEE 757	Coastal Engineering and Processes
CEE 758	Stormwater Management Designs
CEE 759	Stream Restoration
Environmental Engineering (ENV) area courses:	
CEE 720	Solid and Hazardous Waste Engineering
CEE 721	Environmental Sampling and Analysis
CEE 722	Introduction to Marine Pollution and Control
CEE 723	Environmental Water Chemistry
CEE 724	Environmental Engineering Microbiology
CEE 730	Public Health Engineering for Rural and Developing Communities
CEE 731	Advanced Water Treatment Processes
CEE 732	Solid and Hazardous Waste Design
CEE 733	Public Infrastructure Asset Management (PDE)
CEE 734	Bioenvironmental Engineering Design (PDE)
CEE 768	Geo-Environmental Engineering
Sustainability (SUS) area courses:	
CEE 705	Introduction to Sustainable Engineering
CEE 706	Environmental Life Cycle Assessment
CEE 719	Green Building Design
Additional CEE Electives:	
CEE 700	Building Information Modeling
CEE 702	Issues in Engineering Practice and Management
CEE 703	Residential Construction
CEE 704	Transportation Eng & Planning

Program Policies and Requirements

To transfer into the BSCIVE major, a student must satisfy the following:

1. Be a CEPS major or have at least 12 credits of graded work at UNH along with Calculus I, and either chemistry or calculus-based physics.
2. Have an overall UNH grade-point average of 2.33 or greater.

3. Have an overall grade-point average of 2.33 or greater in all CEE courses taken to date;
4. Have a grade-point average of 2.33 or greater in courses taken to date at UNH of MATH 425, PHYS 407, CHEM 403 or CHEM 405, CEE 500 or ME 525, and CEE 501 or ME 526.
5. Have a grade-point average of 2.33 or greater in courses taken to date of CEE 500 and CEE 501.

At the time of transferring into the BSCIVE program, only CEE 600-level and CEE 700-level classes with a grade of C- or better may be transferred in.

BSCIVE majors wishing to participate in domestic or international exchange programs must achieve a cumulative grade-point average of 2.50 or better in all CEE courses taken to date at the time of application to the exchange program.

To begin taking the required CEE 600-level courses in the junior year, students must meet the following requirements:

1. MATH 425, PHYS 407, CHEM 403 or CHEM 405, CEE 500 or ME 525, and CEE 501 or ME 526 must have been completed with passing grades.
2. The student must have a grade-point average of 2.00 or greater in all CEE courses.
3. The student must have a grade-point average of 2.00 or greater in MATH 425, PHYS 407, CHEM 403 or CHEM 405, CEE 500 or ME 525, and CEE 501 or ME 526.
4. The student must have a grade-point average of 2.00 or greater in CEE 500 or ME 525 and CEE 501 or ME 526.

Degree Plan

Course	Title	Credits
First Year		
Fall		
CEE 400	Introduction to Civil Engineering	4
CEE 520	Environmental Pollution and Protection: A Global Context	4
Elective AutoCAD ³		3
Elective Discovery Program requirement ¹		4
Credits		15
Spring		
MATH 425	Calculus I	4
PHYS 407	General Physics I	4
Elective Spatial Metrics ³		4
ENGL 401	First-Year Writing	4
Credits		16
Second Year		
Fall		
CEE 500	Statics for Civil Engineers	3
MATH 426	Calculus II	4
PHYS 408	General Physics II	4
Elective Technical Writing ³		4
Elective Discovery Program requirement ¹		4
Credits		19

Spring

CEE 501	Strength of Materials	3
CEE 502	Project Engineering	3
CHEM 405	Chemical Principles for Engineers	4
MATH 527	Differential Equations with Linear Algebra	4
Elective Discovery Program requirement		4
Credits		18

Third Year**Fall**

CEE 635	Engineering Materials	4
CEE 650	Fluid Mechanics	4
CEE 680	Classical Structural Analysis	3
Elective Discovery Program requirement ¹		4
Credits		15

Spring

CEE 620	Fundamental Aspects of Environmental Engineering	4
CEE 665	Soil Mechanics	4
Elective Statistics ³		4
Elective Discovery Program requirement ¹		4
Credits		16

Fourth Year**Fall**

CEE 797	Introduction to Project Planning and Design	1
Elective Project-Based Design Elective ³		4
Elective Area Elective 2 ³		3
Elective Civil Engineering ³		3
Elective Discovery Program requirement ¹		4
Credits		15

Spring

CEE 798	Project Planning and Design	3
Elective Area Elective 3 ³		3
Elective Area Elective 4 ³		3
Elective Civil Engineering ³		3
Elective Senior Technical Elective ³		3
Credits		15
Total Credits		129

¹ A course satisfying one each of the Discovery Program categories of Humanities, Biological Science, Fine and Performing Arts, Historical Perspectives, Social Science and World Cultures.

² Satisfies capstone requirement for Discovery.

³ Approved list available in the CEE office.

Environmental Engineering Major (B.S.)

<https://ceps.unh.edu/cee/environmental-engineering-bs>

Description

The Environmental Engineering program is accredited by the:

Engineering Accreditation Commission of ABET

111 Market Place
Suite 1050
Baltimore, MD 21202-4012,
(410) 347-7700
<http://www.abet.org>

Environmental engineers graduating with a B.S. EnvE degree will plan, design, and construct public and private facilities to minimize the impact of human activity on the environment and to protect human health. For example, environmental engineers design and build drinking water treatment systems, municipal and industrial wastewater treatment plants, solid waste management facilities, contaminated ground water remediation systems, and hazardous waste remediation facilities. These facilities must meet regulatory requirements, be cost effective to build and maintain, be safe to operate, and have minimal environmental impact. EnvE students can also focus on sustainable engineering with a required course (CEE 705 Introduction to Sustainable Engineering) in junior year and two or three senior year electives, including design electives.

In CEE 420 Environmental Engineering Lectures I, students are introduced to the full spectrum of environmental engineering projects that they will subsequently explore in design teams during their degree program. In (CEE 520 Environmental Pollution and Protection: A Global Context), students tour field sites and through junior and senior year classes and student organizations (ASCE, EWRI, EWB, SWB), they interact with engineers who talk about engineering consulting and design practices applied to local projects. As part of these projects, students:

1. analyze treatment alternatives;
2. recommend a system that meets regulatory operational needs, and is sustainable; and
3. prepare an implementation schedule and project budget.

Design projects are performed in CEE 731 Advanced Water Treatment Processes and a minimum of two design electives. CEE 797 Introduction to Project Planning and Design/ and CEE 798 Project Planning and Design/ serve as a capstone design experience where students work on a multi-disciplinary environmental engineering project and apply skills learned in other courses while working with real-world problems/ clients. EnvE students do not have to take a course in the Discovery Biological Science category since they satisfy this category with CEE 724 Environmental Engineering Microbiology.

At the end of the sophomore year, students are required to have a minimum overall grade-point average of 2.00 and a minimum grade-point average of 2.00 in the following to be permitted to enroll in junior-level courses:

Code	Title	Credits
CEE 420	Environmental Engineering Lectures I	3
MATH 425	Calculus I	4
CHEM 405	Chemical Principles for Engineers	4
PHYS 407	General Physics I	4
MATH 426	Calculus II	4
CEE 500	Statics for Civil Engineers	3
CEE 520	Environmental Pollution and Protection: A Global Context	4

To qualify for graduation, an ENE major must: have satisfied the previously specified course requirements, have satisfied the University's

Academic Requirements, have a minimum cumulative grade-point average of 2.00, and have a minimum grade-point average of 2.00 in engineering courses.

Requirements

These are the required major courses. For a full listing of the requirements within the four years of study please refer to the degree plan tab.

Code	Title	Credits
CEE 420	Environmental Engineering Lectures I	3
MATH 425	Calculus I	4
CHEM 405	Chemical Principles for Engineers	4
ENGL 401	First-Year Writing	4
PHYS 407	General Physics I	4
MATH 426	Calculus II	4
ENGL 502	Professional and Technical Writing	4
CEE 500	Statics for Civil Engineers	3
CEE 520	Environmental Pollution and Protection: A Global Context	4
MATH 527	Differential Equations with Linear Algebra	4
TECH 564	Fundamentals of CAD	3
CEE 502	Project Engineering	3
MATH 644	Statistics for Engineers and Scientists	4
CEE 650	Fluid Mechanics	4
CEE 720	Solid and Hazardous Waste Engineering	3
ESCI 654	Fate and Transport in the Environment	4
CEE 705	Introduction to Sustainable Engineering	3
CEE 620	Fundamental Aspects of Environmental Engineering	4
CEE 724	Environmental Engineering Microbiology	4
CEE 797	Introduction to Project Planning and Design	1
CEE 723	Environmental Water Chemistry	4
CEE 721	Environmental Sampling and Analysis	4
CEE 798	Project Planning and Design	3
CEE 731	Advanced Water Treatment Processes	4

Degree Plan

The following schedule is a sample of a planned program for environmental engineering students completing the major.

Course	Title	Credits
First Year		
Fall		
CEE 420	Environmental Engineering Lectures I	3
ENGL 401	First-Year Writing	4
MATH 425	Calculus I ¹	4
CHEM 405	Chemical Principles for Engineers	4
Discovery Electives ²		4
Credits		19
Spring		
ENGL 502	Professional and Technical Writing	4

MATH 426	Calculus II ¹	4
PHYS 407	General Physics I	4
Discovery Electives ²		4
Credits		16

Second Year

Fall

CEE 520	Environmental Pollution and Protection: A Global Context	4
CEE 500	Statics for Civil Engineers	3
MATH 527	Differential Equations with Linear Algebra	4
TECH 564	Fundamentals of CAD	3
Discovery Elective		4
Credits		18

Spring

MATH 644	Statistics for Engineers and Scientists	4
CEE 502	Project Engineering	3
Discovery Elective		4
Public Health Elective		4
Discovery or Geospatial Course		4
Credits		19

Third Year

Fall

CEE 705	Introduction to Sustainable Engineering	3
CEE 650	Fluid Mechanics	4
CEE 720	Solid and Hazardous Waste Engineering	3
ESCI 654	Fate and Transport in the Environment	4
Credits		14

Spring

CEE 620	Fundamental Aspects of Environmental Engineering	4
CEE 724	Environmental Engineering Microbiology	4
Hydrology Elective ⁴		3-4
Discovery		4
Credits		15-16

Fourth Year

Fall

CEE 721	Environmental Sampling and Analysis	4
CEE 723	Environmental Water Chemistry	4
CEE 797	Introduction to Project Planning and Design	1
CEE Design Electives (2)		6-8
Credits		15-17

Spring

CEE 731	Advanced Water Treatment Processes	4
CEE 798	Project Planning and Design	3
CEE Electives (2)		6-8
Hydraulics Elective		3-4
Credits		16-19
Total Credits		132-138

- ¹ Students who are required to take MATH 418 Analysis and Applications of Functions because they did not pass the placement examination as determined by the Mathematics Department prior to the fall semester, will enroll in MATH 425 Calculus I during the spring semester. Subsequent MATH courses (MATH 426 Calculus II, MATH 527 Differential Equations with Linear Algebra, MATH 644 Statistics for Engineers and Scientists) will be taken one semester later than shown here.
- ² See Discovery Program requirements. The Discovery requirements for Writing, Quantitative Reasoning, and Physical Science are fulfilled by ENGL 401 First-Year Writing, MATH 425 Calculus I, and PHYS 407 General Physics I, respectively. CEE 520 Environmental Pollution and Protection: A Global Context fulfills the Environmental, Technology, and Society requirement. CEE 797 Introduction to Project Planning and Design and CEE 798 Project Planning and Design fulfill the Senior Capstone requirement. Environmental Engineering Microbiology fulfills the Biological Science requirement. Courses in the EnvE curriculum designated Discovery Electives can be selected from the University's approved Discovery Program courses in Fine and Performing Arts, Humanities, Historical Perspectives, World Cultures, and Social Science. One of these electives must have an Inquiry attribute.
- ³ Approved lists of technical, hydrology, hydraulics, and design and non-design electives are available from the EnvE undergraduate coordinator, Nancy Kinner. Students must take a minimum of four 700-level CEE electives totaling at least 10 credits. A minimum of two CEE elective courses must be from the design category.

The EnvE program requires a minimum of 132 total credits for graduation.

Environmental Engineering Minor

Description

The environmental engineering minor is intended primarily for students in engineering and physical sciences who are not in the chemical, civil, or environmental engineering degree programs. Students contemplating such a minor should plan on a strong background in the sciences and mathematics (including differential equations).

The minor provides a comprehensive introduction to major areas of interest in environmental protection through the three required courses. Further breadth in environmental engineering or depth in specific areas can be attained through the choice of appropriate elective courses.

Requirements

The minor requires a minimum of five courses, as follows:

Code	Title	Credits
CEE 620	Fundamental Aspects of Environmental Engineering	4
CEE 705	Introduction to Sustainable Engineering	3
CEE 731	Advanced Water Treatment Processes	4
or CEE 721	Environmental Sampling and Analysis	

A minimum of two elective ENE courses.

Choice of elective courses should be made in consultation with the minor area advisor, Nancy Kinner. Students normally start this program in the

junior year and should declare their intention to enter the program as early as possible during the sophomore year. During the final semester, students must apply to the dean to have the minor appear on the transcript.

Computer Science (CS)

Undergraduate students may choose from one of two degree options: the B.S. in computer science, which is intended for students interested in the design and implementation of software systems, or the B.S. in information technology, which focuses on the application of existing computing technologies to meet the information needs of organizations and individual computer users. The B.S. in computer science also offers a bioinformatics option, which is designed for students who wish to apply computer science expertise in the life sciences.

<https://ceps.unh.edu/computer-science/>

Programs

- Analytics and Data Science Major: Analytics Option (B.S.) (p. 149)
- Analytics and Data Science Major: Data Science Option (B.S.) (p. 150)
- Computer Science Major (B.S.) (p. 151)
- Computer Science Minor (p. 153)
- Computer Programming Cognate (p. 154)
- Information Technology Major (B.S.) (p. 154)
- Information Technology Minor (p. 156)
- Information Technology Cognate (p. 156)
- Skills and Perspectives for the Digital World Cognate (p. 156)

Faculty

<https://ceps.unh.edu/directory/all>

Analytics and Data Science Major: Analytics Option (B.S.)

<https://ceps.unh.edu/computer-science/program/bs/analytics-data-science-major-analytics-option>

Description

The option in Analytics is intended for students interested in either heading into industry immediately upon graduation, or pursuing graduate work in a professionally oriented program such as the Master of Science in Analytics at UNH. The option in Analytics places its emphasis on applications of data science in industry.

Program Objectives

This program has been designed to prepare students for professional careers working with data, with an emphasis on the extraction of meaning from data. The program is not targeted to any one industry; rather, it provides a flexible, practical skillset that can be applied widely. This skillset includes elements of computer science, applied mathematics and statistics, communication skills, and business savvy.

Graduates of the bachelor of science in analytics and data science program are expected to have:

- An understanding of the role of data in guiding decision-making in industry
- An understanding of how data is generated, stored, and accessed
- An understanding of data security
- An understanding of the ethical use of data
- An understanding of structured vs. unstructured data
- An understanding of the methods, statistical and other, used to derive actionable information from data
- Experience with multiple programming languages
- Experience with multiple statistical and data analysis software programs
- The ability to communicate detailed, technical information to a variety of audiences clearly and concisely, without the use of jargon
- The ability to work effectively, both as an individual or as a member of a team
- The ability to successfully lead a team
- The ability to adapt to a dynamic, rapidly changing work environment
- Completed projects and other work experiences on a larger scale than is typical in a bachelor's degree program.

During the course of the program, students will demonstrate their acquisition of these skills by successfully completing their program coursework, their internship experience, and their capstone project.

Requirements

Successful completion of the program entails earning at least 128 credits, meeting the requirements of the University's Discovery program, completing all of the 18 required courses in the major as listed below, including the capstone course, the internship preparedness course, and a three-credit internship. In all major courses, the minimum allowable grade is a C-. The minimum overall GPA for graduation is 2.0. Transfer students may transfer up to a maximum of 32 credits to satisfy major requirements (not counting those courses used to satisfy Discovery requirements).

Program Requirements

Code	Title	Credits
Mathematics		
MATH 425	Calculus I	4
MATH 426	Calculus II	4
MATH 545 or MATH 645	Introduction to Linear Algebra Linear Algebra for Applications	4
MATH 739	Applied Regression Analysis	4
Computer Science		
CS 415 or CS 416	Introduction to Computer Science I Introduction to Computer Science II	4
ECE 401	Perspectives in Electrical and Computer Engineering	4
MATH 539 or MATH 644	Introduction to Statistical Analysis Statistics for Engineers and Scientists	4
IT 505	Database Programming	4
Business		

ADMN 400	Introduction to Business	4
MGT 580	Introduction to Organizational Behavior	4
English		
ENGL 502	Professional and Technical Writing	4
Analytics Courses		
DATA 557	Introduction to Data Science and Analytics	4
DATA 674	Predictive and Prescriptive Analytics I	4
DATA 675	Predictive and Prescriptive Analytics II	4
DATA 690	Internship Experience	3
DATA 757	Big Data	4
DATA 790	Capstone Project	4
Total Credits		67

For additional information about the Analytics and Data Science: Analytics Option, contact Jeremiah Johnson, program coordinator, at (603) 641-4127 or jeremiah.johnson@unh.edu. (jeremiah.johnson@unh.edu)

Analytics and Data Science Major: Data Science Option (B.S.)

<https://ceps.unh.edu/computer-science/program/bs/analytics-data-science-major-data-science-option>

Description

The option in Data Science is intended for students interested in pursuing advanced degrees and conducting original research in data science. The option in data science places its emphasis on the theoretical mathematical and computational underpinnings of modern data science.

Program Objectives

This program has been designed to prepare students for professional careers working with data, with an emphasis on the extraction of meaning from data. The program is not targeted to any one industry; rather, it provides a flexible, practical skillset that can be applied widely. This skillset includes elements of computer science, applied mathematics and statistics, communication skills, and business savvy. Graduates of the bachelor of science in analytics and data science program are expected to have:

- An understanding of the role of data in guiding decision-making in industry
- An understanding of how data is generated, stored, and accessed
- An understanding of data security
- An understanding of the ethical use of data
- An understanding of structured vs. unstructured data
- An understanding of the methods, statistical and other, used to derive actionable information from data
- Experience with multiple programming languages
- Experience with multiple statistical and data analysis software programs
- The ability to communicate detailed, technical information to a variety of audiences clearly and concisely, without the use of jargon
- The ability to work effectively, both as an individual or as a member of a team

- The ability to successfully lead a team
- The ability to adapt to a dynamic, rapidly changing work environment
- Completed projects and other work experiences on a larger scale than is typical in a bachelor's degree program.

During the course of the program, students will demonstrate their acquisition of these skills by successfully completing their program coursework, their internship experience, and their capstone project.

Requirements

Successful completion of the program entails earning at least 128 credits, meeting the requirements of the University's Discovery program, completing all of the 22 required courses in the major as listed below, including the capstone course, the internship preparedness course, and a three-credit internship. In all major courses, the minimum allowable grade is a C-. The minimum overall GPA for graduation is 2.0. Transfer students may transfer up to a maximum of 32 credits to satisfy major requirements (not counting those courses used to satisfy Discovery requirements).

Program Requirements

Code	Title	Credits
Mathematics		
MATH 425	Calculus I	4
MATH 426	Calculus II	4
MATH 528	Multidimensional Calculus	4
MATH 531	Mathematical Proof	4
MATH 539	Introduction to Statistical Analysis	4
or MATH 644	Statistics for Engineers and Scientists	
MATH 645	Linear Algebra for Applications	4
MATH 738	Data Mining and Predictive Analytics	4
MATH 755	Probability with Applications	4
MATH 756	Principles of Statistical Inference	4
MATH 797	Senior Seminar ¹	4
or MATH 798	Senior Project	
Computer Science		
CS 414	From Problems to Algorithms to Programs	4
or CS 415	Introduction to Computer Science I	
CS 417	From Programs to Computer Science	4
or CS 416	Introduction to Computer Science II	
CS 659	Introduction to the Theory of Computation	4
CS 750	Machine Learning	4
CS 758	Algorithms	4
CS 775	Database Systems	4
English		
ENGL 502	Professional and Technical Writing	4
Analytics Course		
DATA 557	Introduction to Data Science and Analytics	4
Select three electives ²		12
Total Credits		84

¹ Fulfills capstone requirement

² Must be 600-700 level and approved by advisor

For additional information about the Analytics and Data Science: Data Science Option, contact Jeremiah Johnson, program coordinator, at (603) 641-4127 or jeremiah.johnson@unh.edu.

Computer Science Major (B.S.)

<https://ceps.unh.edu/computer-science/program/bs/computer-science>

Description

Computer science focuses on problem solving with a particular emphasis on the design of computer-efficient solutions. Within a few years of obtaining a bachelor's degree in either of the two computer science options, alumni will have:

1. Engaged in successful careers in diverse areas of software development and will be pursuing advanced education in computer science or related fields;
2. Applied the full range of core computer science concepts and techniques to fill software development needs of an organization;
3. Adapted to changing directions of computing technology and used state-of-the-art techniques to confront new problems effectively;
4. Navigated the complex interconnections between software and the goals and constraints of the organization served;
5. Participated responsibly in the pervasive and changing role of computing technology in global society as both software engineers and citizens;
6. Operated collaboratively in a team environment and assumed leadership roles.

The B.S. in computer science programs are accredited by the:

Computing Accreditation Commission of ABET
 111 Market Place
 Suite 1050
 Baltimore, MD 21202-4012
 (410) 347-7700

Requirements

Computer science majors must complete the following coursework in computer science, mathematics, computer engineering, science, English, and philosophy (all courses are 4 credits unless indicated otherwise):

Code	Title	Credits
Computer Science Courses		
Select one of the following:		
CS 415	Introduction to Computer Science I	8
& CS 416	and Introduction to Computer Science II	
or CS 414	From Problems to Algorithms to Programs	
& CS 417	and From Programs to Computer Science	
or CS 410	Introduction to Scientific Programming	
& CS 417	and From Programs to Computer Science	
CS 400	Introduction to Computing	1
IT 403	Introduction to Internet Technologies	4
CS 501	Professional Ethics and Communication in Technology-related Fields	4
CS 515	Data Structures and Introduction to Algorithms	4

CS 520	Assembly Language Programming and Machine Organization	4
CS 619	Introduction to Object-Oriented Design and Development	4
CS 620	Operating System Fundamentals	4
CS 659	Introduction to the Theory of Computation	4
CS 671	Programming Language Concepts and Features	4
Computer Science Electives:		
Select one course from the following:		
CS 712	Compiler Design	4
or CS #720	Operating System Programming	
or CS 730	Introduction to Artificial Intelligence	
or CS 730W	Introduction to Artificial Intelligence	
or CS 770	Computer Graphics	
or CS 770W		
Select one course from the following:		
CS 723	Performance Evaluation of Computer Systems	4
or CS 745	Formal Specifications and Verification of Software Systems	
or CS 750	Machine Learning	
or CS 758	Algorithms	
Select two additional CS courses numbered 690-799		8
Professional Elective¹		
Select one course from the following:		
CS 700-level course		
IT 604	Server-side Web Development	
IT 605	Client-side Web Development	
IT 612	Scripting Languages	
IT 630	Data Science and Analytics	
IT 666	Computer Security	
IT 705	Project Management for Information Technology	
IT 780	Topics in Information Technology	
MATH 525	Linearity I	
MATH 526	Linearity II	
MATH 527	Differential Equations with Linear Algebra	
MATH 528	Multidimensional Calculus	
MATH 532		
MATH 545	Introduction to Linear Algebra	
MATH 645	Linear Algebra for Applications	
MATH 646		
MATH 647	Complex Analysis for Applications	
MATH #656	Introduction to Number Theory	
MATH 657		
MATH 658	Topics in Geometry	
MATH 736	Advanced Statistical Methods for Research	
MATH 737	Statistical Methods for Quality Improvement and Design	
MATH 739	Applied Regression Analysis	
MATH 740	Design of Experiments I	
MATH 741	Survival Analysis	
MATH 743	Time Series Analysis	
MATH #744	Design of Experiments II	
MATH 745	Foundations of Applied Mathematics I	

MATH 746	Foundations of Applied Mathematics II	
MATH 747	Introduction to Nonlinear Dynamics and Chaos	
MATH 753	Introduction to Numerical Methods I	
MATH 754		
MATH 755	Probability with Applications	
MATH 756	Principles of Statistical Inference	
MATH 761	Abstract Algebra	
MATH 762	Linear Algebra	
MATH 767	One-Dimensional Real Analysis	
MATH 776	Logic	
MATH 783	Set Theory	
MATH 784	Topology	
MATH 788	Complex Analysis	
ECE 649	Embedded Microcomputer Based Design	
ECE 700 level course		
Senior Capstone Experience:		
CS 791	Senior Project I	2
CS 792	Senior Project II	2
Mathematics Courses		
MATH 425	Calculus I	4
MATH 426	Calculus II	4
MATH 531	Mathematical Proof	4
MATH 539	Introduction to Statistical Analysis	4
or MATH 644	Statistics for Engineers and Scientists	
Electrical and Computer Engineering courses		
ECE 543	Introduction to Digital Systems	4
ECE 562	Computer Organization	4
Science courses		
Science 1 and 2 (two-course sequence): Select one of the following sequences:		8
BIOL 411 & BIOL 412	Introductory Biology: Molecular and Cellular and Introductory Biology: Evolution, Biodiversity and Ecology	
CHEM 403 & CHEM 404	General Chemistry I and General Chemistry II	
ESCI 401 & ESCI 402	Dynamic Earth and Earth History	
ESCI 409 & ESCI 402	Geology and the Environment and Earth History	
PHYS 407 & PHYS 408	General Physics I and General Physics II	
Science 3: Select any Discovery lab science course (DLAB)		4
Other Courses		
ENGL 502	Professional and Technical Writing	4
Discovery requirements not already covered by required courses		
Total Credits		105

¹ Professional elective must be 3 credits or more chosen from the above approved courses. Or, a non-introductory CEPS course with significant science and/or engineering focus, as approved on a per-course basis by the undergraduate studies committee.

Computer science majors must maintain an overall grade-point average of 2.0 or better in all required computer science, mathematics, and computer engineering courses in order to graduate. If at the end of any

semester, including the first, a student’s cumulative grade-point average in these courses falls below 2.0, the student may not be allowed to continue as a CS major.

The following courses must be passed with a grade of C- or better: CS 410, CS 414, CS 415, CS 416, CS 417, CS 515, CS 520, IT 403

If a student wishing to transfer into the computer science major has any coursework that is applicable to the major, the grades in those courses must satisfy the minimum grade requirements for the B.S. degree in computer science. The student must have an overall grade-point average of 2.0 or better in all courses taken at the University.

Degree Plan

Recommended Plan of Study

Course	Title	Credits
First Year		
Fall		
CS 400	Introduction to Computing	1
IT 403	Introduction to Internet Technologies	4
CS 415	Introduction to Computer Science I	4
MATH 425	Calculus I	4
Other Requirements		4
Credits		17
Spring		
CS 416	Introduction to Computer Science II	4
MATH 426	Calculus II	4
ENGL 401	First-Year Writing	4
ECE 543	Introduction to Digital Systems	4
Credits		16
Second Year		
Fall		
CS 515	Data Structures and Introduction to Algorithms	4
MATH 531	Mathematical Proof	4
Other Requirements		8
Credits		16
Spring		
CS 520	Assembly Language Programming and Machine Organization	4
CS 659	Introduction to the Theory of Computation	4
Other Requirements		8
Credits		16
Third Year		
Fall		
CS 620	Operating System Fundamentals	4
CS 671	Programming Language Concepts and Features	4
Other Requirements		8
Credits		16
Spring		
ECE 562	Computer Organization	4

CS 619	Introduction to Object-Oriented Design and Development	4
CS 7xx CS elective		4
Other Requirements		4
Credits		16
Fourth Year		
Fall		
CS 791	Senior Project I	2
Two CS 7xx CS electives		8
Other Requirements		8
Credits		18
Spring		
CS 792	Senior Project II	2
CS 7xx CS elective		4
Professional Elective		4
Other Requirements		4
Credits		14
Total Credits		129

Computer Science Minor

<https://ceps.unh.edu/computer-science/program/minor/computer-science>

Description

The minor in computer science is designed for students in other majors who want to learn the fundamentals of designing and implementing computer software.

Credit toward the minor will be given only for courses passed with C- or better, and a 2.0 grade-point average must be maintained in courses for the minor. Courses taken on the pass/fail basis may not be used for the minor. Students should declare their intent to earn a minor as early as possible and no later than the end of the junior year. During the final term, an application should be made to the dean of the student’s major college to have the minor shown on the academic record. Students must consult with their major adviser and also the minor supervisor.

Requirements

Code	Title	Credits
Requirements		
Select one of the following:		4
CS 415	Introduction to Computer Science I	
CS 414	From Problems to Algorithms to Programs	
CS 410	Introduction to Scientific Programming	
CS 416	Introduction to Computer Science II	4
or CS 417	From Programs to Computer Science	
CS 515	Data Structures and Introduction to Algorithms	4
Other Courses		
Select two of the following:		8
CS 619	Introduction to Object-Oriented Design and Development	

CS 520	Assembly Language Programming and Machine Organization
CS 620	Operating System Fundamentals
CS 659	Introduction to the Theory of Computation ¹
CS 671	Programming Language Concepts and Features
An approved CS 700-level course	

¹ CS 659 Introduction to the Theory of Computation has mathematics prerequisites: MATH 425 Calculus I, MATH 426 Calculus II, and MATH 531 Mathematical Proof.

Computer Programming Cognate

<https://ceps.unh.edu/computer-science/program/cognate/computer-programming>

Description

The Cognate in Programming is designed so that students who wish to go beyond an introductory computer programming course to be able to meet the challenges that technology imposes.

This cognate is for UNH students who are interested in acquiring skills beyond just a basic programming language. This cognate would be an alternative to students who are not going to pursue a minor in Computer Science or Information Technology but still want to have the opportunity to partake a coherent, if short, curriculum that gives them a foundation to participate in programming activities as applicable to their technical areas.

The cognate consists of three courses in total, with one required course and two courses selected from four different sequence options. The Cognate will appear on each student's transcript.

Requirements

Required Course:

Code	Title	Credits
IT 403	Introduction to Internet Technologies	4

Choose one of the following two-course sequences:

Code	Title	Credits
Sequence one:		
CS 415	Introduction to Computer Science I	4
CS 416	Introduction to Computer Science II	4
or IT 505	Database Programming	

Code	Title	Credits
Sequence two:		
CS 414	From Problems to Algorithms to Programs	4
CS 417	From Programs to Computer Science	4
or IT 505	Database Programming	

Code	Title	Credits
Sequence three:		
CS 410	Introduction to Scientific Programming	4

CS 417	From Programs to Computer Science	4
or IT 505	Database Programming	

Code	Title	Credits
CS 405	Introduction to Applications Programming	4
IT 505	Database Programming	4

Information Technology Major (B.S.)

<https://ceps.unh.edu/computer-science/program/bs/information-technology>

Description

Information technology is concerned primarily with the application of existing computing technologies to the information needs of organizations and individual computer users. The IT program aims to provide graduates with the skills and knowledge to take on appropriate professional positions in information technology upon graduation and grow into leadership positions in the field. Potential careers include network administrator, database developer, system administrator, and webmaster.

The broad objectives for B.S. in information technology graduates are:

1. Apply the full range of core IT concepts and techniques to fill the IT needs of an organization and be prepared to assume managerial and other advanced responsibilities,
2. Confront new problems effectively and anticipate the changing directions of technology,
3. Communicate effectively with diverse stakeholders as well as function appropriately in a team environment,
4. Navigate within the complex relationships between IT and larger organizational goals, and
5. Understand the pervasive and changing role of computing technology in global society, and participate responsibly as both IT professional and citizen.

The B.S. in information technology program is accredited by the:

Computing Accreditation Commission of ABET
111 Market Plac
Suite 1050
Baltimore, MD 21202-4012
Phone: (410) 347-7700
www.abet.org/ (<http://www.abet.org/>)

Requirements

Code	Title	Credits
Information Technology Courses		
Select one of the following:		8
CS 415	Introduction to Computer Science I	
& CS 416	and Introduction to Computer Science II	
CS 414	From Problems to Algorithms to Programs	
& CS 417	and From Programs to Computer Science	
CS 410	Introduction to Scientific Programming	
& CS 417	and From Programs to Computer Science	
CS 400	Introduction to Computing	1

IT 403	Introduction to Internet Technologies	4
CS 501	Professional Ethics and Communication in Technology-related Fields	4
IT 502	Intermediate Web Design	4
IT 505	Database Programming	4
IT 520	Computer Architecture	4
IT 609	Network/Systems Administration	4
IT 666	Computer Security	4
IT 699	Internship	1
Select 3 IT 600/700- level		12
IT 705	Project Management for Information Technology	4
IT 710	Senior Project (senior capstone experience)	4
IT 775	Database Technology	4
Mathematics Courses		
MATH 425	Calculus I	4
MATH 539	Introduction to Statistical Analysis	4
Other Courses		
Science 1 and 2 (two-course sequence): Select one of the following sequences:		8
BIOL 411 & BIOL 412	Introductory Biology: Molecular and Cellular and Introductory Biology: Evolution, Biodiversity and Ecology	
CHEM 403 & CHEM 404	General Chemistry I and General Chemistry II	
ESCI 401 & ESCI 402	Dynamic Earth and Earth History	
ESCI 409 & ESCI 402	Geology and the Environment and Earth History	
PHYS 401 & PHYS 402	Introduction to Physics I and Introduction to Physics II	
ENGL 502	Professional and Technical Writing	4
Second discipline (see below for details)		
Total Credits		82

Information technology majors must maintain an overall grade-point average of 2.0 or better in all required information technology and computer science required courses in order to graduate. If at the end of any semester, including the first, a student's cumulative grade-point average in these courses falls below 2.0, the student may not be allowed to continue as an IT major. The following courses must be passed with a grade of C- or better in order to meet IT major requirements CS 414, CS 415, CS 416, CS 417, IT 403, IT 502, IT 505, IT 520.

If a student wishing to transfer into the information technology major has any coursework that is applicable to the major, the grades in those courses must satisfy the minimum grade requirements for the B.S. degree in information technology. The student must have an overall grade-point average of 2.0 or better in all courses taken at the University.

In addition to the above requirements, each student must choose a second discipline in a particular domain outside of IT to which the student's IT skills can be applied. Second disciplines (typically four courses) have been defined by the CS department in such areas as business administration, health management and policy, and justice studies. If a student is interested in an area that is not currently defined, the option of a student-designed second discipline is also available.

Degree Plan

The following is a sample schedule depicting the necessary requirements and the layout of the curriculum. Students must consult with their advisers in order to come up with the proper schedule for themselves.

Course	Title	Credits
First Year		
Fall		
CS 400	Introduction to Computing	1
CS 414	From Problems to Algorithms to Programs	4
IT 403	Introduction to Internet Technologies	4
MATH 425	Calculus I	4
Discovery		4
Credits		17
Spring		
CS 417	From Programs to Computer Science	4
IT 502	Intermediate Web Design	4
ENGL 401	First-Year Writing (Discovery)	4
Discovery		4
Credits		16
Second Year		
Fall		
MATH 539	Introduction to Statistical Analysis	4
IT 505	Database Programming	4
Discovery		4
Lab Science I (Discovery)		4
Second Discipline I		4
Credits		20
Spring		
Lab Science II		4
IT 520	Computer Architecture	4
ENGL 502	Professional and Technical Writing	4
Credits		12
Third Year		
Fall		
CS 501	Professional Ethics and Communication in Technology-related Fields	4
IT 666	Computer Security	4
IT 609	Network/Systems Administration	4
Discovery		4
Credits		16
Spring		
Two 600/700-Level IT Electives		8
Second Discipline II		4
Discovery		4
IT 699	Internship	1
Credits		17
Fourth Year		
Fall		
IT 705	Project Management for Information Technology	4
IT 775	Database Technology	4

Second Discipline III	4
Discovery	4
Credits	16
Spring	
IT 710 Senior Project	4
Second Discipline IV	4
600/700-Level IT Elective	4
Free Elective	4
Credits	16
Total Credits	130

Information Technology Minor

<https://ceps.unh.edu/computer-science/program/minor/information-technology>

Description

The information technology (IT) minor is a way for students in non-technical majors to bridge the gap between a primarily non-technical education and a technical world. Graduates from a variety of fields are discovering that there is a great need to have computer competency in addition to the knowledge they gain in their major; the IT minor, which is tailored to grow students' understanding of computer and information technology applications, helps prepare students for the future.

Students who minor in IT must complete a minimum of 20 credits of IT courses. All students must take IT 520 Computer Architecture as well as an approved introductory programming course. The other three courses may be chosen from the Options list below.

Credit toward the minor will only be given for courses passed with C- or better, and a 2.00 grade-point average must be maintained in courses for the minor. Courses taken on the pass/fail basis may not be used for the minor. Students should declare their intent to earn a minor as early as possible and no later than the end of the junior year. . During the final term, an application should be made to the dean (of the student's major college) to have the minor shown on their academic record. Students must consult with their major adviser and also the minor coordinator.

Requirements

Code	Title	Credits
Requirements		
IT 520	Computer Architecture	4
One programming course chosen from the following list:		4
CS 405	Introduction to Applications Programming	
CS 410	Introduction to Scientific Programming	
CS 414	From Problems to Algorithms to Programs	
Three options chosen from the following list:		12
IT 403	Introduction to Internet Technologies	
CS 417	From Programs to Computer Science	
IT 502	Intermediate Web Design	
IT 505	Database Programming	
IT 604	Server-side Web Development	
IT 605	Client-side Web Development	

IT 609	Network/Systems Administration
IT 630	Data Science and Analytics
IT 666	Computer Security
IT 780	Topics in Information Technology
Other courses are eligible by permission of the minor coordinator	
Total Credits	20

Information Technology Cognate

<https://ceps.unh.edu/computer-science/program/cognate/information-technology>

Description

The Toolbox Cognate in Information Technology is designed to provide students with knowledge and skills required by essentially any job today.

With introductory level options, including courses from outside the department, the cognate is of value to students who wish to get a firm foundation in areas related to computing and information technology. The cognate also gives students considering study of Information Technology or Computer Science an opportunity to sample a broad range of courses in the field.

The Cognate will appear on each student's transcript.

Requirements

The cognate consists of three courses with no more than two courses to be taken from the same category (some courses may have pre-requisites).

Code	Title	Credits
Computer Applications		
CS 401	Computers and Their Applications	4
Web		
IT 403	Introduction to Internet Technologies	4
IT 502	Intermediate Web Design	4
Computing/Programming		
CS 405	Introduction to Applications Programming	4
CS 410	Introduction to Scientific Programming	4
MATH 445	Mathematics and Applications with MATLAB	4
IT 505	Database Programming	4
IT 520	Computer Architecture	4
Statistics		
MATH 439	Statistical Discovery for Everyone	4
MATH 539	Introduction to Statistical Analysis	4

Skills and Perspectives for the Digital World Cognate

<https://ceps.unh.edu/computer-science/program/cognate/skills-perspectives-digital-world>

Description

The Cognate in Skills and Perspectives for the Digital World is designed so that students both engage with and reflect on the technology associated with the digital world. The curriculum consists of three courses: one to strengthen understanding of the technologies that drive the World Wide Web, one course to explore computer programming, and one course to consider the impact of the technologies on society.

The Cognate will provide students with a foundation for the development of technical and critical skills aligned with one of the 21st century's defining areas- information technology. For example, a recent statement by GE's CEO asserts that if you join the company today, as opposed to 20 years ago, you're going to learn to code even though you may be in sales, finance or operations. This Cognate gives students and future employees a fundamental introduction into technologies that are necessary for high functioning in today's world, both in the workplace and beyond.

Requirements

Code	Title	Credits
IT 403	Introduction to Internet Technologies	4
Choose one of the following:		4
CS 405	Introduction to Applications Programming	
CS 410	Introduction to Scientific Programming	
CS 414	From Problems to Algorithms to Programs	
Choose one of the following:		4
ANTH #508	Anthropology of Internet	
WS 444D	Cyborgs, Avatars, and Feminists: Gender in the Virtual World	
CS 408	Living in a Networked World: The Good, the Bad, and the Ugly	
ENGL 415E	Literature and Cyberculture	
Total Credits		12

Credit toward the cognate will only be given for courses passed with C- or better, and a 2.00 grade-point average must be maintained in courses for the cognate. Courses taken on the pass/fail basis may not be used for the cognate.

Earth Sciences (ESCI)

The courses offered in the Department of Earth Sciences cover the broad spectrum of geosciences, with emphases on geology, climate, geochemistry, geophysics, hydrology, and oceanography. The curriculum encompasses a group of related disciplines concerned with an understanding of Earth and its environment. Studies of the processes that shape the continents and oceans, drive the hydrologic cycle and ocean circulation, and affect climate change and the evolution of life are based on a foundation of basic mathematics, physics, and chemistry.

The need for people trained in the Earth and environmental sciences has been increasing in response to growing societal demands for sound environmental and resource management. Issues of particular concern include global climate change impacts, management of water resources, development of energy and mineral resources, waste disposal, and the assessment of natural hazards. In addition, the demand for well-

trained secondary school teachers of Earth sciences has been steadily increasing.

The Department of Earth Sciences offers four majors: B.S. Earth sciences, B.S. environmental sciences (interdisciplinary with the College of Life Sciences and Agriculture), B.A. Earth sciences, and B.A. Earth sciences teaching. These programs prepare students for advanced study in the geosciences; for entry-level professional employment in public or private institutions concerned with environmental and resource management, including consulting firms, government agencies, energy- and resource-extraction firms, utilities, and nonprofit organizations; and for secondary-school teaching of Earth sciences.

The Department of Earth Sciences also offers a minor in Earth sciences, as well as an interdisciplinary minor in oceanography.

Descriptions and requirements for the majors and minors are arranged alphabetically.

<https://ceps.unh.edu/earth-sciences>

Programs

- Earth Sciences Major (B.A.) (p. 157)
- Earth Sciences Major (B.S.) (p. 158)
- Earth Sciences Minor (p. 159)
- Earth Sciences Teaching Major (B.A.) (p. 160)
- Environmental Sciences Major: Geosystems Option (B.S.) (p. 160)
- Environmental Sciences Major: Hydrology Option (B.S.) (p. 161)
- Oceanography Minor (p. 163)

Faculty

<https://ceps.unh.edu/earth-sciences/faculty-staff-directory>

Earth Sciences Major (B.A.)

<https://ceps.unh.edu/earth-sciences/earth-sciences-ba>

Description

The bachelor of arts in Earth sciences is offered through the Department of Earth Sciences. This program provides students an opportunity to obtain a broad education and a general background in the Earth sciences with a greater degree of freedom in choosing electives than in the bachelor of science programs. Through careful choice of electives, students can prepare for graduate school, business, or industry.

Requirements

Code	Title	Credits
Satisfy the Discovery Program Requirements ¹		
Satisfy the bachelor of arts degree requirements		
Complete (with a C- or better in each course) a minimum of eight courses in the department, including the following:		
ESCI 401	Dynamic Earth	4
or ESCI 409	Geology and the Environment	
ESCI 402	Earth History	4

ESCI 512	Principles of Mineralogy	4
Five advanced-level courses, two of which must be 700-level or above		

Math Requirements

MATH 425	Calculus I	4
MATH 426	Calculus II	4
CHEM 403	General Chemistry I	4

Capstone

¹ Note that ESCI 401 Dynamic Earth, ESCI 402 Earth History, ESCI 405 Global Environmental Change, ESCI 409 Geology and the Environment, ESCI 420 Our Solar System, ESCI 501 Introduction to Oceanography cannot be taken to fulfill Discovery Program requirements for majors in the Department of Earth Sciences.

It is strongly advised that students complete, as early as possible, a year each of college chemistry and physics.

Earth Sciences Major (B.S.)

<https://ceps.unh.edu/earth-sciences/earth-sciences-bs>

Description

The bachelor of science in Earth sciences is offered through the Department of Earth Sciences. The program represents a strong concentration in the Earth sciences and is especially well-suited for students who plan to continue their studies in graduate school. Beyond a central core of courses, there are several possible specializations (climate, geology, geophysics, oceanography, petroleum geology) from which students must choose in order to develop depth in a particular area of Earth sciences. Students are encouraged to attend a summer off-campus field experience, for which scholarship funds may be available.

Requirements

Code	Title	Credits
Requirements		
Satisfy the Discovery Program requirements and the bachelor of science degree requirements		
MATH 425	Calculus I ¹	4
MATH 426	Calculus II	4
CHEM 403	General Chemistry I ^{1,2}	4
CHEM 404	General Chemistry II ^{1,2}	4
PHYS 407	General Physics I ¹	4
PHYS 408	General Physics II ¹	4
Core Curriculum		
ESCI 401	Dynamic Earth	4
or ESCI 409	Geology and the Environment	
ESCI 402	Earth History	4
ESCI 501	Introduction to Oceanography	4
ESCI 512	Principles of Mineralogy	4
ESCI 530	Geological Field Methods ³	4
or ESCI 534	Techniques in Environmental Sciences	
Select one of the following:		
ESCI 654	Fate and Transport in the Environment	4

ESCI 701	Quantitative Methods in Earth Sciences ⁴
ESCI #731	Geodynamics

Specializations

Select one of the following approved specializations:

Climate
Geology
Geophysics
Oceanography
Petroleum Geology

Science/Math Electives

Complete three additional approved science/math electives (required for all approved specialization except Petroleum Geology) ⁵

Capstone

Complete the capstone requirement

Total Credits 48

- ¹ Some of these courses may also satisfy Discovery Program requirements.
- ² Or CHEM 405 Chemical Principles for Engineers if applicable
- ³ ESCI 530 Geological Field Methods is required for the geology, geophysics and petroleum geology specializations
- ⁴ Geophysics track must select ESCI 701 Quantitative Methods in Earth Sciences
- ⁵ The following should be considered: additional 700-level Earth sciences courses; additional chemistry, mathematics, and physics courses; courses in computer science, engineering, and the biological sciences; and an off-campus field camp.

Specializations

Climate

Code	Title	Credits
ESCI 514	Introduction to Climate	3
ESCI 561	Landscape Evolution	4
Select at least two of the following:		6-7
ESCI 758	Introductory Physical Oceanography	
ESCI 760	Paleoceanography	
ESCI 762	Glacial Geology	
ESCI 765	Paleoclimatology	
Select three advanced-level approved electives		9-12
Total Credits		22-26

Geology

Code	Title	Credits
ESCI 561	Landscape Evolution	4
ESCI 614	Introduction to Petrology	4
ESCI 631	Structural Geology	4
ESCI 652	Paleontology	4
Two approved 700-level electives		6-8
Total Credits		22-24

Geophysics

Code	Title	Credits
MATH 527	Differential Equations with Linear Algebra	4
MATH 528	Multidimensional Calculus	4
ESCI 561	Landscape Evolution	4
or ESCI 614	Introduction to Petrology	
ESCI 631	Structural Geology	4
Select at least two of the following:		8
ESCI #731	Geodynamics	
ESCI 734	Geophysics	
ESCI #735	Earthquakes and Faulting	
ESCI 756	Geotectonics	
ESCI 759	Geological Oceanography	
One approved 700-level elective		3-4
Total Credits		27-28

Oceanography

Code	Title	Credits
BIOL 411	Introductory Biology: Molecular and Cellular	4
ESCI 514	Introduction to Climate	3
Select at least three of the following:		10-11
ESCI 750	Biological Oceanography	
ESCI 752	Chemical Oceanography	
ESCI 758	Introductory Physical Oceanography	
ESCI 759	Geological Oceanography	
Complete three advanced-level approved electives		9-12
Total Credits		26-30

Petroleum Geology

Code	Title	Credits
ESCI 614	Introduction to Petrology	4
ESCI 631	Structural Geology	4
ESCI 652	Paleontology	4
ESCI 734	Geophysics	4
ESCI 741	Geochemistry	4
ESCI 754	Sedimentology	4
ESCI 756	Geotectonics	3
ESCI 759	Geological Oceanography	4
ESCI 796	Topics (Petroleum Geology)	4
CHE 705	Fossil Fuels and Renewable Energy Sources	4
Total Credits		39

Capstone Experience

A capstone experience is required of all undergraduate Earth sciences majors during their senior year. All capstone experiences at UNH must meet one or more of the following criteria:

1. The capstone synthesizes and applies disciplinary knowledge and skills.
2. The capstone fosters reflection on undergraduate learning and experience.
3. The capstone demonstrates emerging professional competencies.

4. The capstone applies, analyzes, and/or interprets research or data or artistic expression.
5. The capstone explores areas of interest based on the integration of prior learning.

Examples of Department of Earth Sciences capstone experiences include Senior Thesis (ESCI 799 Senior Thesis), UROP/SURF projects, environmental or geologic field camps, or Earth sciences education and outreach activities. Additional experiences may qualify (e.g., ESCI 795 Topics/ESCI 796 Topics field courses, INCO 590 Student Research Experience, INCO 790 Advanced Research Experience, internships) if they are designed according to the above criteria. Students should work closely with their advisers to define the most appropriate capstone experience for the Earth sciences degree option and all capstone experiences must be approved by the Department of Earth Sciences undergraduate coordinator. Presentation of projects or experiences developed for the capstone is encouraged at the annual UNH Undergraduate Research Conference or other appropriate venue.

Earth Sciences Minor

<https://ceps.unh.edu/earth-sciences/earth-sciences-minor>

Description

The Department of Earth Sciences offers a minor in Earth sciences available to all University students. The Earth sciences minor provides an opportunity for students to complement their major field of study with foundational knowledge and essential skills in the geosciences. As with all minors offered at UNH, the Earth sciences minor adheres to the following University requirements:

The minor consists of at least 20 semester hours of credit. For the Earth sciences minor, the 20 credits typically come from five ESCI courses and may include research credits supervised by an Earth sciences faculty member. A grade of C- or better must be earned in each course, and an overall 2.00 grade point average must be maintained for all courses applied toward the minor. Courses taken on a pass/fail basis may not be used for the minor. No more than two courses (8 credits) can be used to satisfy simultaneously requirements for a student's major and minor, or two minors. No more than two courses (8 credits) may be transferred from another accredited institution and applied toward the minor, provided UNH has accepted them as transfer credits.

Requirements

Courses in the Earth sciences minor must include both introductory and more advanced ESCI courses. Strongly recommended introductory courses include ESCI 401 Dynamic Earth or ESCI 409 Geology and the Environment (students may not receive credit for both ESCI 401 Dynamic Earth and ESCI 409 Geology and the Environment) and ESCI 402 Earth History. More advanced courses must include at least one at the 600 or 700 level. Specific courses in the program are selected in consultation with a minor adviser in the Department of Earth Sciences, with flexibility in approved courses to accommodate interests in different aspects of the geosciences. Interested students should contact the Department of Earth Sciences (earth.sciences@unh.edu) to arrange to complete an Intent to Minor form no later than their junior year. Forms can be picked up in the Earth sciences main office, 214 James Hall.

Earth Sciences Teaching Major (B.A.)

<https://ceps.unh.edu/earth-sciences/earth-sciences-teaching-ba>

Description

The bachelor of arts in Earth sciences teaching program is offered by the Department of Earth Sciences in coordination with the Department of Education. The program is specifically designed to prepare students to teach Earth sciences in secondary school. With careful planning, upon graduation from this program, qualified students are prepared to complete a M.A.T./M.Ed. degree in education with an additional year of graduate study, which includes a year-long internship (EDUC 900A Internship and Seminar in Teaching/EDUC 901A Internship and Seminar in Teaching). After completing this typically five-year program, students receive full teacher certification for New Hampshire, which is recognized in many other states.

General Science Certification

Students majoring in animal sciences, biochemistry, biology, Earth sciences, environmental conservation studies, environmental sciences, forestry, microbiology, plant biology, wildlife management, or zoology may seek certification to teach science at the middle, junior, or high school level.

For further information, contact the coordinator of teacher education in the Department of Education.

Requirements

Code	Title	Credits
Requirements		
Satisfy the Discovery Program Requirements		
Satisfy the bachelor of arts degree requirements		
ESCI 401	Dynamic Earth	4
or ESCI 409	Geology and the Environment	
ESCI 402	Earth History	4
ESCI 501	Introduction to Oceanography	4
GEOG 473	Elements of Weather	4
CHEM 403 & CHEM 404	General Chemistry I and General Chemistry II ¹	8
PHYS 406	Introduction to Modern Astronomy	4
Select one of the following:		
PHYS 401 & PHYS 402	Introduction to Physics I and Introduction to Physics II	8
PHYS 407 & PHYS 408	General Physics I and General Physics II	
Complete 12 approved elective credits from intermediate and/or advanced Earth sciences courses.		12
Math Requirements		
MATH 425	Calculus I	4
MATH 426	Calculus II	4
Capstone		
Teacher Education Requirements		

Satisfy the secondary-school teacher education program.

Total Credits

56

¹ Or CHEM 405 Chemical Principles for Engineers if applicable

Environmental Sciences Major: Geosystems Option (B.S.)

<https://ceps.unh.edu/earth-sciences/program/bs/environmental-sciences-major-geosystems-option>

Description

The College of Engineering and Physical Sciences (CEPS) and the College of Life Science and Agriculture (COLSA) jointly offer a bachelor of science degree in environmental sciences. Environmental sciences, an interdisciplinary field, focuses on the interaction of biological, chemical, and physical processes that shape our natural environment. Students graduating with a degree in environmental sciences will have an understanding of these interacting processes, the ability to communicate effectively with both scientific and lay audiences, competency in field methods appropriate for entry-level environmental science positions, competency in the use and application of Geographic Information Systems (GIS), a basic understanding of environmental policy, and the ability to contribute to multidisciplinary teams. The University of New Hampshire is a recognized leader in environmental sciences research, and the environmental sciences program capitalizes on faculty expertise in this area. The full-time faculty members comprising this program have major teaching and research emphases in the areas of biogeochemical cycling, environmental chemistry, ecosystem science, geospatial science, global change, hydrology, plant ecology, soil science, and water resource management.

Employment opportunities include environmental consulting firms, educational facilities (e.g., science centers), environmental monitoring laboratories (e.g., water treatment plants; the Environmental Protection Agency), government agencies (e.g., the U.S. Geological Survey, Bureau of Land Management, Natural Resource Conservation Service), university and government research laboratories, and nongovernment environmental organizations. The environmental sciences program also constitutes an excellent preparation for graduate programs in several areas relating to the environment. Students should consult with their adviser early if their goals include further study.

The Program has four options, and specific course requirements for the major vary by option. The geosystems and hydrology options are both managed by the Department of Earth Sciences in CEPS, and the ecosystems and soils and watersheds options are both managed by the Department of Natural Resources and the Environment in the COLSA. The geosystems option provides students with a solid grounding in quantitative reasoning, with an emphasis on geochemical and geospatial systems.

Requirements

In addition to the Discovery Program and University writing requirements, all students will take Introduction to Environmental Science NR 403 Introduction to Environmental Science and Professional Perspectives in Natural Resources (NR 400 Professional Perspectives in Natural Resources), plus one other elective introductory environmental science

course. Foundation courses include introductions to biology, physics, chemistry, geology, calculus, and statistics.

INTRODUCTORY

Code	Title	Credits
NR 400	Professional Perspectives in Natural Resources	1
NR 403	Introduction to Environmental Science	4
Plus one other elective introductory environmental science course		4
Total Credits		9

FOUNDATION

Code	Title	Credits
Biology		
BIOL 411	Introductory Biology: Molecular and Cellular	4
or BIOL 412	Introductory Biology: Evolution, Biodiversity and Ecology	
Chemistry		
Select one of the following:		4-8
CHEM 403	General Chemistry I	
& CHEM 404	and General Chemistry II	
or CHEM 405		Chemical Principles for Engineers
Physics		
PHYS 407	General Physics I	8
& PHYS 408	and General Physics II	
Calculus		
MATH 425	Calculus I	8
& MATH 426	and Calculus II	
Statistics		
MATH 644	Statistics for Engineers and Scientists	4
or BIOL 528	Applied Biostatistics I	
Geology		
Select one of the following:		4
ESCI 401	Dynamic Earth	
ESCI 402	Earth History	
ESCI 409	Geology and the Environment	
Total Credits		32-36

CORE COURSES

Code	Title	Credits
ESCI 534	Techniques in Environmental Sciences	3
ESCI 654	Fate and Transport in the Environment	4
ESCI 777	GIS for Earth & Environmental Sciences	4
or NR 658	Introduction to Geographic Information Systems	
NR 602	Natural Resources and Environmental Policy	4
Capstone Experience ¹		
Total Credits		15

¹ NR 791 Preparation for Capstone and an independent study or capstone course taken in the senior year and approved by their adviser and the program coordinator.

Geosystems

Code	Title	Credits
Mineralogy		
ESCI 512	Principles of Mineralogy	4
Geomorphology		
ESCI 561	Landscape Evolution	4
Biogeosciences		
ESCI 642	Biogeosciences in the Earth System	3
Geochemistry		
Approved Geochemistry Elective		4
ESCI 741	Geochemistry	
ESCI 745	Isotope Geochemistry	
ESCI 747	Aqueous Geochemistry	
ESCI 796	Topics (Biogeochemistry)	
or NR 744	Biogeochemistry	
A course in quantitative or spatial analysis		4
Select two or three approved electives		8-12
Total Credits		27-31

Some students enroll in the EcoQuest program (a study abroad opportunity in New Zealand), which satisfies the policy requirement, and capstone requirement if taken senior year.

Students must complete additional courses for the geosystems option to total 88 credits in the major.

For a list of approved elective courses and for further information about the geosystems option, students may contact earth.sciences@unh.edu. (earth.sciences@unh.edu)

Environmental Sciences Major: Hydrology Option (B.S.)

<https://ceps.unh.edu/earth-sciences/environmental-sciences-hydrology-bs>

Description

The College of Engineering and Physical Sciences (CEPS) and the College of Life Science and Agriculture (COLSA) jointly offer a bachelor of science degree in environmental sciences. Environmental sciences, an interdisciplinary field, focuses on the interaction of biological, chemical, and physical processes that shape our natural environment. Students graduating with a degree in environmental sciences will have an understanding of these interacting processes, the ability to communicate effectively with both scientific and lay audiences, competency in field methods appropriate for entry-level environmental science positions, competency in the use and application of Geographic Information Systems (GIS), a basic understanding of environmental policy, and the ability to contribute to multidisciplinary teams. The University of New Hampshire is a recognized leader in environmental sciences research, and the environmental sciences program capitalizes on faculty expertise in this area. The full-time faculty members comprising this program have major teaching and research emphases in the areas of biogeochemical cycling, environmental chemistry, geospatial science, ecosystem science, global change, hydrology, plant ecology, soil science, and water resource management.

Employment opportunities include: environmental consulting firms, educational facilities (e.g., science centers), environmental monitoring laboratories (e.g., water treatment plants; the Environmental Protection Agency), government agencies (e.g., the U.S. Geological Survey, Bureau of Land Management, Natural Resource Conservation Service), university and government research laboratories, and nongovernment environmental organizations. The environmental sciences program also constitutes an excellent preparation for graduate programs in several areas relating to the environment. Students should consult with their adviser early if their goals include further study.

The Program has four options, and specific course requirements for the major vary by option. The geosystems and hydrology options are both managed by the Department of Earth Sciences in CEPS, and the ecosystems and soils and watersheds options are both managed by the Department of Natural Resources and the Environment in the COLSA. The hydrology option provides students with a solid grounding in fundamental hydrological principles and quantitative reasoning.

Requirements

In addition to the Discovery Program and University writing requirements, all students will take Introduction to Environmental Science NR 403 Introduction to Environmental Science and Professional Perspectives in Natural Resources (NR 400 Professional Perspectives in Natural Resources), plus one other elective introductory environmental science course. Foundation courses include introductions to biology, physics, chemistry, geology, calculus, and statistics.

INTRODUCTORY

Code	Title	Credits
NR 400	Professional Perspectives in Natural Resources	1
NR 403	Introduction to Environmental Science	4
Select one elective introductory course from the following:		4
NR 504	Freshwater Resources	
CEE 520	Environmental Pollution and Protection: A Global Context	
ESCI 405	Global Environmental Change	
ESCI 501	Introduction to Oceanography	
ESCI 514	Introduction to Climate	
GEOG 473	Elements of Weather	
Total Credits		9

FOUNDATION

Code	Title	Credits
Biology		
BIOL 411	Introductory Biology: Molecular and Cellular	4
or BIOL 412	Introductory Biology: Evolution, Biodiversity and Ecology	
Chemistry		
Select one of the following:		4-8
CHEM 403	General Chemistry I	
& CHEM 404	and General Chemistry II	
or CHEM 405	Chemical Principles for Engineers	
Physics		
PHYS 407	General Physics I	4
PHYS 408	General Physics II	4

Calculus

MATH 425	Calculus I	4
MATH 426	Calculus II	4

Statistics

MATH 644	Statistics for Engineers and Scientists	4
or BIOL 528	Applied Biostatistics I	

Geology

Select one of the following:		4
ESCI 401	Dynamic Earth	
ESCI 402	Earth History	
ESCI 409	Geology and the Environment	

Total Credits 32-36

CORE COURSES

Code	Title	Credits
ESCI 534	Techniques in Environmental Sciences	3
ESCI 654	Fate and Transport in the Environment	4
ESCI 777	GIS for Earth & Environmental Sciences	4
or NR 658	Introduction to Geographic Information Systems	
NR 602	Natural Resources and Environmental Policy	4
or NR 662	Environmental Policy, Planning and Sustainability in New Zealand	
Capstone Experience ¹		
Total Credits		15

¹ NR 791 Preparation for Capstone and an independent study or capstone course taken in the senior year and approved by their adviser and the program coordinator.

HYDROLOGY

Code	Title	Credits
Geomorphology		
ESCI 561	Landscape Evolution	4
Soils/Mineralogy		
ESCI 512	Principles of Mineralogy	4
or NR 501	Studio Soils	
Surface Water Hydrology		
ESCI 705	Principles of Hydrology	4
or CEE 754	Engineering Hydrology	
Groundwater Hydrology		
ESCI 710	Groundwater Hydrology	4
Select one Quantitative Analysis course from the following:		4
CS 410	Introduction to Scientific Programming	
ESCI 701	Quantitative Methods in Earth Sciences	
ESCI 764	Spectral Analysis of Geophysical Time Series Data	
MATH 525	Linearity I	
MATH 527	Differential Equations with Linear Algebra	
MATH 528	Multidimensional Calculus	
MATH 645	Linear Algebra for Applications	
MATH 739	Applied Regression Analysis	
MATH 740	Design of Experiments I	
Select two or three approved electives from the following:		8-12
CEE 650	Fluid Mechanics	

CEE 721	Environmental Sampling and Analysis
CEE 723	Environmental Water Chemistry
CEE 724	Environmental Engineering Microbiology
CEE 750	Ecohydrology
CEE 751	Open Channel Flow
CEE 758	Stormwater Management Designs
CEE 759	Stream Restoration
ESCI 642	Biogeosciences in the Earth System
ESCI 741	Geochemistry
ESCI 745	Isotope Geochemistry
ESCI 747	Aqueous Geochemistry
ESCI 762	Glacial Geology
ESCI 778	Remote Sensing Earth & Environmental Sciences
NR 660	Ecology and Biogeography of New Zealand
NR 661	Restoration Ecology and Ecosystem Management in New Zealand
NR 703	Watershed Water Quality Management
NR 707	Environmental Modeling
NR 711	Wetland Ecology and Management
NR 744	Biogeochemistry
NR 751	Aquatic Ecosystems
NR 757	Remote Sensing of the Environment
NR 759	Digital Image Processing for Natural Resources
NR 761	Environmental Soil Chemistry
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Total Credits	28-32

Some students enroll in the EcoQuest program (a study abroad opportunity in New Zealand), which satisfies the policy requirement, and capstone requirement if taken senior year.

Students must complete additional courses for the hydrology option to total 88 credits in the major.

For further information about the hydrology option or to discuss alternative elective courses, students may contact earth.sciences@unh.edu. (earth.sciences@unh.edu)

Oceanography Minor

<https://ceps.unh.edu/earth-sciences/oceanography-minor>

Description

The minor in oceanography is available to all students in the University interested in obtaining a broad background in oceanography. The minor consists of a minimum of five courses with grades of C (2.00) or better and no pass/fail courses. No more than 8 major requirement credits may be used. All courses in the program are selected in consultation with the oceanography minor adviser, Dr. Jamie Pringle, (603) 862-5000, jpringle@unh.edu. Students must complete an Intent to Minor form no later than their junior year. Forms can be picked up in the Earth Sciences departmental office, 214 James Hall.

Requirements

Code	Title	Credits
Required Courses		
ESCI 501	Introduction to Oceanography	4
Select two of the following:		6-8
ESCI 750	Biological Oceanography	
ESCI 752	Chemical Oceanography	
ESCI 758	Introductory Physical Oceanography	
ESCI 759	Geological Oceanography	
Select two of the following: ¹		6-8
MEFB 401	Marine Estuarine and Freshwater Biology: Freshmen Seminar	
MEFB 403	Investigative Marine Biology Laboratory	
MEFB 503	Introduction to Marine Biology	
MEFB 530	Evolution and Marine Diversity	
MEFB 535	Marine Mammal Biology	
MEFB 625	Introduction to Marine Botany	
MEFB 674	Ecology and Marine Environment	
MEFB 702	Sustainable Marine Fisheries	
MEFB 722	Marine Phycology	
MEFB 725	Marine Ecology	
MEFB 754	Anatomy and Function of Marine Vertebrates	
CEE 722	Introduction to Marine Pollution and Control	
CEE 757	Coastal Engineering and Processes	
ESCI 502	Beaches and Coasts	
ESCI 514	Introduction to Climate	
ESCI 701	Quantitative Methods in Earth Sciences	
ESCI 747	Aqueous Geochemistry	
ESCI 754	Sedimentology	
ESCI 756	Geotectonics	
ESCI 765	Paleoclimatology	
ESCI/OE 771	Geodesy and Positioning for Ocean Mapping	
OE 610	Ocean Instrumentation Lab	
OE 759	Estuarine and Coastal Modeling	
OE 690	Introduction to Ocean Engineering	
OE 710	Ocean Measurements Lab	
OE 753	Ocean Hydrodynamics	
OE 754	Ocean Waves and Tides	
OE 757	Coastal Engineering and Processes	
EREC #711	Marine Resource Economics	
TECH 797	Undergraduate Ocean Research Project	
ZOOL 610	Principles of Aquaculture	
ZOOL 628	Marine Invertebrate Evolution and Ecology	
ZOOL 710	Ichthyology	
ZOOL #721	Aquatic Invasive Species	
ZOOL 772	Fisheries Biology	
ZOOL 773	Physiology of Fish	
ZOOL/ESCI 750	Biological Oceanography	
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Total Credits		16-20

¹ Or a suitable substitute approved by the minor advisor (at least one of these courses should be in the biological sciences).

Electrical and Computer Engineering (ECE)

The Department of Electrical and Computer Engineering offers a B.S. in electrical engineering and a B.S. in computer engineering. Both degree programs are accredited by the:

Engineering Accreditation Commission of ABET
415 N. Charles Street
Baltimore, MD 21201
Telephone (410) 347-7700

Electrical engineers design, develop, and produce the electrical and electronic systems upon which modern society has come to depend: basic infrastructure, such as the electric power grid and fiber optic communication lines; public conveniences, such as mag lev transporters and LED signs; consumer products, such as iPods and MP3 players; personal communication devices, such as smart phones; military systems, such as rail guns and laser weapons; instruments that can image the ocean floor or analyze the Earth's atmosphere from satellites; and medical diagnostic machines like CAT and MRI scanners. Almost every facet of modern life is touched by the work of electrical engineers.

At UNH, the cornerstone of the electrical engineering program is the involvement of students in the solution of real-world problems. Students electing this major gain knowledge of advanced electronic circuit and system design through the use of computer-aided design tools, hardware circuit prototyping, and hands-on laboratory testing.

Computers have become embedded in virtually every engineering system, including everyday items ranging from watches to automobiles. Computer engineering, traditionally a subset of electrical engineering, is a rapidly growing field that emphasizes the design, interfacing, hardware/software tradeoffs, and real-time applications of embedded computers. Students who elect this major will gain a knowledge of both hardware and software concepts, and will learn to design, build, and test systems containing digital computers.

ECE Department Mission

The mission of the department is to foster and advance knowledge in electrical and computer engineering.

The mission involves:

- teaching courses in electrical and computer engineering and related fields at the bachelor's, master's, and doctoral levels;
- advancing knowledge through research and scholarship;
- serving the state and nation by making the department's intellectual resources available to industry and government agencies. The undergraduate EE and CE programs shall provide a firm foundation in electrical and computer engineering theory and practice, with a mix of laboratory and design experiences. The programs also shall foster teamwork and project management skills.

The graduate ECE program shall lead to the degrees of master of science in electrical and computer engineering and the doctor of philosophy in electrical and computer engineering. Research and scholarship are core components of the department's mission and they directly impact undergraduate and graduate education. Success in obtaining funds to

procure equipment and support research efforts is therefore an essential objective for the department.

The department recognizes the need to conduct periodic reviews and adjustments to meet the current and projected needs of the state and nation according to its mission objectives. The current mission was approved by the ECE faculty in March 2001 and again on October 27, 2009, approved by the ECE Student Advisory Board in October 2001, and ratified by the ECE Industrial Advisory Board in April 2002. The mission was reaffirmed by the ECE Industrial Advisory Board in November 22, 2004 and on October 26, 2009.

Electrical Engineering and Computer Engineering Program Educational Objectives

The Department of Electrical and Computer Engineering has adopted a set of program educational objectives that consists of statements describing the expected accomplishments of graduates during the first several years following graduation from either program:

Electrical Engineering Program Educational Objectives

Depth: To be effective in applying electrical engineering principles in engineering practice or for advanced study in electrical engineering.

Breadth: To have a productive career in the many diverse fields of electrical engineering such as analog engineering, bioengineering, communications, and electromagnetics and waves, or in the pursuit of graduate education in disciplines such as electrical engineering, medicine, law, or business.

Professionalism: To function effectively in the complex modern work environment with the ability to assume professional leadership roles.

Computer Engineering Program Educational Objectives

Depth: To be effective in applying computer engineering principles in engineering practice or for advanced study in computer engineering.

Breadth: To have a productive career in the many diverse fields of computer engineering such as digital engineering, bioengineering, security, communications, and embedded systems, or in the pursuit of graduate education in disciplines such as computer engineering, medicine, law, or business.

Professionalism: To function effectively in the complex modern work environment with the ability to assume professional leadership roles.

The electrical and computer engineering educational program objectives were approved by the ECE faculty and the ECE Student Advisory Board in September 2017 and then ratified by the ECE Industrial Advisory Board in October 2017.

Electrical Engineering and Computer Engineering Program Educational Outcomes

The Department of Electrical and Computer Engineering has adopted a set of program educational outcomes that consists of statements describing what students are expected to know and be able to do by the time of graduation, the achievement of which indicates that the student is equipped to achieve the program objectives. The current electrical

engineering program educational outcomes and computer engineering program educational outcomes are:

- an ability to apply knowledge of mathematics, science, and engineering;
- an ability to design and conduct experiments, as well as to analyze and interpret data;
- an ability to design a system, component, or process to meet desired needs;
- an ability to function on multidisciplinary teams;
- an ability to identify, formulate, and solve engineering problems;
- an ability to communicate effectively;
- an understanding of professional and ethical responsibility;
- the broad education necessary to understand the impact of engineering solutions in a global and societal context;
- a recognition of the need for, and ability to engage in, lifelong learning;
- a knowledge of contemporary issues;
- an ability to use techniques, skills, and modern engineering tools necessary for engineering practice.

Electrical and computer program educational outcomes were last approved by the ECE faculty in September 2017, approved by the ECE Student Advisory Board in October 2017, and ratified by the ECE Industrial Advisory Board in October 2017. The program educational outcomes were reaffirmed by the ECE Industrial Advisory Board in October 2017.

Students contemplating a decision between the electrical engineering and computer engineering degree programs should consider both the similarities and differences of the two programs. The two curricula require the same foundational courses in mathematics, physics, analog and digital electronic circuits, and a capstone senior design project. The computer engineering degree program requires additional fluency in software development and advanced computer system and hardware design. The electrical engineering degree program requires advanced study in analog and mixed-signal electronic circuit and system analysis and design. Discovery Program requirements are identical for both degree programs.

<https://ceps.unh.edu/ece>

Programs

- Computer Engineering Major (B.S.) (p. 165)
- Electrical Engineering Major (B.S.) (p. 166)
- Electrical and Computer Engineering Minor (p. 168)

Faculty

Electrical and Computer Engineering Faculty (<https://ceps.unh.edu/electrical-computer-engineering/faculty-staff-directory>)

Computer Engineering Major (B.S.)

<https://ceps.unh.edu/ece/computer-engineering-bs>

Description

In addition to the university's mandatory Discovery Program requirements, degree candidates must complete our core program (freshman through junior years). In the senior year, students select professional technical electives in the areas of their interest. They also carry out a student-designed project to acquire both breadth and depth of study and to integrate knowledge across course boundaries.

For a detailed semester by semester list of requirements for the four years of study, please refer to the Degree Plan tab.

Requirements

In addition to Discovery Program requirements, the department has a number of grade-point average and course requirements:

1. Any computer engineering major whose cumulative grade-point average in ECE and computer science courses is less than 2.0 during any three semesters will not be allowed to continue as a computer engineering major.
2. Computer engineering majors must achieve a 2.0 grade-point average in ECE and CS courses as a requirement for graduation.

To make an exception to any of these departmental requirements based on extenuating circumstances, students must petition the department's undergraduate committee. Mindful of these rules, students, with their adviser's assistance, should plan their programs based on the distribution of courses found in the Degree Plan tab.

Required Courses

Code	Title	Credits
CS 415	Introduction to Computer Science I	4
CS 416	Introduction to Computer Science II	4
CS 515	Data Structures and Introduction to Algorithms	4
CS 520	Assembly Language Programming and Machine Organization	4
ECE 401	Perspectives in Electrical and Computer Engineering	4
ECE 541	Electric Circuits	4
ECE 543	Introduction to Digital Systems	4
ECE 548	Electronic Design I	4
ECE 562	Computer Organization	4
ECE 583	Designing with Programmable Logic	4
ECE 602	Engineering Analysis	4
ECE 603	Electromagnetic Fields and Waves I	4
ECE 633	Signals and Systems I	3
ECE 634	Signals and Systems II	3
ECE 647	Random Processes and Signals in Engineering	3
ECE 649	Embedded Microcomputer Based Design	4
ECON 402	Principles of Economics (Micro)	4
or EREC 411	Environmental and Resource Economics Perspectives	
MATH 425	Calculus I	4
MATH 426	Calculus II	4
MATH 527	Differential Equations with Linear Algebra	4
MATH 645	Linear Algebra for Applications	4

PHYS 407	General Physics I	4
PHYS 408	General Physics II	4
Capstone ²		
ECE 791	Senior Project I	2
ECE 792	Senior Project II	2
Professional Electives		
Choose two ECE 700-level courses ¹		8
Select two courses from the following:		8
CS 619	Introduction to Object-Oriented Design and Development	
CS 620	Operating System Fundamentals	
CS 659	Introduction to the Theory of Computation	
CS 671	Programming Language Concepts and Features	
CS 700:799		
CS 730W	Introduction to Artificial Intelligence	
CS 760W	Introduction to Human-Computer Interaction	
CS 767W	Interactive Data Visualization	
CS 770W		
DS 773	Database Management and Systems Analysis	
or DS 774	E-Business	
ECE 651	Electronic Design II	
ECE 795	Electrical and Computer Engineering Projects	
ECE 796	Special Topics	
Total Credits		109

¹ Choose two 700-level courses not including ECE 795 or ECE 796.

² Honors students who complete ECE 791H Senior Honors Project I and ECE 792H Senior Honors Project II satisfy one professional elective requirement as well as the requirements for ECE 791 Senior Project I and ECE 792 Senior Project II.

Degree Plan

Course	Title	Credits
First Year		
Fall		
ECE 401	Perspectives in Electrical and Computer Engineering	4
MATH 425	Calculus I	4
CS 415	Introduction to Computer Science I	4
ECON 402 or EREC 411	Principles of Economics (Micro) or Environmental and Resource Economics Perspectives	4
Credits		16
Spring		
ECE 543	Introduction to Digital Systems	4
MATH 426	Calculus II	4
CS 416	Introduction to Computer Science II	4
ENGL 401	First-Year Writing	4
Credits		16
Second Year		
Fall		
ECE 562	Computer Organization	4

PHYS 407	General Physics I	4
MATH 527	Differential Equations with Linear Algebra	4
CS 515	Data Structures and Introduction to Algorithms	4
Credits		16

Spring

ECE 583	Designing with Programmable Logic	4
PHYS 408	General Physics II	4
CS 520	Assembly Language Programming and Machine Organization	4
MATH 645	Linear Algebra for Applications	4
Credits		16

Third Year

Fall

ECE 541	Electric Circuits	4
ECE 602	Engineering Analysis	4
ECE 633	Signals and Systems I	3
ECE 649	Embedded Microcomputer Based Design	4
Discovery Program Category		4
Credits		19

Spring

ECE 548	Electronic Design I	4
ECE 603	Electromagnetic Fields and Waves I	4
ECE 634	Signals and Systems II	3
ECE 647	Random Processes and Signals in Engineering	3
Discovery Program Category		4
Credits		18

Fourth Year

Fall

Two Professional Electives		8
Two Discovery Program Categories		8
ECE 791	Senior Project I	2
Credits		18

Spring

Two Professional Electives		8
Discovery Program Category		4
ECE 792	Senior Project II	2
Credits		14
Total Credits		133

Electrical Engineering Major (B.S.)

<https://ceps.unh.edu/ece/electrical-engineering-bs>

Description

In addition to the university's mandatory Discovery Program requirements, degree candidates must complete our core program (freshman through junior years). In the senior year, students select professional technical electives in the areas of their interest. They also carry out a student-designed project to acquire both breadth and depth of study and to integrate knowledge across course boundaries.

For a detailed semester by semester list of requirements for the four years of study, please refer to the Degree Plan tab.

Requirements

In addition to Discovery Program requirements, the department has a number of grade-point average and course requirements.

1. Any electrical engineering major whose cumulative grade-point average in ECE courses is less than 2.0 during any three semesters will not be allowed to continue as an electrical engineering major.
2. Electrical engineering majors must achieve a 2.0 grade-point average in ECE courses as a requirement for graduation.

To make an exception to any of these departmental requirements based on extenuating circumstances, students must petition the department's undergraduate committee. Mindful of these rules, students, with their adviser's assistance, should plan their programs based on the distribution of courses found in the Degree Plan tab.

Required Courses

Code	Title	Credits
CS 410C or CS 415	Introduction to Scientific Programming/C Introduction to Computer Science I	4
ECE 401	Perspectives in Electrical and Computer Engineering	4
ECE 541	Electric Circuits	4
ECE 543	Introduction to Digital Systems	4
ECE 548	Electronic Design I	4
ECE 562	Computer Organization	4
ECE 602	Engineering Analysis	4
ECE 603	Electromagnetic Fields and Waves I	4
ECE 617	Junior Laboratory I	4
ECE 618	Junior Laboratory II	4
ECE 633	Signals and Systems I	3
ECE 634	Signals and Systems II	3
ECE 647	Random Processes and Signals in Engineering	3
ECE 651	Electronic Design II	4
ECON 402 or EREC 411	Principles of Economics (Micro) Environmental and Resource Economics Perspectives	4
MATH 425	Calculus I	4
MATH 426	Calculus II	4
MATH 527	Differential Equations with Linear Algebra	4
MATH 645	Linear Algebra for Applications	4
PHYS 407	General Physics I	4
PHYS 408	General Physics II	4
Capstone		
ECE 791	Senior Project I	2
ECE 792	Senior Project II	2
Mathematics or Science Elective		
Select one from the following:		3-4
CHEM 405	Chemical Principles for Engineers	
MATH 644	Statistics for Engineers and Scientists	
MATH 647	Complex Analysis for Applications	
MS #762	Electronic Materials Science	

PHYS 505	General Physics III	
PHYS 615	Classical Mechanics and Mathematical Physics I	
Professional Electives		
Choose four ECE 700-level courses		16
Total Credits		104-105

Degree Plan

Course	Title	Credits
First Year		
Fall		
ECE 401	Perspectives in Electrical and Computer Engineering	4
MATH 425	Calculus I	4
CS 410C	Introduction to Scientific Programming/C ¹	4
ECON 402 or EREC 411	Principles of Economics (Micro) or Environmental and Resource Economics Perspectives	4
Credits		16
Spring		
PHYS 407	General Physics I	4
ENGL 401	First-Year Writing	4
MATH 426	Calculus II	4
Discovery Program Category ¹		4
Credits		16
Second Year		
Fall		
ECE 541	Electric Circuits	4
ECE 543	Introduction to Digital Systems	4
PHYS 408	General Physics II	4
MATH 527	Differential Equations with Linear Algebra	4
Credits		16
Spring		
ECE 548	Electronic Design I	4
ECE 562	Computer Organization	4
MATH 645	Linear Algebra for Applications	4
Discovery Program Category		4
Credits		16
Third Year		
Fall		
ECE 602	Engineering Analysis	4
ECE 617	Junior Laboratory I	4
ECE 633	Signals and Systems I	3
ECE 651	Electronic Design II	4
Math/Science Elective ⁴		3-4
Credits		18-19
Spring		
ECE 603	Electromagnetic Fields and Waves I	4
ECE 618	Junior Laboratory II	4
ECE 634	Signals and Systems II	3

ECE 647	Random Processes and Signals in Engineering	3
Credits		14
Fourth Year		
Fall		
Two Professional Electives ²		8
Two Discovery Program Category courses		8
ECE 791	Senior Project I ³	2
Credits		18
Spring		
Two Professional Electives ²		8
Discovery Program Category		4
ECE 792	Senior Project II ³	2
Credits		14
Total Credits		128-129

¹ Students who wish to preserve the option of transferring to the computer engineering major without incurring a delay in graduation should consult with their academic adviser before electing these courses. It is recommended that such students take CS 415 Introduction to Computer Science I in the fall semester and CS 416 Introduction to Computer Science II in the spring semester in place of the listed courses.

² Four professional electives must be selected from the following categories of courses:

- At least two from: ECE 7XX not including ECE 795 Electrical and Computer Engineering Projects and ECE 796 Special Topics
- Any of these: ECE 795 Electrical and Computer Engineering Projects, ECE 796 Special Topics
- No more than one from: , DS 773 Database Management and Systems Analysis, DS 774 E-Business
- Honors students who complete ECE 791H Senior Honors Project I and ECE 792H Senior Honors Project II satisfy one professional elective requirement as well as the requirements for ECE 791 Senior Project I and ECE 792 Senior Project II.

³ ECE 791 Senior Project I and ECE 792 Senior Project II fulfill Discovery Program Capstone Experience.

⁴ Math/Science Elective approved courses: MATH 644 Statistics for Engineers and Scientists, MATH 647 Complex Analysis for Applications, CHEM 405 Chemical Principles for Engineers, MS #762 Electronic Materials Science, PHYS 505 General Physics III, PHYS 615 Classical Mechanics and Mathematical Physics I, ME 523 Introduction to Statics and Dynamics.

Students are required to take either ECON 402 Principles of Economics (Micro) or EREC 411 Environmental and Resource Economics Perspectives to fulfill the Social Science Category of the Discovery Program.

Fulfilling the EE Program curriculum automatically meets Discovery Category, "Environment, Technology and Society."

Electrical and Computer Engineering Minor

<https://ceps.unh.edu/ece/minor-electrical-and-computer-engineering>

Description

The Department of Electrical and Computer Engineering encourages highly motivated students to consider a minor in Electrical and Computer Engineering. A university-wide GPA of at least 2.8 is required in all but the most compelling of cases, along with an appropriate reason for desiring the minor. Interested students should complete the provided application (https://ceps.unh.edu/sites/ceps.unh.edu/files/departments/electrical_and_computer_engineering/ece_minor_application_rev.doc) form and submit it to the ECE Undergraduate Curriculum Committee (Kingsbury W201) during his/her sophomore or, at the latest, junior year. After it is approved, the student will need to fill out an "Intent to Minor" form, available from the Associate Dean's office (Kingsbury W283) in order to make entry into the minor program official. It is also the student's responsibility to submit a "Minor Certification of Completion (<http://www.unh.edu/registrar/forms>)" form after all the minor courses have been taken, but before graduation. The ECE Minor Application Form can be downloaded here (https://ceps.unh.edu/sites/ceps.unh.edu/files/departments/electrical_and_computer_engineering/ece_minor_application_rev.doc) or obtained in the ECE office.

For additional information please contact the ECE Department. Our ECE Minor Faculty Advisor (<https://ceps.unh.edu/electrical-computer-engineering/contact-us>) will be glad to answer any of your questions and help you select courses that best fit your career goals.

Requirements

Requirements for the ECE Minor:

1. You must take a minimum of five ECE courses (at least 18 credits), each with a grade of C- or better.

Code	Title	Credits
ECE 541	Electric Circuits (or ECE 537 with grade of A/A-)	4
ECE 548	Electronic Design I	4
ECE 543	Introduction to Digital Systems	4
Two additional approved ECE courses.		

2. You must achieve at least an overall 2.0 average in all courses taken for the minor.

3. Courses taken credit/fail may not be used for the minor.

4. No more than eight credits of courses that the student's major specifies by number may be applied to the ECE minor.

5. No more than two courses completed prior to acceptance into the ECE minor may be counted toward the minor.

Environmental Sciences

The College of Engineering and Physical Sciences (CEPS) and the College of Life Sciences and Agriculture (COLSA) jointly offer a bachelor of science degree in environmental sciences. Environmental sciences, an interdisciplinary field, focuses on the interaction of biological, chemical, and physical processes that shape our natural environment. Students graduating with a degree in environmental sciences will have an understanding of these interacting processes, the ability to communicate effectively with both scientific and lay audiences, competency in field methods appropriate for entry-level environmental science positions,

competency in the use and application of Geographic Information Systems (GIS), a basic understanding of environmental policy, and the ability to contribute to multidisciplinary teams. The University of New Hampshire is a recognized leader in environmental sciences research, and the environmental sciences program capitalizes on faculty expertise in this area. The full-time faculty members comprising this program have major teaching and research emphases in the areas of biogeochemical cycling, environmental chemistry, ecosystem science, geospatial science, global change, hydrology, plant ecology, soil science, and water resource management.

Employment opportunities include environmental consulting firms, educational facilities (e.g., science centers), environmental monitoring laboratories (e.g., water treatment plants; the Environmental Protection Agency), government agencies (e.g., the U.S. Geological Survey, Bureau of Land Management, Natural Resource Conservation Service), university and government research laboratories, and nongovernment environmental organizations. The environmental sciences program also constitutes an excellent preparation for graduate programs in several areas relating to the environment. Students should consult with their adviser early if their goals include further study.

The Program has four options, and specific course requirements for the major vary by option. The geosystems and hydrology options are both managed by the Department of Earth Sciences in CEPS, and the ecosystems and soil and watershed management options are both managed by the Department of Natural Resources and the Environment in COLSA.

Programs

- Environmental Sciences Major: Ecosystems Option (B.S.) (p. 252)
- Environmental Sciences Major: Geosystems Option (B.S.) (p. 160)
- Environmental Sciences Major: Hydrology Option (B.S.) (p. 161)
- Environmental Sciences Major: Soil and Watersheds Option (B.S.) (p. 254)

Faculty

COLSA faculty: <https://colsa.unh.edu/directory/all>

CEPS faculty: <https://ceps.unh.edu/directory/all>

Materials Science (MS)

Programs

- Materials Science Minor (p. 169)

Materials Science Minor

<https://ceps.unh.edu/materials-science/undergraduate-programs>

Description

Materials science is an interdisciplinary field that involves the research, development, and design of new materials. In the past century, materials scientists have enabled major technological advances in areas such as electronic materials for semiconductors, new metal alloys for aircraft

and automotive applications, and new polymers for a host of medical and consumer applications. In order to prepare students for continuing growth and innovation in materials science, the materials science program offers this minor, which is open to all students at UNH.

The minor offers a broad introduction to materials science, which reflects the interdisciplinary nature of the field. Students must complete at least 18 credits and a minimum of five courses, as described below, with C- or better and a minimum 2.0 grade-point average. No more than 8 credits used to satisfy the student's major requirements may be used toward the minor. Students interested in the minor should contact the director of the materials science program (Prof. James Krzanowski, james.krzanowski@unh.edu) as early as possible and preferably before the end of their sophomore year.

Requirements

To complete the minor in materials science, students must take the following courses.

Code	Title	Credits
Required		
ME 561	Introduction to Materials Science ¹	4
Group A: Thermodynamics, Kinetics and Structure of Materials		
Select one of the following:		4-5
CHEM 683 & CHEM 685	Physical Chemistry I and Physical Chemistry Laboratory ²	
PHYS 508	Thermodynamics and Statistical Mechanics ^{2,3}	
ME #760 or ME 795	Physical Metallurgy I or Special Topics	
MS #762	Electronic Materials Science	
ME 761	Diffraction and Imaging Methods in Materials Science	
Group B: Materials Applications and Properties		
Select one of the following:		4-5
CHEM 545 & CHEM 546	Organic Chemistry and Organic Chemistry Laboratory	
CHEM 547 & CHEM 549	Organic Chemistry I and Organic Chemistry Laboratory	
CHEM 651 & CHEM 653	Organic Chemistry I and Organic Chemistry Laboratory	
PHYS 718	Condensed Matter Physics	
ME #731	Fracture and Fatigue Engineering Material	
ME 786	Introduction to Finite Element Analysis	
ME 735	Mechanics of Composite Materials	
ME 795	Special Topics	
Select two to three additional courses from either Group A or Group B ⁴		4-6
Total Credits		16-20

¹ It is strongly recommended that students take this course during their sophomore year.

² Students cannot receive credit towards the minor for both PHYS 508 Thermodynamics and Statistical Mechanics and CHEM 683 Physical Chemistry I/CHEM 685 Physical Chemistry Laboratory.

³ Students cannot receive credit towards the minor for PHYS 508 Thermodynamics and Statistical Mechanics if they have taken ME 503 Thermodynamics.

⁴ As needed to reach the required 18 credits

Mathematics and Statistics (MATH)

The Department of Mathematics and Statistics offers a variety of programs leading to five different degrees:

- B.A. degree: mathematics major;
- B.S. in mathematics degree;
- B.S. in applied mathematics degree;
- B.S. in mathematics education degree; and
- B.S. in statistics degree.

These programs provide flexibility through elective choices and are designed to maximize educational and employment opportunities. Each student must enroll in one specific program; however, changes between programs usually can be accommodated.

The first two years of all programs are similar. In the first year, students are expected to take MATH 425 Calculus I and MATH 426 Calculus II, as well as an introductory programming course (either MATH 445 Mathematics and Applications with MATLAB or CS 410 Introduction to Scientific Programming). A sophomore typically takes follow-up calculus courses in MATH 527 Differential Equations with Linear Algebra and MATH 528 Multidimensional Calculus, MATH 539 Introduction to Statistical Analysis, and MATH 531 Mathematical Proof. The senior capstone experience is fulfilled by a variety of designated courses in each of the degree programs; specific details are given in each program's course listing below.

For more information about the department's undergraduate programs, visit <http://ceps.unh.edu/mathematics-statistics>

Standards for Graduation

In all courses used to satisfy the requirements for its major programs, the Department of Mathematics and Statistics requires that a student earn a grade of C- or better and have an overall grade-point average of at least 2.00 in these courses.

Minoring in Mathematics

The Department of Mathematics and Statistics offers three minor programs: mathematics, applied mathematics, and statistics. These programs, which are open to all students enrolled at the University, require a minimum of five MATH courses as detailed below. Students whose major program requires more than two courses required by the minor program must substitute additional courses from the list of elective courses to meet the five-course minimum.

<https://ceps.unh.edu/mathematics-statistics>

Programs

- Applied Mathematics Major: Computation Option (B.S.) (p. 170)
- Applied Mathematics Major: Dynamics and Control Option (B.S.) (p. 171)
- Applied Mathematics Major: Economics Option (B.S.) (p. 171)
- Applied Mathematics Major: Fluid Dynamics Option (B.S.) (p. 172)

- Applied Mathematics Major: Solid Mechanics and Vibrations Option (B.S.) (p. 173)
- Mathematics Education Major: Elementary/Middle School K-8 Option (B.S.) (p. 173)
- Mathematics Education Major: Secondary Option (B.S.) (p. 174)
- Mathematics Major (B.A.) (p. 175)
- Mathematics Major (B.S.) (p. 175)
- Applied Mathematics Minor (p. 176)
- Mathematics Minor (p. 176)
- Statistics Major (B.S.) (p. 177)
- Statistics Minor (p. 177)

Faculty

Visit <https://ceps.unh.edu/directory/all> for faculty.

Applied Mathematics Major: Computation Option (B.S.)

<https://ceps.unh.edu/mathematics-statistics/program/bs/applied-mathematics-computation-option>

Description

This degree program prepares students for employment and/or graduate study in a variety of fields and research specializations in which mathematics plays a critical role in the solution of important scientific and technological problems.

Graduation Requirements

In all courses used to satisfy the requirements for its major programs, the Department of Mathematics and Statistics requires that a student earn a grade of C- or better and have an overall grade-point average of at least 2.00 in these courses.

Requirements

Major Requirements

Code	Title	Credits
MATH 425	Calculus I	4
MATH 426	Calculus II	4
MATH 445 or IAM 550	Mathematics and Applications with MATLAB Introduction to Engineering Computing	4
MATH 527	Differential Equations with Linear Algebra ¹	4
MATH 528	Multidimensional Calculus ¹	4
MATH 531	Mathematical Proof	4
MATH 539	Introduction to Statistical Analysis	4
MATH 645	Linear Algebra for Applications ¹	4
MATH 753	Introduction to Numerical Methods I	4
PHYS 407	General Physics I	4
Capstone - select one of the following:		4
MATH 797	Senior Seminar	
MATH 798	Senior Project	

MATH 799	Senior Thesis	
Total Credits		44

¹ MATH 525 Linearity I *may be substituted for*: MATH 645 Linear Algebra for Applications.
MATH 525 Linearity I & MATH 526 Linearity II *may be substituted for*: MATH 527 Differential Equations with Linear Algebra, MATH 528 Multidimensional Calculus, and MATH 645 Linear Algebra for Applications.

Computation Option Requirements

Code	Title	Credits
PHYS 408	General Physics II	4
MATH 647	Complex Analysis for Applications	4
MATH 745	Foundations of Applied Mathematics I	4
CS 415	Introduction to Computer Science I	4
CS 416	Introduction to Computer Science II	4
CS 515	Data Structures and Introduction to Algorithms	4
CS 659	Introduction to the Theory of Computation	4
CS 758	Algorithms	4
IAM 751	Introduction to High-Performance Computing	4
Total Credits		36

Applied Mathematics Major: Dynamics and Control Option (B.S.)

<https://ceps.unh.edu/mathematics-statistics/program/bs/applied-mathematics-dynamics-control-option>

Description

This degree program prepares students for employment and/or graduate study in a variety of fields and research specializations in which mathematics plays a critical role in the solution of important scientific and technological problems.

Graduation Requirements

In all courses used to satisfy the requirements for its major programs, the Department of Mathematics and Statistics requires that a student earn a grade of C- or better and have an overall grade-point average of at least 2.00 in these courses.

Requirements

Major Requirements

Code	Title	Credits
MATH 425	Calculus I	4
MATH 426	Calculus II	4
MATH 445	Mathematics and Applications with MATLAB	4
or IAM 550	Introduction to Engineering Computing	
MATH 527	Differential Equations with Linear Algebra ¹	4
MATH 528	Multidimensional Calculus ¹	4
MATH 531	Mathematical Proof	4
MATH 539	Introduction to Statistical Analysis	4

MATH 645	Linear Algebra for Applications ¹	4
MATH 753	Introduction to Numerical Methods I	4
PHYS 407	General Physics I	4
Capstone - select one of the following:		4
MATH 797	Senior Seminar	
MATH 798	Senior Project	
MATH 799	Senior Thesis	
Total Credits		44

¹ MATH 525 Linearity I *may be substituted for*: MATH 645 Linear Algebra for Applications.
MATH 525 Linearity I & MATH 526 Linearity II *may be substituted for*: MATH 527 Differential Equations with Linear Algebra, MATH 528 Multidimensional Calculus, and MATH 645 Linear Algebra for Applications.

Dynamics and Control Option Requirements

Code	Title	Credits
PHYS 408	General Physics II	4
MATH 647	Complex Analysis for Applications	4
MATH 747	Introduction to Nonlinear Dynamics and Chaos	4
ME 525	Statics	3
or CEE 500	Statics for Civil Engineers	
ME 627	Dynamics	3
ECE 633	Signals and Systems I	3
ECE 634	Signals and Systems II	3
ECE 772	Control Systems	4
ONE approved elective at the 600-700 level, selected in consultation with your academic adviser.		4
Total Credits		32

Applied Mathematics Major: Economics Option (B.S.)

<https://ceps.unh.edu/mathematics-statistics/program/bs/applied-mathematics-economics-option>

Description

This degree program prepares students for employment and/or graduate study in a variety of fields and research specializations in which mathematics plays a critical role in the solution of important scientific and technological problems.

Graduation Requirements

In all courses used to satisfy the requirements for its major programs, the Department of Mathematics and Statistics requires that a student earn a grade of C- or better and have an overall grade-point average of at least 2.00 in these courses.

Requirements

Major Requirements

Code	Title	Credits
MATH 425	Calculus I	4
MATH 426	Calculus II	4
MATH 445 or IAM 550	Mathematics and Applications with MATLAB Introduction to Engineering Computing	4
MATH 527	Differential Equations with Linear Algebra ¹	4
MATH 528	Multidimensional Calculus ¹	4
MATH 531	Mathematical Proof	4
MATH 539	Introduction to Statistical Analysis	4
MATH 645	Linear Algebra for Applications ¹	4
MATH 753	Introduction to Numerical Methods I	4
PHYS 407	General Physics I	4
Capstone - select one of the following:		4
MATH 797	Senior Seminar	
MATH 798	Senior Project	
MATH 799	Senior Thesis	
Total Credits		44

¹ MATH 525 Linearity I *may be substituted for:* MATH 645 Linear Algebra for Applications.
MATH 525 Linearity I & MATH 526 Linearity II *may be substituted for:* MATH 527 Differential Equations with Linear Algebra, MATH 528 Multidimensional Calculus, and MATH 645 Linear Algebra for Applications.

Economics Option Requirements

Code	Title	Credits
MATH 739	Applied Regression Analysis	4
MATH 755	Probability with Applications	4
Select ONE approved MATH elective at the 700-level, chosen in consultation with the major advisor.		4
ECON 401	Principles of Economics (Macro) (This course satisfies the Social Science requirement for the Discovery Program.)	4
ECON 402	Principles of Economics (Micro)	4
ECON 605	Intermediate Microeconomic Analysis	4
ECON 611	Intermediate Macroeconomic Analysis	4
ECON 726	Introduction to Econometrics	4
Select ONE approved ECON or DS elective at the 700- level, chosen in consultation with your advisor.		4
Total Credits		36

Applied Mathematics Major: Fluid Dynamics Option (B.S.)

<https://ceps.unh.edu/mathematics-statistics/program/bs/applied-mathematics-fluid-dynamics-option>

Description

This degree program prepares students for employment and/or graduate study in a variety of fields and research specializations in which mathematics plays a critical role in the solution of important scientific and technological problems.

Graduation Requirements

In all courses used to satisfy the requirements for its major programs, the Department of Mathematics and Statistics requires that a student earn a grade of C- or better and have an overall grade-point average of at least 2.00 in these courses.

Requirements

Major Requirements

Code	Title	Credits
MATH 425	Calculus I	4
MATH 426	Calculus II	4
MATH 445 or IAM 550	Mathematics and Applications with MATLAB Introduction to Engineering Computing	4
MATH 527	Differential Equations with Linear Algebra ¹	4
MATH 528	Multidimensional Calculus ¹	4
MATH 531	Mathematical Proof	4
MATH 539	Introduction to Statistical Analysis	4
MATH 645	Linear Algebra for Applications ¹	4
MATH 753	Introduction to Numerical Methods I	4
PHYS 407	General Physics I	4
Capstone - select one of the following:		4
MATH 797	Senior Seminar	
MATH 798	Senior Project	
MATH 799	Senior Thesis	
Total Credits		44

¹ MATH 525 Linearity I *may be substituted for:* MATH 645 Linear Algebra for Applications.
MATH 525 Linearity I & MATH 526 Linearity II *may be substituted for:* MATH 527 Differential Equations with Linear Algebra, MATH 528 Multidimensional Calculus, and MATH 645 Linear Algebra for Applications.

Fluid Dynamics Option Requirements

Code	Title	Credits
PHYS 408	General Physics II	4
MATH 647	Complex Analysis for Applications	4
MATH 745	Foundations of Applied Mathematics I	4
ME 503	Thermodynamics	3
ME 525 or CEE 500	Statics Statics for Civil Engineers	3
ME 608	Fluid Dynamics	3
ME 627	Dynamics	3
Select two of the following:		6-8
ME 707	Analytical Fluid Dynamics	
ME 709	Computational Fluid Dynamics	

ME 712 Waves in Fluids

ONE approved 700-level elective, selected in consultation with your academic advisor.

Total Credits 30-32

Applied Mathematics Major: Solid Mechanics and Vibrations Option (B.S.)

<https://ceps.unh.edu/mathematics-statistics/program/bs/applied-mathematics-solid-mechanics-vibrations-option>

Description

This degree program prepares students for employment and/or graduate study in a variety of fields and research specializations in which mathematics plays a critical role in the solution of important scientific and technological problems.

Graduation Requirements

In all courses used to satisfy the requirements for its major programs, the Department of Mathematics and Statistics requires that a student earn a grade of C- or better and have an overall grade-point average of at least 2.00 in these courses.

Requirements

Major Requirements

Code	Title	Credits
MATH 425	Calculus I	4
MATH 426	Calculus II	4
MATH 445 or IAM 550	Mathematics and Applications with MATLAB Introduction to Engineering Computing	4
MATH 527	Differential Equations with Linear Algebra ¹	4
MATH 528	Multidimensional Calculus ¹	4
MATH 531	Mathematical Proof	4
MATH 539	Introduction to Statistical Analysis	4
MATH 645	Linear Algebra for Applications ¹	4
MATH 753	Introduction to Numerical Methods I	4
PHYS 407	General Physics I	4
Capstone - select one of the following:		4
MATH 797	Senior Seminar	
MATH 798	Senior Project	
MATH 799	Senior Thesis	
Total Credits		44

¹ MATH 525 Linearity I *may be substituted for*: MATH 645 Linear Algebra for Applications.

MATH 525 Linearity I & MATH 526 Linearity II *may be substituted for*: MATH 527 Differential Equations with Linear Algebra, MATH 528 Multidimensional Calculus, and MATH 645 Linear Algebra for Applications.

Solid Mechanics and Vibrations Option Requirements

Code	Title	Credits
PHYS 408	General Physics II	4
MATH 647	Complex Analysis for Applications	4
MATH 745	Foundations of Applied Mathematics I	4
ME 525 or CEE 500	Statics Statics for Civil Engineers	3
ME 526 or CEE 501	Mechanics of Materials Strength of Materials	3
ME 561	Introduction to Materials Science	4
ME 627	Dynamics	3
Select TWO of the following:		8
ME 724	Vibration Theory and Applications	
ME 727	Advanced Mechanics of Solids	
ME 730	Mechanical Behavior of Materials	
ME #731	Fracture and Fatigue Engineering Material	
Total Credits		33

Math Education Major: Elementary/Middle School Education K-8 Option (B.S.)

<https://ceps.unh.edu/mathematics-statistics/program/bs/mathematics-education-elementarymiddle-school-option>

Description

This professional degree program prepares students for teaching mathematics at the elementary and/or middle school level. The program is coordinated with the education department's teacher certification programs. For the elementary option, full certification requires the five-year program. Students may complete the degree requirements for middle school option with full teacher certification in either four or five years.

Students electing the four-year option leading to middle school certification must plan for one semester of student teaching (EDUC 694 Courses in Supervised Teaching) in their senior year; this requires careful planning with your program adviser to accommodate the scheduling of required MATH courses. Requirements for admission to student teaching include receiving credit for EDUC 500 and a minimum cumulative 2.8 GPA.

The five-year program for either option includes a year-long teaching internship in the fifth year. The internship requires admission into a UNH Department of Education graduate program that leads to certification. See Education, College of Liberal Arts. (<https://catalog.unh.edu/graduate/programs-study/education>)

Graduation Requirements

In all courses used to satisfy the requirements for its major programs, the Department of Mathematics and Statistics requires that a student earn a grade of C- or better and have an overall grade-point average of at least 2.00 in these courses.

For **teacher licensure** a grade of B- or better is required in all Education courses.

Requirements

Code	Title	Credits
Required MATH Courses		
MATH 425	Calculus I	4
MATH 426	Calculus II	4
MATH 445 or CS 410	Mathematics and Applications with MATLAB Introduction to Scientific Programming	4
MATH 531	Mathematical Proof	4
MATH 539	Introduction to Statistical Analysis	4
MATH 545 or MATH 645	Introduction to Linear Algebra Linear Algebra for Applications	4
MATH 621	Number Systems for Teachers	4
MATH 622	Geometry for Teachers	4
MATH 623	Probability and Statistics for Teachers	4
MATH 625	Functions and Algebra for Teachers	4
MATH 700	Introduction to Mathematics Education	4
MATH 708	Teaching Mathematics in Grades K-8	4
MATH 760	Geometry	4
MATH 790	Historical Foundations of Mathematics	4
Capstone		
MATH 797 or MATH 799	Senior Seminar Senior Thesis	4
Other Required Courses		
PHYS 406	Introduction to Modern Astronomy	4
EDUC 500	Exploring Teaching	4
EDUC 700	Educational Structure and Change	4
EDUC 701	Human Development and Learning: Educational Psychology	4
EDUC 705	Contemporary Educational Perspectives	4
Total Credits		80

Note: EDUC 703F Teaching Elementary School Science, EDUC 703M Teaching Elementary Social Studies, EDUC 706 Introduction to Reading in the Elementary School, and EDUC 751A Educating Exceptional Learners: Elementary are requirements for certification and may be taken as an undergraduate.

EDUC 751A Educating Exceptional Learners: Elementary or EDUC 751B Educating Exceptional Learners: Secondary are required for middle school certification (grades 5 - 8 only) and may be taken as an undergraduate.

Mathematics Education Major: Secondary Education Option (B.S.)

<https://ceps.unh.edu/mathematics-statistics/program/bs/mathematics-education-secondary-education-option>

Description

This professional degree program prepares students for teaching mathematics at the secondary level. The program is coordinated with the education department's teacher certification programs. Students may complete the degree requirements for the secondary option with full teacher certification in either four or five years.

Students electing the four-year option leading must plan for one semester of student teaching (EDUC 694 Courses in Supervised Teaching) in their senior year; this requires careful planning with your program adviser to accommodate the scheduling of required MATH courses. Requirements for admission to student teaching include receiving credit for EDUC 500 and a minimum cumulative 2.8 GPA.

The five-year program includes a year-long teaching internship in the fifth year. The internship requires admission into a UNH Department of Education graduate program that leads to certification. See Education, College of Liberal Arts. (<https://catalog.unh.edu/graduate/programs-study/education>)

Graduation Requirements

In all courses used to satisfy the requirements for its major programs, the Department of Mathematics and Statistics requires that a student earn a grade of C- or better and have an overall grade-point average of at least 2.00 in these courses.

For **teacher licensure** a grade of B- or better is required in all Education courses.

Requirements

Code	Title	Credits
Required MATH Courses		
MATH 425	Calculus I	4
MATH 426	Calculus II	4
MATH 445 or CS 410	Mathematics and Applications with MATLAB Introduction to Scientific Programming	4
MATH 527	Differential Equations with Linear Algebra	4
MATH 528	Multidimensional Calculus	4
MATH 531	Mathematical Proof	4
MATH 539	Introduction to Statistical Analysis	4
MATH 545 or MATH 645	Introduction to Linear Algebra Linear Algebra for Applications	4
MATH 624	Analysis of Secondary School Mathematics	4
MATH 700	Introduction to Mathematics Education	4
MATH 709	Teaching of Mathematics in Grades 6-12	4
MATH 760	Geometry	4
MATH 761	Abstract Algebra	4
MATH 790	Historical Foundations of Mathematics	4
Capstone		
MATH 797 or MATH 799	Senior Seminar Senior Thesis	4
Other Required Courses		
EDUC 500	Exploring Teaching	4
EDUC 700	Educational Structure and Change	4

EDUC 701	Human Development and Learning: Educational Psychology	4
EDUC 705	Contemporary Educational Perspectives	4
Total Credits		76

Note: EDUC 751B Educating Exceptional Learners: Secondary is a requirement for certification and may be taken as an undergraduate.

Mathematics Major (B.A.)

<https://ceps.unh.edu/mathematics-statistics/mathematics-ba>

Description

The bachelor of arts degree with the mathematics major may offer a broader liberal arts program than the bachelor of science degree programs. By a careful selection of electives, students can shape this major into a preparation for graduate school, business, or industry.

Graduation Requirements

In all courses used to satisfy the requirements for its major programs, the Department of Mathematics and Statistics requires that a student earn a grade of C- or better and have an overall grade-point average of at least 2.00 in these courses.

Requirements

Code	Title	Credits
Required MATH Courses		
MATH 425	Calculus I	4
MATH 426	Calculus II	4
MATH 445	Mathematics and Applications with MATLAB	4
or CS 410	Introduction to Scientific Programming	
MATH 527	Differential Equations with Linear Algebra ¹	4
MATH 528	Multidimensional Calculus ¹	4
MATH 531	Mathematical Proof	4
MATH 539	Introduction to Statistical Analysis	4
MATH 545	Introduction to Linear Algebra ¹	4
or MATH 645	Linear Algebra for Applications	
MATH 761	Abstract Algebra	4
MATH 767	One-Dimensional Real Analysis	4
Select THREE approved MATH courses, chosen in consultation with the major advisor		12
Select one of the following (satisfies the capstone experience requirement for the Discovery Program):		2-4
MATH 797	Senior Seminar	
MATH 799	Senior Thesis	
Total Credits		54-56

¹ MATH 525 Linearity I *may be substituted for*: MATH 545 Introduction to Linear Algebra *or* MATH 645 Linear Algebra for Applications. MATH 525 Linearity I - MATH 526 Linearity II *may be substituted for*: MATH 527 Differential Equations with Linear Algebra, MATH 528 Multidimensional Calculus, *and* MATH 645 Linear Algebra for Applications.

Other required courses: Foreign language requirement as defined by the University for all B.A. degrees.

Mathematics Major (B.S.)

<https://ceps.unh.edu/mathematics-statistics/mathematics-bs>

Description

This program offers the strongest concentration in mathematics, requiring courses that are intended to prepare the student for graduate work in mathematics. Through a judicious choice of electives, students may design stronger pre-graduate programs, a program in applied mathematics, or slant the program toward a career in business or industry.

Graduation Requirements

In all courses used to satisfy the requirements for its major programs, the Department of Mathematics and Statistics requires that a student earn a grade of C- or better and have an overall grade-point average of at least 2.00 in these courses.

Requirements

Code	Title	Credits
Required MATH Courses		
MATH 425	Calculus I	4
MATH 426	Calculus II	4
MATH 445	Mathematics and Applications with MATLAB	4
or CS 410	Introduction to Scientific Programming	
MATH 527	Differential Equations with Linear Algebra ¹	4
MATH 528	Multidimensional Calculus ¹	4
MATH 531	Mathematical Proof	4
MATH 539	Introduction to Statistical Analysis	4
MATH 545	Introduction to Linear Algebra ¹	4
or MATH 645	Linear Algebra for Applications	
MATH 761	Abstract Algebra	4
MATH 763	Abstract Algebra II	4
MATH 767	One-Dimensional Real Analysis	4
MATH 784	Topology	4
MATH 788	Complex Analysis	4
MATH Elective ²		4
Select two elective courses from the following:		8
MATH 765	Introduction to Commutative Algebra and Algebraic Geometry	
MATH 768	Real Analysis II	
MATH 769	Introduction to Differential Geometry	
MATH 770	Foundations of Number Theory	
MATH 772	Combinatorics	
Capstone		2 - 4
MATH 797	Senior Seminar	
or MATH 799	Senior Thesis	
Other Required Courses		
PHYS 407	General Physics I	4

PHYS 408	General Physics II	4
Total Credits		74-76

- ¹ MATH 525 Linearity I *may be substituted for*: MATH 545 Introduction to Linear Algebra *or* MATH 645 Linear Algebra for Applications. MATH 525 Linearity I - MATH 526 Linearity II *may be substituted for*: MATH 527 Differential Equations with Linear Algebra, MATH 528 Multidimensional Calculus, *and* MATH 645 Linear Algebra for Applications.
- ² Students should work with their advisor to identify the MATH course that will be used to fulfill this elective requirement.

Applied Mathematics Minor

<https://ceps.unh.edu/mathematics-statistics/minors-mathematical-sciences>

Description

This minor program introduces students to variety of fields and research specializations in which mathematics plays a critical role in the solution of important scientific and technological problems.

Credit toward the minor will be given only for courses passed with C- or better, and a 2.0 grade-point average must be maintained in courses for the minor. Courses taken on the pass/fail basis may not be used for the minor. Students should declare their intent to earn a minor as early as possible and no later than the end of the junior year. During the final term, an application should be made to the dean of the student's major college to have the minor shown on the academic record. Students must consult with their major adviser and also the minor supervisor.

It requires a minimum of five MATH courses as detailed in the minor requirements. No more than 8.0 credits (or two courses) used by the student to satisfy major requirements may be used for the minor. Additional courses from the list of course electives may be utilized to meet the five-course minimum.

For further information please contact Professor Mark Lyon.

Requirements

Code	Title	Credits
Required		
MATH 528	Multidimensional Calculus ¹	4
MATH 645	Linear Algebra for Applications ¹	4
MATH 745	Foundations of Applied Mathematics I	4
MATH 753	Introduction to Numerical Methods I	4
Electives		
Select one of the following:		4
MATH 647	Complex Analysis for Applications	
MATH 746	Foundations of Applied Mathematics II	
MATH 747	Introduction to Nonlinear Dynamics and Chaos	
MATH 755	Probability with Applications	
Total Credits		20

¹ This requirement may be satisfied by MATH 525 Linearity I - MATH 526 Linearity II

Mathematics Minor

<https://ceps.unh.edu/mathematics-statistics/minors-mathematical-sciences>

Description

The minor in mathematics is open to all students enrolled at the University of New Hampshire.

Credit toward the minor will be given only for courses passed with C- or better, and a 2.0 grade-point average must be maintained in courses for the minor. Courses taken on the pass/fail basis may not be used for the minor. Students should declare their intent to earn a minor as early as possible and no later than the end of the junior year. During the final term, an application should be made to the dean of the student's major college to have the minor shown on the academic record. Students must consult with their major adviser and also the minor supervisor.

It requires a minimum of five MATH courses as detailed in the minor requirements. No more than 8.0 credits (or two courses) used by the student to satisfy major requirements may be used for the minor. Additional courses from the list of course electives may be utilized to meet the five-course minimum.

For further details please contact Professor Junhao Shen.

Requirements

Code	Title	Credits
Required		
MATH 528	Multidimensional Calculus ¹	4
MATH 531	Mathematical Proof	4
MATH 761	Abstract Algebra	4
or MATH 767	One-Dimensional Real Analysis	
Electives		
Select two of the following:		8
MATH 658	Topics in Geometry	
MATH 760	Geometry	
MATH 761	Abstract Algebra	
MATH 763	Abstract Algebra II	
MATH 765	Introduction to Commutative Algebra and Algebraic Geometry	
MATH 767	One-Dimensional Real Analysis	
MATH 768	Real Analysis II	
MATH 769	Introduction to Differential Geometry	
MATH 770	Foundations of Number Theory	
MATH 772	Combinatorics	
MATH 776	Logic	
MATH 783	Set Theory	
MATH 784	Topology	
MATH 788	Complex Analysis	
Total Credits		20

¹ This requirement may be satisfied by MATH 525 Linearity I and MATH 526 Linearity II

Statistics Major (B.S.)

<https://ceps.unh.edu/mathematics-statistics/statistics-bs>

Description

This program prepares students for employment and/or graduate study in a variety of fields and research specializations in which statistical analysis and its applications play a critical role. In addition to its degree programs, the department has an active interest in the actuarial profession. Those interested in actuarial science should seek the advice of departmental coordinator of the actuarial program, Professor Linyuan Li.

Graduation Requirements

In all courses used to satisfy the requirements for its major programs, the Department of Mathematics and Statistics requires that a student earn a grade of C- or better and have an overall grade-point average of at least 2.00 in these courses.

Requirements

Code	Title	Credits
MATH 425	Calculus I	4
MATH 426	Calculus II	4
MATH 445 or CS 410	Mathematics and Applications with MATLAB Introduction to Scientific Programming	4
MATH 527	Differential Equations with Linear Algebra ¹	4
MATH 528	Multidimensional Calculus ¹	4
MATH 531	Mathematical Proof	4
MATH 539	Introduction to Statistical Analysis	4
MATH 645	Linear Algebra for Applications ¹	4
MATH 739	Applied Regression Analysis	4
MATH 755	Probability with Applications	4
MATH 756	Principles of Statistical Inference	4
TWO approved MATH electives ²		8
Select THREE from the following:		12
MATH 736	Advanced Statistical Methods for Research	
MATH 737	Statistical Methods for Quality Improvement and Design	
MATH 740	Design of Experiments I	
MATH 741	Survival Analysis	
MATH 743	Time Series Analysis	
MATH #744	Design of Experiments II	
Capstone		4
MATH 797 or MATH 798 or MATH 799	Senior Seminar Senior Project Senior Thesis	
Total Credits		68

¹ MATH 525 Linearity I - MATH 526 Linearity II *may be substituted for*: MATH 527 Differential Equations with Linear Algebra, MATH 528 Multidimensional Calculus, *and* MATH 645 Linear Algebra for Applications

² Two MATH electives: at least one of which is at the 700-level, chosen in consultation with the major advisor.

Statistics Minor

<https://ceps.unh.edu/mathematics-statistics/minors-mathematical-sciences>

Description

The minor in statistics is designed for students in other majors who want to learn the fundamentals of statistical analysis and its applications.

Credit toward the minor will be given only for courses passed with C- or better, and a 2.0 grade-point average must be maintained in courses for the minor. Courses taken on the pass/fail basis may not be used for the minor. Students should declare their intent to earn a minor as early as possible and no later than the end of the junior year. During the final term, an application should be made to the dean of the student's major college to have the minor shown on the academic record. Students must consult with their major adviser and also the minor supervisor.

It requires a minimum of five MATH courses as detailed in the minor requirements. No more than 8.0 credits (or two courses) used by the student to satisfy major requirements may be used for the minor. Additional courses from the list of course electives may be utilized to meet the five-course minimum.

For further information please contact Professor Ernst Linder.

Requirements

Code	Title	Credits
Required		
MATH 539 or MATH 644	Introduction to Statistical Analysis Statistics for Engineers and Scientists	4
MATH 645	Linear Algebra for Applications ¹	4
Electives		
Select three courses from the following:		12
MATH 736	Advanced Statistical Methods for Research	
MATH 737	Statistical Methods for Quality Improvement and Design	
MATH 739	Applied Regression Analysis	
MATH 740	Design of Experiments I	
MATH 741	Survival Analysis	
MATH 743	Time Series Analysis	
MATH #744	Design of Experiments II	
MATH 755	Probability with Applications	
MATH 756	Principles of Statistical Inference	
Total Credits		20

¹ This requirement may be substituted for MATH 525 Linearity I.

Mechanical Engineering (ME)

The Mechanical Engineering Program at UNH is accredited by the:

Engineering Accreditation Commission of ABET, <http://www.abet.org>

Mission

In support of the University and college missions, the Department of Mechanical Engineering is dedicated to educating the highest quality engineering professionals and leaders. Graduates will be prepared to creatively solve engineering problems through the use of analysis, computation, and experimentation. Students completing the program should be well-informed citizens who have the ability to grow intellectually and are able to solve new, challenging problems with self-confidence. It is the department's intent to maintain a general and flexible curriculum that prepares students for both industrial practice and graduate education.

Educational Objectives

The objective of the UNH Mechanical Engineering Program is to produce graduates who are ethical professionals and good citizens. As they progress in the first several years following graduation, they are expected to:

1. Use their engineering education and communication skills for success in:
 - a. Technical careers in industry, academia, government, or other organizations;
 - b. Graduate school in engineering or physical sciences;
 - c. Nontechnical careers or education in areas such as law, medicine, business, public policy, secondary education, service industries, etc.;
 - d. Careers involving management or entrepreneurship.
2. Exercise lifelong learning to:
 - a. Pursue professional development opportunities in their disciplines;
 - b. Develop new knowledge and skills;
 - c. Pursue new areas of expertise or careers.
3. Use their engineering background to:
 - a. Solve technical problems for societal benefit;
 - b. Develop new knowledge and products that will promote sustainable economic and environmental developments to improve the quality of life;
 - c. Promote the practice of engineering.

Mechanical engineering is a challenging profession and has two major emphases. The first is the general area of mechanical design, which involves all types of mechanical motion and the forces and energy that drive it. The other emphasis deals with energy generation and conversion and is grounded in the principles of the thermal and fluid sciences. Other subject areas, which support both emphases and are frequently part of designs and products, are the materials sciences, manufacturing, and control systems. All of these areas are included in the education and training of mechanical engineers. Ocean engineering is another focus area in our department which emphasizes solving engineering problems associated with the sustainable utilization of ocean resources and the scientific exploration and study of the ocean environment. Mechanical engineering requires significant study in mathematics, engineering computing, and basic sciences such as chemistry and physics, as well as basic engineering courses, before reaching the more specialized courses. Additional information can be found at the mechanical engineering website.

<https://ceps.unh.edu/mechanical-engineering>

Programs

- Mechanical Engineering Major (B.S.) (p. 178)
- Mechanical Engineering Minor (p. 180)

Faculty

<https://ceps.unh.edu/directory/all>

Mechanical Engineering Major (B.S.)

<https://ceps.unh.edu/mechanical-engineering/mechanical-engineering-bs>

Description

The B.S.M.E. curriculum provides students with a solid engineering core and prepares students for professional engineering careers or for graduate study. The department has a four-course mechanics sequence, a four-course thermal/fluid sciences sequence, and a two-course systems and controls sequence. Modern experimental methods are taught in a two-course sequence starting in the junior year. The two-semester senior design project requires students to utilize the skills they have learned in their courses and function in an engineering team. The five technical electives required in the program give the students the opportunity to focus on advanced technical areas of their choice.

With their advisers' assistance, students should plan a program based on the following distribution of courses that totals not less than 128 credits. Note: mechanical engineering graduates typically exceed this requirement depending on what elective courses they select in the curriculum. The degree plan outlined below is typical only in format. Within the constraints of satisfying all the requirements and having all the necessary prerequisites, schedules may vary because of scheduling needs or student preference. Curriculum flexibility allows students to pursue a co-op experience or a minor, if interested which will potentially delay graduation. Some mechanical engineering elective courses may not be offered every year.

Requirements

Technical Elective Requirements:

Of the five technical elective courses, at least three of these courses must be taken in mechanical or ocean engineering, and these must be at least three credits and at the 600 or 700 level. At most, two may be selected from other 600- or 700-level courses in the College of Engineering and Physical Sciences (CEPS), which can include CS 410 Introduction to Scientific Programming (equivalent to a 600 level technical elective), ESCI 501 Introduction to Oceanography, ECE 543 Introduction to Digital Systems, or a course approved by the department. Only one technical elective is allowed at the 400 or 500 level. Courses that cover nearly identical material to core mechanical and ocean engineering courses, but in another CEPS department, will not be accepted as technical electives, e.g.,

Code	Title	Credits
CHE 601	Fluid Mechanics and Unit Operations	3
CHE 602	Heat Transfer and Unit Operations	3

CHE 604	Chemical Engineering Thermodynamics	3
CEE 635	Engineering Materials	4
CEE 650	Fluid Mechanics	4
ECE 633	Signals and Systems I	3

Students should consult with their academic advisor before selecting technical electives outside of mechanical/ocean engineering. With departmental approval, the two technical electives outside of mechanical/ocean engineering can be used for studying a focused area/minor, with the restrictions that only one course can be at the 400 or 500 level and the focused area/minor must be in a bachelor's degree program.

Discovery Program Requirements:

Students must satisfy the University's Discovery Program requirements. The following features are unique to students in the Mechanical Engineering Program:

As is the case across the University, all students are required to take an Inquiry course or an Inquiry Attributes course during their first two years. This can be satisfied with ME 441 Introduction to Engineering Design and Solid Modeling. Students who are exempt from ME 441 Introduction to Engineering Design and Solid Modeling due to prior engineering design and computer-aided design (CAD) experience must select an Inquiry 444 course or a course with an Inquiry Attribute and enroll in ME 477 Introduction to Solid Modeling. The Discovery Environment, Technology, and Society category requirement is met upon receiving a B.S. degree in mechanical engineering. The Discovery Social Science category must be satisfied with either ECON 402 Principles of Economics (Micro) or EREC 411 Environmental and Resource Economics Perspectives. The Discovery senior capstone experience is satisfied with either ME 755 Senior Design Project I and ME 756 Senior Design Project II or TECH 797 Undergraduate Ocean Research Project.

Grade-Point Average Requirements:

In order to graduate with a mechanical engineering B.S. degree, students must have at least a 2.0 grade-point average in all engineering and science courses, including required technical electives, normally taken as department requirements after the start of the junior year as defined in the degree plan below.

Predictor courses: To enter the sophomore year, students must achieve a greater than (but not equal to) 2.00 GPA in PHYS 407 General Physics I and MATH 426 Calculus II with no grade below a C.

To enter the junior year, students must achieve a minimum GPA of 2.00 in ME 525 Statics, ME 526 Mechanics of Materials, and ME 503 Thermodynamics with only one C- grade allowed and no grades below C-.

Students are allowed two repeats of these predictor courses to achieve the predictor rule requirements before being removed from the Program. This can be a single class repeated twice or two classes repeated once. Students are also removed from the program if they obtain a semester GPA below 1.5 three times. Students may petition to be reinstated after one year out of the program.

Transfer Policy for UNH Students into the Department of Mechanical Engineering:

CEPS Students: To transfer into the freshman or sophomore year, students must earn a combined GPA greater than (but not equal to) 2.00

in PHYS 407 General Physics I and MATH 426 Calculus II with no grade below a C in these two courses.

If students are enrolled in ME 525 Statics (or CEE 500 Statics for Civil Engineers), ME 526 Mechanics of Materials (or CEE 501 Strength of Materials), or ME 503 Thermodynamics, they must earn a combined GPA of 2.00 with no grade below a C- in two of these courses with only one C- grade allowed to transfer into Mechanical Engineering. Note: A combined GPA greater than (but not equal to) 2.00 in PHYS 407 General Physics I and MATH 426 Calculus II with no grade below a C is also required.

Non-CEPS Students: To transfer into the Department of Mechanical Engineering from another college at UNH, students have to satisfy the CEPS college transfer policy as well as the Department of Mechanical Engineering transfer policies listed above according to their status.

List of Required Courses:

Code	Title	Credits
CHEM 405	Chemical Principles for Engineers	4-8
or CHEM 403 & CHEM 404	General Chemistry I and General Chemistry II	
ECON 402	Principles of Economics (Micro)	4
or EREC 411	Environmental and Resource Economics Perspectives	
ECE 537	Introduction to Electrical Engineering	4
ENGL 401	First-Year Writing	4
IAM 550	Introduction to Engineering Computing	4
MATH 425	Calculus I	4
MATH 426	Calculus II	4
MATH 527	Differential Equations with Linear Algebra	4
or MATH 525	Linearity I	
MATH 528	Multidimensional Calculus	4
or MATH 526	Linearity II	
ME 441	Introduction to Engineering Design and Solid Modeling	4
or ME 477	Introduction to Solid Modeling	
ME 503	Thermodynamics	3
ME 525	Statics	3
ME 526	Mechanics of Materials	3
ME 561	Introduction to Materials Science	4
ME 603	Heat Transfer	3
ME 608	Fluid Dynamics	3
ME 627	Dynamics	3
ME 643	Machine Design	3
ME 646	Experimental Measurement and Data Analysis	4
ME 670	Systems Modeling, Simulation, and Control	4
ME 705	Thermal System Analysis and Design	4
ME 747	Experimental Measurement and Modeling of Complex Systems	4
ME 755	Senior Design Project I	2
or TECH 797	Undergraduate Ocean Research Project	
ME 756	Senior Design Project II	2
or TECH 797	Undergraduate Ocean Research Project	
PHYS 407	General Physics I	4
PHYS 408	General Physics II	4

Degree Plan

Course	Title	Credits
First Year		
Fall		
ME 441 or ME 477	Introduction to Engineering Design and Solid Modeling ¹ or Introduction to Solid Modeling	4
CHEM 405	Chemical Principles for Engineers ²	4
OR		
CHEM 403 & CHEM 404	General Chemistry I and General Chemistry II ²	
MATH 425	Calculus I ³	4
Discovery Program Elective		4
Credits		16
Spring		
ENGL 401	First-Year Writing ⁴	4
MATH 426	Calculus II	4
PHYS 407	General Physics I ²	4
Discovery Program Elective		4
Credits		16
Second Year		
Fall		
ME 525	Statics	3
IAM 550	Introduction to Engineering Computing	4
MATH 528 or MATH 525	Multidimensional Calculus ⁵ or Linearity I	4
PHYS 408	General Physics II	4
Discovery Program Elective		4
Credits		19
Spring		
ME 503	Thermodynamics	3
ME 526	Mechanics of Materials	3
ME 561	Introduction to Materials Science	4
MATH 527 or MATH 526	Differential Equations with Linear Algebra ⁵ or Linearity II	4
Credits		14
Third Year		
Fall		
ME 608	Fluid Dynamics	3
ME 627	Dynamics	3
ME 705	Thermal System Analysis and Design	4
ECE 537	Introduction to Electrical Engineering	4
Discovery Program Elective		4
Credits		18
Spring		
ME 603	Heat Transfer	3
ME 643	Machine Design	3
ME 646	Experimental Measurement and Data Analysis	4
ME 670	Systems Modeling, Simulation, and Control	4
Credits		14

Fourth Year

Fall

ME 755 or TECH 797	Senior Design Project I ⁶ or Undergraduate Ocean Research Project	2
ME 747	Experimental Measurement and Modeling of Complex Systems	4
Technical Elective		3-4
Technical Elective		3-4
Discovery Program Elective		4
Credits		16-18

Spring

ME 756 or TECH 797	Senior Design Project II ⁶ or Undergraduate Ocean Research Project	2
Technical Elective		3-4
Technical Elective		3-4
Technical Elective		3-4
Discovery Program Elective		4
Credits		15-18
Total Credits		128-133

¹ ME 441 Introduction to Engineering Design and Solid Modeling satisfies the Discovery Inquiry requirement. Note: ME 477 does not satisfy the Discovery Inquiry requirement. An alternative Discovery Program Inquiry course or Inquiry Attributes course is required. Permission is required to take ME 477 in place of ME 441.

² CHEM 405 Chemical Principles for Engineers or CHEM 403 General Chemistry I and CHEM 404 General Chemistry II, or PHYS 407 General Physics I satisfies the Discovery Physical Science (with lab) category.

³ MATH 425 Calculus I satisfies the Discovery Foundation Quantitative Reasoning category.

⁴ ENGL 401 First-Year Writing satisfies the Discovery Foundation Writing Skills category.

⁵ MATH 525 Linearity I and MATH 526 Linearity II also counts as a 600 level technical elective course typically completed in the senior year of the program. Permission is required to take Linearity I and II.

⁶ These courses (ME 755-756 and TECH 797) satisfy the Discovery Senior Capstone Experience category.

Mechanical Engineering Minor

<https://ceps.unh.edu/mechanical-engineering/mechanical-engineering-minor>

Description

The minor, administered by the Department of Mechanical Engineering, is open to all students of the University and offers a broad introduction to mechanical engineering.

Requirements

Students must complete a minimum of six courses as follows:

Code	Title	Credits
ME 441	Introduction to Engineering Design and Solid Modeling	4
ME 503	Thermodynamics	3
ME 525	Statics	3
ME 526	Mechanics of Materials	3
ME 627	Dynamics	3
ME 608	Fluid Dynamics	3
Total Credits		19

Electrical and Computer Engineering majors should take the following courses:

Code	Title	Credits
ME 477	Introduction to Solid Modeling	1
ECE 633	Signals and Systems I ¹	3
ECE 634	Signals and Systems II ¹	3
ME 503	Thermodynamics	3
ME 525	Statics	3
ME 561	Introduction to Materials Science	4
Select one of the following: ²		
ME 526	Mechanics of Materials	3
ME 608	Fluid Dynamics	3
ME 627	Dynamics	3

¹ ECE Major Required Courses.

² The total number of credits required is 20.

Physics majors should take the following courses:

Code	Title	Credits
PHYS 508	Thermodynamics and Statistical Mechanics ¹	4
PHYS 615	Classical Mechanics and Mathematical Physics I ¹	4
ME 477	Introduction to Solid Modeling	1
ME 526	Mechanics of Materials	3
ME 608	Fluid Dynamics	3
Select one of the following: ²		
ME 643	Machine Design	3
ME 670	Systems Modeling, Simulation, and Control	4
ME 705	Thermal System Analysis and Design	4

¹ Physics Major Required Courses.

² The total number of credits to complete the Physics Minor will be either 18 or 19 depending on what course is selected.

Interested students should contact the Mechanical Engineering Chair at (603) 862-1353 and file an intent to minor form. During the last semester, students must complete a completion of minor form for it to appear on their transcript.

Ocean Engineering (OE)

Mission

The mechanical engineering department strives to prepare students for productive careers in industry or government as well as to provide a foundation for graduate studies. The undergraduate program in ocean

engineering emphasizes ocean engineering fundamentals while offering interdisciplinary opportunities for focused study in civil, electrical, environmental, or mechanical engineering, as well as marine sciences.

Program Educational Objectives

The ocean engineering program seeks to provide an environment that enables students to pursue their goals in an innovative, rigorous, and challenging program with a diversity of offerings. The program has the following major educational objectives, with the expectation that alumni will have successful careers in the many diverse areas of the ocean engineering profession. Within a few years of obtaining a bachelor's degree in ocean engineering, we expect our graduates to have the following attributes:

Depth. To be effective in applying ocean engineering principles in engineering practice or for advanced study in ocean engineering.

Breadth. To have a productive career in the many diverse fields of ocean engineering such as coastal engineering, ocean acoustics, offshore structures, and marine renewable energy, or in the pursuit of graduate education in disciplines that include marine science, engineering, medicine, law, or business.

Professionalism. To function effectively in the complex modern work environment with the ability to assume professional leadership roles.

<https://marine.unh.edu/oe>

Programs

- Ocean Engineering Major (B.S.) (p. 181)
- Ocean Engineering Minor (p. 183)

Faculty

<https://ceps.unh.edu/directory/all>

Ocean Engineering Major (B.S.)

<https://ceps.unh.edu/mechanical-engineering/ocean-engineering-bs>

Description

Ocean engineering is a field of study that seeks to solve engineering problems associated with the ocean, including those problems associated with the sustainable utilization of ocean resources and the scientific exploration and study of the ocean environment. Ocean engineering is an interdisciplinary field with roots in mechanical, electrical, civil, and environmental engineering, with strong ties to physical, chemical, biological, and geological oceanography. Students of ocean engineering are best served when they are formally trained inside a framework that fuses the expertise of these often-disparate fields.

The BSOE curriculum provides students with a solid engineering core and prepares students for professional engineering careers or for graduate study. The BSOE starts with foundational classes in math, physics, chemistry, and engineering computing, along with introductions to ocean engineering through seminars and oceanography coursework. Students develop their engineering acumen through coursework and laboratory studies that are focused on analysis, experimentation, and

design. Students proceed to increasingly advanced coursework in ocean instrumentation, waves and tides, the design of ocean structures, coastal engineering, ocean measurements, and ocean acoustics. Opportunities exist for at least four technical electives, which help students gain further competence in an area of their choice. Students finish their curriculum with a two-semester senior capstone design project. Elective courses in the arts, humanities, and the social sciences are included to provide a well-rounded education.

Students work with an adviser to plan a program that is based on the courses shown in the ocean engineering degree plan below that totals not less than 128 credits. The degree plan is considered a guideline and may be modified to suit student needs and desires within the constraints of meeting minimum credit hours, course pre-requisites, and non-major elective course requirements. Some ocean engineering elective courses may not be offered every year.

Requirements

Technical Elective Requirements:

The ocean engineering program curriculum requires four technical electives that are CEPS 600-level or higher courses that have been approved by the OE undergraduate curriculum committee. Sequences have been identified that will provide students more in-depth opportunities in one of the ocean engineering sub-areas.

Discovery Program Requirements:

Students must satisfy the University's Discovery Program requirements. The following features are unique to students in the Ocean Engineering program:

As is the case across the University, all students are required to take an Inquiry course or an Inquiry Attribute course during their first two years. This is satisfied with ESCI 501 Introduction to Oceanography. The Discovery Environment, Technology, and Society category requirement is met upon receiving a B.S. degree in ocean engineering. The Discovery Social Science category must be satisfied with either ECON 402 Principles of Economics (Micro) or EREC 411 Environmental and Resource Economics Perspectives. The Discovery senior capstone experience is satisfied with TECH 797 Undergraduate Ocean Research Project.

Grade-Point Average Requirements:

In order to graduate with an ocean engineering B.S. degree, students must have at least a 2.0 grade-point average in all engineering and science courses, including required technical electives, normally taken as department requirements after the start of the junior year as defined in the degree plan below.

Predictor courses: To enter the sophomore year, students must achieve a greater than (but not equal to) 2.00 GPA in PHYS 407 General Physics I and MATH 426 Calculus II with no grade below a C.

To enter the junior year, students must achieve a minimum GPA of 2.00 in ME 525 Statics, ME 526 Mechanics of Materials, and ME 503 Thermodynamics with only one C- grade allowed and no grades below C-.

Students are allowed two repeats of these predictor courses to achieve the predictor rule requirements before being removed from the Program. This can be a single class repeated twice or two classes repeated once. Students are also removed from the program if they obtain a semester

GPA <1.5 three times. Students may petition to be reinstated after one year out of the program.

Transfer Policy for UNH Students into the Department of Mechanical Engineering:

CEPS Students: To transfer into the freshman or sophomore year, students must earn a combined GPA greater than (but not equal to) 2.00 in PHYS 407 General Physics I and MATH 426 Calculus II with no grade below a C in these two courses.

If students are enrolled in ME 525 Statics (or CEE 500 Statics for Civil Engineers), ME 526 Mechanics of Materials (or CEE 501 Strength of Materials), or ME 503 Thermodynamics, they must earn a combined GPA of 2.00 with no grade below a C- in two of these courses with only one C- grade allowed to transfer in and advance to the junior year. Note: a combined GPA greater than (but not equal to) 2.00 in PHYS 407 General Physics I and MATH 426 Calculus II with no grade below a C is also required.

Non-CEPS Students: To transfer into the Department of Mechanical Engineering from another college at UNH, students have to satisfy the CEPS college transfer policy as well as the Department of Mechanical Engineering transfer policies listed above according to status.

List of Required Courses:

Code	Title	Credits
CHEM 405	Chemical Principles for Engineers	4
or CHEM 403 & CHEM 404	General Chemistry I and General Chemistry II	
ECON 402	Principles of Economics (Micro)	4
or EREC 411	Environmental and Resource Economics Perspectives	
ECE 537	Introduction to Electrical Engineering	4
ESCI 501	Introduction to Oceanography	4
IAM 550	Introduction to Engineering Computing	4
MATH 425	Calculus I	4
MATH 426	Calculus II	4
MATH 525 & MATH 526	Linearity I and Linearity II	8-12
or MATH 527 & MATH 528	Differential Equations with Linear Algebra and Multidimensional Calculus	
ME 503	Thermodynamics	3
ME 525	Statics	3
ME 526	Mechanics of Materials	3
ME 608	Fluid Dynamics	3
ME 627	Dynamics	3
OE 400	Ocean Engineering Seminar	1
OE 401	Ocean Engineering Seminar	1
OE 610	Ocean Instrumentation Lab	4
OE 690	Introduction to Ocean Engineering	4
OE 710	Ocean Measurements Lab	4
OE 754	Ocean Waves and Tides	4
OE 757	Coastal Engineering and Processes	3
OE 758	Design of Ocean Structures	3
OE 765	Underwater Acoustics	3
PHYS 407	General Physics I	4
PHYS 408	General Physics II	4

TECH 797	Undergraduate Ocean Research Project	4
Technical Electives: 600-level or higher, choose four electives, at least one of the four courses must be 4 credits.		

Technical Elective ⁶	4
Credits	14

Fourth Year**Fall**

OE 710	Ocean Measurements Lab	4
OE 765	Underwater Acoustics	3
TECH 797	Undergraduate Ocean Research Project	2
Discovery Program Elective		4
Technical Elective ⁶		4
Credits		17

Spring

TECH 797	Undergraduate Ocean Research Project	2
Technical Elective ⁶		3-4
Technical Elective ⁶		3-4
Discovery Program Elective		4
Discovery Program Elective		4
Credits		16-18
Total Credits		128-130

¹ MATH 425 Calculus I satisfies the Discovery Foundation Quantitative Reasoning category.

² PHYS 407 General Physics I or CHEM 405 Chemical Principles for Engineers or CHEM 403 General Chemistry I and CHEM 404 General Chemistry II satisfies the Discovery Physical Science (with lab) category.

³ ENGL 401 First-Year Writing satisfies the Discovery Foundation Writing Skills category.

⁴ ESCI 501 Introduction to Oceanography satisfies the Discovery Inquiry requirement.

⁵ MATH 525 Linearity I and MATH 526 Linearity II may be substituted for MATH 527 Differential Equations with Linear Algebra and MATH 528 Multidimensional Calculus, and a technical elective course.

⁶ Total technical elective credits must be at 14 credits or higher to meet the UNH required total of 128 credits for graduation

Ocean Engineering Minor

<https://ceps.unh.edu/mechanical-engineering/ocean-engineering-minor>

Description

The ocean engineering minor allows undergraduate engineering students to acquire a nucleus of knowledge about engineering pertaining to the ocean and the coastal zone.

Requirements

To meet the University minor requirement, students must satisfactorily complete a minimum of five courses from the following list:

Code	Title	Credits
Select five of the following:		
ESCI 501	Introduction to Oceanography	
OE 690	Introduction to Ocean Engineering	
ESCI 752	Chemical Oceanography	

Degree Plan

Course	Title	Credits
First Year		
Fall		
MATH 425	Calculus I ¹	4
OE 400	Ocean Engineering Seminar	1
PHYS 407	General Physics I ²	4
Discovery Program Elective		4
Discovery Program Elective		4
Credits		17
Spring		
ENGL 401	First-Year Writing ³	4
MATH 426	Calculus II	4
OE 401	Ocean Engineering Seminar	1
PHYS 408	General Physics II	4
Discovery Program Elective		4
Credits		17
Second Year		
Fall		
CHEM 405	Chemical Principles for Engineers (Or) ²	4
CHEM 403 & CHEM 404	General Chemistry I and General Chemistry II ²	
ESCI 501	Introduction to Oceanography (satisfies the Discovery Inquiry requirement) ⁴	4
MATH 528 or MATH 525	Multidimensional Calculus ⁵ or Linearity I	4
ME 525	Statics	3
Credits		15
Spring		
IAM 550	Introduction to Engineering Computing	4
MATH 527 or MATH 526	Differential Equations with Linear Algebra ⁵ or Linearity II	4
ME 503	Thermodynamics	3
ME 526	Mechanics of Materials	3
OE 690	Introduction to Ocean Engineering	4
Credits		18
Third Year		
Fall		
ECE 537	Introduction to Electrical Engineering	4
ME 608	Fluid Dynamics	3
ME 627	Dynamics	3
OE 754	Ocean Waves and Tides	4
Credits		14
Spring		
OE 610	Ocean Instrumentation Lab	4
OE 757	Coastal Engineering and Processes	3
OE 758	Design of Ocean Structures	3

ESCI 758	Introductory Physical Oceanography
ESCI 759	Geological Oceanography
OE 710	Ocean Measurements Lab
OE 744	Corrosion
OE 754	Ocean Waves and Tides
OE #756	Principles of Naval Architecture and Model Testing
OE 757	Coastal Engineering and Processes
OE 765	Underwater Acoustics
OE 771	Geodesy and Positioning for Ocean Mapping
OE 795	Special Topics
CEE 722	Introduction to Marine Pollution and Control
TECH 797	Undergraduate Ocean Research Project

Students typically take ESCI 501 Introduction to Oceanography, TECH 797 Undergraduate Ocean Research Project, and OE 690 Introduction to Ocean Engineering plus two additional engineering courses from the above list to complete the minor.

Students wishing to take the ocean engineering minor should indicate their interest to the ocean engineering minor adviser, Diane Foster, (603) 862-3089 or diane.foster@unh.edu (Kenneth.Baldwin@unh.edu) no later than the beginning of the junior year and file an intent to minor form. During the final semester, students must complete a completion of minor form for it to appear on their transcript.

Physics (PHYS)

Physics is concerned with the properties of matter and the laws that describe its behavior. As a fundamental science, its discoveries and laws are basic to understanding in nearly all areas of science and technology. Advances in such diverse fields as medical instrumentation, solid state electronics, and space research have relied heavily on the application of basic physical laws and principles.

Students interested in the study of physics at the University of New Hampshire will find a strong interaction between research and academic programs. Undergraduates frequently participate in research studies ranging from nuclear scattering experiments at major particle accelerators to astrophysical studies of the solar system using space probes. These experiences have proven beneficial to engineering and physics students alike. The department is located in DeMeritt Hall (completed in 2008) and Morse Hall. Both buildings are equipped with state-of-the-art research facilities and laboratories. DeMeritt Hall also houses the physics library, classrooms, and a number of open and comfortable meeting areas, which provide an inviting atmosphere for study, interaction, and collaboration.

The suggested programs that follow are indicative of the flexibility available to students, whether they are preparing for graduate work in physics or astronomy, industrial opportunities, governmental research, secondary-level teaching, or a general education that might utilize the fundamental knowledge of physics.

Several undergraduate degree programs are offered through the department of physics. The B.S. degree is designed for students who wish to work as professional physicists or engineers; the interdisciplinary options in chemical physics, materials science, and astronomy allow students to combine physics with other disciplines. The B.A. degree is designed for students who want a strong background in physics but also

want a broad liberal arts education. A minor in physics allows a student to combine an interest in physics with another major.

Physics-related degrees are also offered in other departments. For those students with strong interests in both math and physics, the Department of Mathematics offers a B.S. interdisciplinary option in physics.

Interested students are encouraged to contact the department for further information. More detailed information is also on the physics department website.

<https://physics.unh.edu/>

Programs

- Engineering Physics Major (B.S.) (p. 184)
- Physics Major (B.A.) (p. 187)
- Physics Major (B.S.) (p. 188)
- Physics Major: Astronomy Option (B.S.) (p. 190)
- Physics Major: Chemical Physics Option (B.S.) (p. 191)
- Physics Major: Materials Science Option (B.S.) (p. 191)
- Physics Minor (p. 192)

Faculty

<https://physics.unh.edu/people/faculty>

Engineering Physics Major (B.S.)

<https://ceps.unh.edu/physics/program/bs/engineering-physics-major>

Description

The goal of the UNH BSEP program is to produce broadly-trained engineers who can provide solutions to today's challenging problems in support of a technologically evolving society. The core of the program is based on interdisciplinary training, complemented with a deeper understanding of the physical principles needed to support careers in engineering, engineering research or, perhaps, further training in systems engineering. The program balances depth and breadth in skill development; flexibility and functionality are what drive the program in the sense that 1) the particular focus is based on the student's interests, and 2) the breadth of the course selection is guided by the post-graduation goals of the student (e.g., employment versus graduate school).

Requirements

Code	Title	Credits
Discovery Program requirements		
Writing requirements		
Bachelor of Science requirements		
Core Requirements for all tracks:		
CHEM 403 or CHEM 405	General Chemistry I Chemical Principles for Engineers	4
CS 410P or IAM 550	Introduction to Scientific Programming/Python Introduction to Engineering Computing	4

MATH 425	Calculus I	4
MATH 426	Calculus II	4
Choose one:		8-12
MATH 527 & MATH 528	Differential Equations with Linear Algebra and Multidimensional Calculus	
	or MATH 52!Linearity I & MATH 526 and Linearity II	
PHYS 400	Freshman Seminar	1
PHYS 407	General Physics I	4
PHYS 408	General Physics II	4
PHYS 505	General Physics III	3
PHYS 506	General Physics III Laboratory	1
PHYS 508	Thermodynamics and Statistical Mechanics	4
PHYS 615	Classical Mechanics and Mathematical Physics I	4
PHYS 616	Classical Mechanics and Mathematical Physics II	4
PHYS 703	Electricity and Magnetism I	4
PHYS 797	Senior Design Project	2

Additional courses for Aerospace Track

ME 441	Introduction to Engineering Design and Solid Modeling	4
ME 608	Fluid Dynamics	3
ME 670	Systems Modeling, Simulation, and Control	4
ME 743	Satellite Systems, Dynamics, and Control	3
ECE 541	Electric Circuits	4
ECE 548	Electronic Design I	4
ECE 651	Electronic Design II	4
PHYS 708	Optics	4
PHYS 712	Space Plasma Physics	4

Additional Courses for Material Science track

ME 561	Introduction to Materials Science	4
ME 646	Experimental Measurement and Data Analysis	4
ME 761	Diffraction and Imaging Methods in Materials Science	4
ECE 541	Electric Circuits	4
ECE 548	Electronic Design I	4
PHYS 701	Quantum Mechanics I	4
PHYS 718	Condensed Matter Physics	4

Electives in major: choose three courses from the following: 12

ME 730	Mechanical Behavior of Materials	
ME 735	Mechanics of Composite Materials	
ME #760	Physical Metallurgy I	
ME 786	Introduction to Finite Element Analysis	
ME 795	Special Topics (Thin Film Science & Technology)	
ME 795	Special Topics (Fracture and Fatigue of Engineering Material)	
ME 795	Special Topics (Physical Metallurgy of Automotive and Aerospace Materials)	
ME 795	Special Topics (Thermodynamics & Kinetics of Materials I)	

Additional Courses for the Engineering Research track

ECE 541	Electric Circuits	4
ECE 543	Introduction to Digital Systems	4
ECE 548	Electronic Design I	4

ECE 633	Signals and Systems I	3
ECE 647	Random Processes and Signals in Engineering	3
ECE 651	Electronic Design II	4
ME 608	Fluid Dynamics	3
PHYS 704	Electricity and Magnetism II	4
PHYS 708	Optics	4
Electives in major: choose three from the following		12
ECE 634	Signals and Systems II	
MS #762	Electronic Materials Science	
ME 561	Introduction to Materials Science	
ME 670	Systems Modeling, Simulation, and Control	
ME 706	Renewable Energy: Physical and Engineering Principles	
ME 712	Waves in Fluids	
ME 743	Satellite Systems, Dynamics, and Control	
ME #770	Design with Microprocessors	

A student must have a minimum grade of C in each 400- or 500-level courses that are part of the core requirements and an overall grade-point average of 2.33 in these courses in order to continue in the program.

Degree Plan

Aerospace Track (p. 185)
Materials Science Track (p.)
Engineering Research Track (p.)
Aerospace Track

Course	Title	Credits
First Year		
Fall		
PHYS 407H	Honors/General Physics I	4
MATH 425H	Honors/Calculus I	4
ME 441	Introduction to Engineering Design and Solid Modeling	4
PHYS 400	Freshman Seminar	1
ENGL 401	First-Year Writing	4
	Credits	17
Spring		
PHYS 408H	Honors/General Physics II	4
MATH 426H	Honors/Calculus II	4
CHEM 405	Chemical Principles for Engineers	4
IAM 550	Introduction to Engineering Computing	4
	Credits	16
Second Year		
Fall		
PHYS 505	General Physics III	3
PHYS 506	General Physics III Laboratory	1
PHYS 508	Thermodynamics and Statistical Mechanics	4
MATH 528	Multidimensional Calculus	4
Discovery Elective		4
	Credits	16

Spring

PHYS 615	Classical Mechanics and Mathematical Physics I	4
MATH 527	Differential Equations with Linear Algebra	4
Discovery Elective		8
Credits		16

Third Year

Fall

PHYS 616	Classical Mechanics and Mathematical Physics II	4
ME 608	Fluid Dynamics	3
ECE 541	Electric Circuits	4
Discovery Elective		4
Credits		15

Spring

PHYS 703	Electricity and Magnetism I	4
ME 670	Systems Modeling, Simulation, and Control	4
ECE 548	Electronic Design I	4
Discovery Elective		4
Credits		16

Fourth Year

Fall

PHYS 797	Senior Design Project	2
PHYS 708	Optics	4
ECE 651	Electronic Design II	4
Discovery Elective		4
Credits		14

Spring

PHYS 797	Senior Design Project	2
ME 743	Satellite Systems, Dynamics, and Control	3
PHYS 712	Space Plasma Physics	4
Discovery Elective		4
Credits		13
Total Credits		123

Materials Science Track

Course	Title	Credits
First Year		
Fall		
PHYS 407H	Honors/General Physics I	4
MATH 425H	Honors/Calculus I	4
CHEM 405	Chemical Principles for Engineers	4
PHYS 400	Freshman Seminar	1
ENGL 401	First-Year Writing	4
Credits		17
Spring		
PHYS 408H	Honors/General Physics II	4
MATH 426H	Honors/Calculus II	4
IAM 550	Introduction to Engineering Computing	4
Discovery Elective		4
Credits		16

Second Year

Fall

PHYS 508	Thermodynamics and Statistical Mechanics	4
PHYS 505	General Physics III	3
PHYS 506	General Physics III Laboratory	1
MATH 528	Multidimensional Calculus	4
Discovery Elective		4
Credits		16

Spring

PHYS 615	Classical Mechanics and Mathematical Physics I	4
MATH 527	Differential Equations with Linear Algebra	4
ME 561	Introduction to Materials Science	4
Discovery Elective		4
Credits		16

Third Year

Fall

PHYS 701	Quantum Mechanics I	4
PHYS 616	Classical Mechanics and Mathematical Physics II	4
ME 761	Diffraction and Imaging Methods in Materials Science	4
Discovery Elective		4
Credits		16

Spring

PHYS 703	Electricity and Magnetism I	4
PHYS 718	Condensed Matter Physics	4
ME 646	Experimental Measurement and Data Analysis	4
Discovery Elective		4
Credits		16

Fourth Year

Fall

PHYS 797	Senior Design Project	2
ECE 541	Electric Circuits	4
Elective in Major		8
Discovery Elective		4
Credits		18

Spring

PHYS 797	Senior Design Project	2
ECE 548	Electronic Design I	4
Elective in Major		4
Discovery Elective		4
Credits		14
Total Credits		129

Engineering Research Track

Course	Title	Credits
First Year		
Fall		
PHYS 407H	Honors/General Physics I	4

MATH 425H	Honors/Calculus I	4
CHEM 405	Chemical Principles for Engineers	4
PHYS 400	Freshman Seminar	1
Discovery Elective		4
Credits		17

Spring

PHYS 408H	Honors/General Physics II	4
MATH 426H	Honors/Calculus II	4
IAM 550	Introduction to Engineering Computing	4
ENGL 401	First-Year Writing	4
Credits		16

Second Year**Fall**

PHYS 505	General Physics III	3
PHYS 506	General Physics III Laboratory	1
MATH 528	Multidimensional Calculus	4
ECE 541	Electric Circuits	4
Discovery Elective		4
Credits		16

Spring

PHYS 615	Classical Mechanics and Mathematical Physics I	4
MATH 527	Differential Equations with Linear Algebra	4
ECE 548	Electronic Design I	4
Discovery Elective		4
Credits		16

Third Year**Fall**

PHYS 508	Thermodynamics and Statistical Mechanics	4
ECE 651	Electronic Design II	4
PHYS 616	Classical Mechanics and Mathematical Physics II	4
Discovery Elective		4
Credits		16

Spring

PHYS 703	Electricity and Magnetism I	4
ECE 543	Introduction to Digital Systems	4
Elective in Major		4
Discovery Elective		4
Credits		16

Fourth Year**Fall**

PHYS 797	Senior Design Project	2
PHYS 704	Electricity and Magnetism II	4
PHYS 708	Optics	4
ECE 633	Signals and Systems I	3
Elective in Major		4
Discovery Elective		4
Credits		21

Spring

Discovery Elective		4
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PHYS 797	Senior Design Project	2
ECE 647	Random Processes and Signals in Engineering	3
ME 608	Fluid Dynamics	3
Elective in Major		4
Credits		16
Total Credits		134

Physics Major (B.A.)

<https://ceps.unh.edu/physics/program/ba/physics-major>

Description

This program provides an opportunity for a broad and liberal education, which in some cases may be sufficient for graduate work. This program can also be excellent preparation for middle and high school physics teachers, pre-med and pre-law students, and those wishing to pursue a technical career in industry. Because there are fewer required courses than for a B.S., you have time to pursue other academic interests. A judicious choice of electives may also prepare students for interdisciplinary programs that require proficiency in a specialized area of physics.

Requirements

Code	Title	Credits
University Discovery Program requirements ¹		
Bachelor of Arts Degree requirements		
PHYS 400	Freshman Seminar	1
PHYS 407	General Physics I	4
PHYS 408	General Physics II	4
PHYS 505 & PHYS 506	General Physics III and General Physics III Laboratory	4
PHYS 508	Thermodynamics and Statistical Mechanics	4
PHYS 605	Experimental Physics I	5
PHYS 615	Classical Mechanics and Mathematical Physics I	4
PHYS 616	Classical Mechanics and Mathematical Physics II	4
PHYS 701	Quantum Mechanics I	4
PHYS 703	Electricity and Magnetism I	4
PHYS 705	Experimental Physics II	4
Capstone: ²		
PHYS 795 & PHYS 799	Independent Study and Thesis or PHYS 798 Senior Project	

¹ Note that no physics course can satisfy these requirement for a physics major. The rationale behind this is that a course in physics does not broaden the education of a physics major.

² A capstone experience is required of all physics majors during their senior year. The Physics Department encourages students to write a senior thesis (PHYS 799 Thesis) for their capstone experience. Other options include independent study research projects (PHYS 795 Independent Study or INCO 590 Student Research Experience) or a special project as part of senior lab (PHYS 705 Experimental Physics II). All capstone experiences must be approved by the undergraduate committee during the student's penultimate semester.

Note that MATH 425 Calculus I, MATH 426 Calculus II, and MATH 525 Linearity I, MATH 526 Linearity II or MATH 527 Differential Equations with Linear Algebra, MATH 528 Multidimensional Calculus are prerequisites for some of the courses.

Degree Plan

Suggested Curriculum for B.A. in Physics

In the following table, "electives" include Discovery courses, writing-intensive courses, language courses required for the B.A., and free-choice electives.

Course	Title	Credits
First Year		
Fall		
PHYS 400	Freshman Seminar	1
PHYS 407	General Physics I	4
MATH 425	Calculus I	4
Elective		8
Credits		17
Spring		
PHYS 408	General Physics II	4
MATH 426	Calculus II	4
ENGL 401	First-Year Writing	4
Elective		4
Credits		16
Second Year		
Fall		
PHYS 505 & PHYS 506	General Physics III and General Physics III Laboratory	4
MATH 525 or MATH 527	Linearity I or Differential Equations with Linear Algebra	4-6
Elective		8
Credits		16-18
Spring		
PHYS 615	Classical Mechanics and Mathematical Physics I	4
MATH 526 or MATH 528	Linearity II or Multidimensional Calculus	4-6
Elective		8
Credits		16-18
Third Year		
Fall		
PHYS 616	Classical Mechanics and Mathematical Physics II	4

PHYS 701	Quantum Mechanics I	4
Electives		8
Credits		16
Spring		
PHYS 703	Electricity and Magnetism I	4
PHYS 605	Experimental Physics I	5
Electives		8
Credits		17
Fourth Year		
Fall		
PHYS 705	Experimental Physics II	4
PHYS 508	Thermodynamics and Statistical Mechanics	4
Elective		8
Credits		16
Spring		
Elective		16
Credits		16
Total Credits		130-134

Physics Major (B.S.)

<https://ceps.unh.edu/physics/program/bs/physics-major>

Description

The bachelor of science degree in physics prepares students for professional work as physicists, and is the first step toward graduate work in physics. It is also excellent preparation for graduate programs in medicine, law, or engineering, as well as for technical jobs in industry. The required courses are those typically necessary for admission to graduate study in physics or astronomy. The interdisciplinary options require fewer physics courses combined with a concentration in another area (chemistry or materials science). The astronomy option emphasizes courses that help prepare a student for advanced studies in astronomy.

Requirements

Code	Title	Credits
University Discovery requirements ¹		
Bachelor of Science requirements		
Minimum physics requirements:		
PHYS 400	Freshman Seminar	1
PHYS 407	General Physics I	4
PHYS 408	General Physics II	4
PHYS 505 & PHYS 506	General Physics III and General Physics III Laboratory	4
PHYS 508	Thermodynamics and Statistical Mechanics	4
PHYS 605	Experimental Physics I	5
PHYS 615	Classical Mechanics and Mathematical Physics I	4
PHYS 616	Classical Mechanics and Mathematical Physics II	4
PHYS 701	Quantum Mechanics I	4
PHYS 702	Quantum Mechanics II	4
PHYS 703	Electricity and Magnetism I	4

PHYS 704	Electricity and Magnetism II	4
PHYS 705	Experimental Physics II	4
Select two electives from the following:		8
PHYS 708	Optics	
PHYS 710	Modern Astrophysics	
PHYS 712	Space Plasma Physics	
PHYS 718	Condensed Matter Physics	
PHYS 720	Nuclear Physics	
PHYS 764	General Relativity and Cosmology	
MATH 747	Introduction to Nonlinear Dynamics and Chaos	
MATH 753	Introduction to Numerical Methods I	
Chemistry:		
CHEM 403	General Chemistry I	4
or CHEM 405	Chemical Principles for Engineers	
Mathematics:		
MATH 425	Calculus I	8
& MATH 426	and Calculus II	
Select one of the following options: ²		12
Option A:		
MATH 525	Linearity I	
& MATH 526	and Linearity II ²	
Option B:		
MATH 528	Multidimensional Calculus	
MATH 527	Differential Equations with Linear Algebra	
MATH 545	Introduction to Linear Algebra	
or MATH 645	Linear Algebra for Applications	
Computer Programming:		
CS 410P	Introduction to Scientific Programming/Python	4
or IAM 550	Introduction to Engineering Computing	
Capstone: ³		
PHYS 795	Independent Study	
& PHYS 799	and Thesis	
or PHYS 798	Senior Project	

¹ Note that no physics course can satisfy these requirements for a physics major. The rationale behind this is that a course in physics does not broaden the education of a physics major.

² The Department generally recommends MATH 645 Linear Algebra for Applications over MATH 545 Introduction to Linear Algebra for physics majors.

³ A capstone experience is required of all physics majors during their senior year. The Physics Department encourages students to write a senior thesis (PHYS 799 Thesis) for their capstone experience. Other options include independent study research projects (PHYS 795 Independent Study or INCO 590 Student Research Experience) or a special project as part of senior lab (PHYS 705 Experimental Physics II). All capstone experiences must be approved by the undergraduate committee during the student's penultimate semester.

By the end of the spring semester of the sophomore year, a student must have a minimum grade of C in each 400- or 500-level course specifically required for the B.S. degree and an overall grade-point average of at least 2.33 in these courses in order to continue in the B.S. program.

Physics Electives

In the following table, "electives" include Discovery courses, writing-intensive courses, physics electives, and free-choice electives. Note that physics electives can only be taken in the junior or senior year because of prerequisites, and are in general offered every other year.

Code	Title	Credits
PHYS 708	Optics	4
PHYS 710	Modern Astrophysics	4
PHYS 712	Space Plasma Physics	4
PHYS 718	Condensed Matter Physics	4
PHYS 720	Nuclear Physics	4
PHYS 764	General Relativity and Cosmology	4
MATH 747	Introduction to Nonlinear Dynamics and Chaos	4
MATH 753	Introduction to Numerical Methods I	4

Degree Plan

Suggested Curriculum for B.S. in Physics

Course	Title	Credits
First Year		
Fall		
PHYS 400	Freshman Seminar	1
PHYS 407	General Physics I	4
MATH 425	Calculus I	4
ENGL 401	First-Year Writing	4
CHEM 403	General Chemistry I	4
or CHEM 405	or Chemical Principles for Engineers	
Credits		17
Spring		
PHYS 408	General Physics II	4
MATH 426	Calculus II	4
Elective		4
CS 410P	Introduction to Scientific Programming/Python	4
or IAM 550	or Introduction to Engineering Computing	
Credits		16
Second Year		
Fall		
PHYS 505	General Physics III	4
& PHYS 506	and General Physics III Laboratory	
PHYS 508	Thermodynamics and Statistical Mechanics	4
MATH 528	Multidimensional Calculus	4-6
or MATH 525	or Linearity I	
Elective		4
Credits		16-18
Spring		
PHYS 615	Classical Mechanics and Mathematical Physics I	4
PHYS 605	Experimental Physics I	5
Select one of the following two options:		8 or 6

(1) For students who took MATH 528:		
MATH 527	Differential Equations with Linear Algebra	
and		
MATH 645	Linear Algebra for Applications	
OR		
(2) For students who took MATH 525:		
MATH 526	Linearity II	
and		
Elective		
	Credits	17-15
Third Year		
Fall		
PHYS 616	Classical Mechanics and Mathematical Physics II	4
PHYS 701	Quantum Mechanics I	4
Electives		8
	Credits	16
Spring		
PHYS 702	Quantum Mechanics II	4
PHYS 703	Electricity and Magnetism I	4
Electives		8
	Credits	16
Fourth Year		
Fall		
PHYS 704	Electricity and Magnetism II	4
PHYS 705	Experimental Physics II	4
Electives		8
	Credits	16
Spring		
Electives		16
	Credits	16
Total Credits		130

Physics Major: Astronomy Option (B.S.)

<https://ceps.unh.edu/physics/program/bs/physics-major-astronomy-option>

Description

The astronomy option prepares students for professional work as a physicist or astrophysicist, and is the first step towards graduate work in astronomy or physics. It takes full advantage of the wide range of research that UNH has to offer in astrophysics and space science.

Requirements

Code	Title	Credits
University Discovery requirements ¹		
Bachelor of Science requirements		
Physics requirements:		
PHYS 400	Freshman Seminar	1

PHYS 406	Introduction to Modern Astronomy	4
PHYS 407	General Physics I	4
PHYS 408	General Physics II	4
PHYS 505 & PHYS 506	General Physics III and General Physics III Laboratory	4
PHYS 508	Thermodynamics and Statistical Mechanics	4
PHYS 605	Experimental Physics I	5
PHYS 615	Classical Mechanics and Mathematical Physics I	4
PHYS 616	Classical Mechanics and Mathematical Physics II	4
PHYS 701	Quantum Mechanics I	4
PHYS 702	Quantum Mechanics II	4
PHYS 703	Electricity and Magnetism I	4
PHYS 704	Electricity and Magnetism II	4
PHYS 705	Experimental Physics II	4
PHYS 710	Modern Astrophysics	4
Capstone:		
PHYS 795	Independent Study	4
PHYS 799	Thesis	4
Chemistry:		
CHEM 403	General Chemistry I	4
or CHEM 405	Chemical Principles for Engineers	
Mathematics:		
MATH 425 & MATH 426	Calculus I and Calculus II	8
Select one of the following options: ²		12
Option A:		
MATH 525	Linearity I	
MATH 526	Linearity II	
Option B:		
MATH 528	Multidimensional Calculus	
MATH 527	Differential Equations with Linear Algebra	
MATH 545	Introduction to Linear Algebra	
or MATH 645	Linear Algebra for Applications	
Computer Programming:		
CS 410P	Introduction to Scientific Programming/Python	4
or IAM 550	Introduction to Engineering Computing	
Electives in Option:		
Select one of the following:		4
PHYS 708	Optics	
PHYS 712	Space Plasma Physics	
PHYS 720	Nuclear Physics	
PHYS 764	General Relativity and Cosmology	

¹ Note that no physics course can satisfy these requirement for a physics major. The rationale behind this is that a course in physics does not broaden the education of a physics major.

² The Department generally recommends MATH 645 Linear Algebra for Applications over MATH 545 Introduction to Linear Algebra for Physics majors, but the best option, when possible, is MATH 525 Linearity I-MATH 526 Linearity II.

By the end of the spring semester of the sophomore year, a student must have a minimum grade of C in each 400- or 500-level course specifically

required for the B.S. degree and an overall grade-point average of at least 2.33 in these courses in order to continue in the B.S. program.

Physics Major: Chemical Physics Option (B.S.)

<https://ceps.unh.edu/physics/program/bs/physics-major-chemical-physics-option>

Description

This option in the physics degree program combines courses from the physics and chemistry departments to provide training in chemical physics. It includes most courses that are required for a regular Bachelor of Science degree in physics, adding several courses in physical chemistry/analytical chemistry. The option prepares you for research into the structure of matter using a wide range of spectroscopic and computational methods, and for graduate studies in chemical physics, physical chemistry and atomic and molecular physics.

Requirements

Code	Title	Credits
University Discovery requirements ¹		
Bachelor of Science requirements		
Physics requirements:		
PHYS 400	Freshman Seminar	1
PHYS 407	General Physics I	4
PHYS 408	General Physics II	4
PHYS 505	General Physics III	4
& PHYS 506	and General Physics III Laboratory	
PHYS 508	Thermodynamics and Statistical Mechanics	4
PHYS 605	Experimental Physics I	5
PHYS 615	Classical Mechanics and Mathematical Physics I	4
PHYS 616	Classical Mechanics and Mathematical Physics II	4
PHYS 701	Quantum Mechanics I	4
PHYS 702	Quantum Mechanics II	4
PHYS 703	Electricity and Magnetism I	4
PHYS 705	Experimental Physics II	4
Capstone:		
PHYS 795	Independent Study	
& PHYS 799	and Thesis	
or PHYS 798	Senior Project	
Chemistry:		
CHEM 403	General Chemistry I	4
CHEM 683	Physical Chemistry I	5
& CHEM 686	and Physical Chemistry Laboratory	
CHEM 762	Instrumental Methods of Chemical Analysis	3
CHEM 763	Instrumental Methods of Chemical Analysis Laboratory	2
		or
		3
CHEM 776	Physical Chemistry III	3
Mathematics:		
MATH 425	Calculus I	4
MATH 426	Calculus II	4

Select one of the following options: ²

12

Option A:

MATH 525 Linearity I

MATH 526 Linearity II

Option B:

MATH 528 Multidimensional Calculus

MATH 527 Differential Equations with Linear Algebra

MATH 545 Introduction to Linear Algebra

or MATH 645 Linear Algebra for Applications

Computer Programming:

CS 410P Introduction to Scientific Programming/Python 4

or IAM 550 Introduction to Engineering Computing

Electives in option:

Select one of the following:

CHEM 547 Organic Chemistry I

& CHEM 549 and Organic Chemistry Laboratory

or PHYS 718 Condensed Matter Physics

¹ Note that no physics course can satisfy these requirement for a physics major. The rationale behind this is that a course in physics does not broaden the education of a physics major.

² The Department generally recommends MATH 645 Linear Algebra for Applications over MATH 545 Introduction to Linear Algebra for physics majors, but the best option, when possible, is MATH 525 Linearity I-MATH 526 Linearity II.

By the end of the spring semester of the sophomore year, a student must have a minimum grade of C in each 400- or 500-level course specifically required for the B.S. degree and an overall grade-point average of at least 2.33 in these courses in order to continue in the B.S. program.

Physics Major: Materials Science Option (B.S.)

<https://ceps.unh.edu/physics/program/bs/physics-major-materials-science-option>

Description

This option combines courses from the Physics and other departments to provide training in physics and materials science, an area that has proven industrial demand. In addition to the core courses in classical and modern physics, the students will take six courses in which they will study materials synthesis and properties and get hands-on training in materials characterization techniques, such as diffraction, electron microscopy, scanning probe microscopy, and photoelectron spectroscopy. Two semesters of thesis work in a research lab complement the training in the classroom. Students completing this program will have a wide variety of career opportunities to pursue, for example, in microelectronics, advanced materials synthesis and design, and thin film engineering. Alternatively, they are qualified for postgraduate programs in condensed matter physics or materials science.

Requirements

Code	Title	Credits
University Discovery requirements ¹		
Bachelor of Science requirements		
Physics requirements:		
PHYS 400	Freshman Seminar	1
PHYS 407	General Physics I	4
PHYS 408	General Physics II	4
PHYS 505 & PHYS 506	General Physics III and General Physics III Laboratory	4
PHYS 508	Thermodynamics and Statistical Mechanics	4
PHYS 605	Experimental Physics I	5
PHYS 615	Classical Mechanics and Mathematical Physics I	4
PHYS 616	Classical Mechanics and Mathematical Physics II	4
PHYS 701	Quantum Mechanics I	4
PHYS 703	Electricity and Magnetism I	4
PHYS 705	Experimental Physics II	4
Capstone:		
PHYS 795 & PHYS 799 or PHYS 798	Independent Study and Thesis Senior Project	
Mechanical Engineering:		
ME 561	Introduction to Materials Science	4
ME 730	Mechanical Behavior of Materials	4
ME #760	Physical Metallurgy I	4
Mathematics:		
MATH 425	Calculus I	4
MATH 426	Calculus II	4
Select one of the following options: ²		12
Option A:		
MATH 525	Linearity I	
MATH 526	Linearity II	
Option B:		
MATH 528	Multidimensional Calculus	
MATH 527	Differential Equations with Linear Algebra	
MATH 545	Introduction to Linear Algebra	
	or MATH 645 Linear Algebra for Applications	
Computer Programming:		
CS 410P or IAM 550	Introduction to Scientific Programming/Python Introduction to Engineering Computing	4
Electives in Option		
Select three courses of the following:		
ME #731	Fracture and Fatigue Engineering Material	
ME 761	Diffraction and Imaging Methods in Materials Science	
ME 795	Special Topics	
PHYS 718	Condensed Matter Physics	
Chemistry:		
CHEM 403 or CHEM 405	General Chemistry I Chemical Principles for Engineers	4

¹ Note that no physics course can satisfy these requirements for a physics major. The rationale behind this is that a course in physics does not broaden the education of a physics major.

² The Department generally recommends MATH 645 Linear Algebra for Applications over MATH 545 Introduction to Linear Algebra for physics majors, but the best option, when possible, is MATH 525 Linearity I-MATH 526 Linearity II.

By the end of the spring semester of the sophomore year, a student must have a minimum grade of C in each 400- or 500-level course specifically required for the B.S. degree and an overall grade-point average of at least 2.33 in these courses in order to continue in the B.S. program.

Physics Minor

<https://physics.unh.edu/content/minor-physics>

Description

The minor in physics consists of five courses in physics.

Requirements

Code	Title	Credits
PHYS 407	General Physics I	4
PHYS 408	General Physics II	4
PHYS 505	General Physics III	3
Elective ¹		4
Elective ¹		4
Total Credits		19

¹ Select a four-credit physics course, chosen in consultation with the student's physics minor advisor.

College of Health and Human Services

Michael S. Ferrara, Dean

C. Anne Broussard, Associate Dean

The College of Health and Human Services (CHHS) prepares students for professional health-related careers, through hands-on, experiential learning. Taught by profession and field experts, CHHS provides undergraduate instruction that leads to the bachelor of science degree in communication sciences and disorders, health management and policy, human development and family studies, kinesiology (with majors in athletic training, exercise science, health and physical education, outdoor education and sport studies), nursing, occupational therapy, recreation management and policy (with options in program and event management and therapeutic recreation), and social work. Each program enables students to acquire the knowledge and skills needed to practice in their chosen professions and to obtain a broad cultural background in the humanities and social sciences.

Undeclared Major

A limited number of well-qualified first-year students who have expressed an interest in a health-related career but who are undecided about a specific major may enter the College of Health and Human Services as undeclared students. All CHHS undeclared students are advised by a professional academic counselor, who helps students determine appropriate major courses to explore. Upon declaration of a specific major, each student is assigned a faculty advisor within the major department.

Degrees Offered

Bachelor of Science (B.S.)

Degree Requirements

Candidates for the Bachelor of Science (B.S.) degree must satisfy all University requirements for graduation, earn at least 128 credits, successfully complete the courses required in one of the majors described in this section, and achieve the required minimum grade-point average in the chosen curriculum. Generally, courses are to be completed in the sequence in which they are arranged. Degree candidates must satisfy all of the University and Discovery Program requirements in addition to satisfying the requirements of an individual major program, which includes a senior capstone course/experience.

<https://chhs.unh.edu/>

Departments

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- Health Management and Policy (p. 200)
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Programs of Study

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Applied Human Anatomy and Physiology

- Applied Human Anatomy and Physiology Minor (p. 193)

Applied Human Anatomy and Physiology Minor

<https://chhs.unh.edu/kin/applied-human-anatomy-physiology-minor>

Description

The minor is designed to provide students with an opportunity to develop knowledge and skills necessary for pursuing degrees in medicine and allied health.

Admission to the applied Human Anatomy & Physiology minor is based on successful completion of BMS 507 & BMS 508 or ANC 511 and ANC 512 (or equivalent accepted by minor adviser) with a grade of C or better and a minimum GPA of 2.75.

Requirements

Minor Requirements

Code	Title	Credits
KIN 620	Physiology of Exercise	4
KIN 652	Clinical Kinesiology	4
KIN 653A	Musculoskeletal Assessment	2
KIN 706 & KIN 707	Neurology and Neurology Lab	6
Select one of the following:		4
KIN 505	Activity, Injuries and Disease	
KIN 527	Scientific Foundations of Health and Fitness	

KIN 607	Biology of Aging	
Total Credits		20

Athletic Training

Programs

- Athletic Training Major (B.S.) (p. 194)

Athletic Training Major (B.S.)

https://chhs.unh.edu/kin_at

Description

Athletic trainers are health care professionals who collaborate with physicians. The services provided by athletic trainers are comprised of prevention, emergency care, clinical diagnosis, therapeutic intervention, and rehabilitation of injuries and medical conditions. The athletic training major is accredited by the Commission on Accreditation of Athletic Training Education (CAATE) and prepares professionals qualified to attend to the athlete, the fitness-conscious runner, the skilled professional athlete, or anyone engaged in physical activity. Students gain clinical experience within the UNH Department of Athletics, at local high schools, and at off-campus clinical sites. Successful completion of the entire program, including supervised clinical experience, qualifies students to take the Board of Certification (BOC) certification exam.

Students are admitted to the UNH athletic training major with conditional status. Specific competitive criteria must be met during the student's first year before he or she may apply for full-time status in the major, which is awarded only to students demonstrating exemplary performance in classes and directed observation. Detailed criteria may be found at the program webpage under "Earning Full-Time Status". Additionally, athletic training major technical standards establish the qualities considered necessary for students to achieve the knowledge, skills, and competencies associated with the program. Candidates for full-time status will be required to verify they understand and meet these technical standards or that they can meet them, with reasonable accommodation. Interested students should consult with program coordinator, Dan Sedory, regarding entry criteria and the technical standards.

Students must earn a grade of C (2.0) or better in all KIN-required courses and BMS 507 Human Anatomy and Physiology I, BMS 508 Human Anatomy and Physiology II.

Students in athletic training complete KIN 718 Career Preparation in Athletic Training, as the capstone course for the major. This course is designed to provide students with a means to integrate and augment concepts, skills, and knowledge gained in all previously completed major course requirements. Prerequisites include KIN 665 Laboratory Practicum in Athletic Training, sections A-D.

Requirements

Major Requirements

Code	Title	Credits
BMS 507	Human Anatomy and Physiology I	4
BMS 508	Human Anatomy and Physiology II	4

KIN 506	Concepts of Athletic Training for the Professional	4
KIN 507	Concepts of Athletic Training Lab	1
KIN 585	Emergency Medical Responder	4
KIN 620	Physiology of Exercise	4
KIN 652	Clinical Kinesiology	4
KIN 658	Evaluation and Care of Athletic Training Injury I	4
KIN 658L	Evaluation and Care of Athletic Training Injury I Lab	1
KIN 659	Evaluation and Care of Athletic Training Injury II	4
KIN 659L	Evaluation and Care of Athletic Training Injury II Lab	1
KIN 660	Therapeutic Exercise in Athletic Training	4
KIN 661	Therapeutic Exercise in Athletic Training Laboratory	1
KIN 662	Therapeutic Modalities in Athletic Training	4
KIN 663	Therapeutic Modalities in Athletic Training Laboratory	1
KIN 665	Laboratory Practicum in Athletic Training ¹	10
KIN 667	Pharmacology for Athletic Training	2
KIN 668	Ergogenic Aids in Sports	2
KIN 670	General Medical Conditions in Athletics	4
KIN 710	Organization and Administration of Athletic Training Programs	4
KIN 715	Seminar in Athletic Training	4
KIN 718	Career Preparation in Athletic Training	4
KIN 780	Psychological Factors in Sport	4
NUTR 400	Nutrition in Health and Well Being	4
PSYC 401	Introduction to Psychology	4
Statistics Course		4
Total Credits		91

¹ Must complete five sections of KIN 665 Laboratory Practicum in Athletic Training, sections: A, B, C, D, E, 2 credits each. Sections must be completed in a specified sequence, see Degree Plan.

Degree Plan

Recommended Major Sequencing of Courses

This list only includes major classes. Students should be registered for, and taking an average of 16 credits per semester to be 'on track' to graduate in 4 years. In most semesters, this means a student will be taking Discovery or elective course, to meet this 16 credit 'load'.

Course	Title	Credits
First Year		
Fall		
BMS 507	Human Anatomy and Physiology I	4
KIN 406	Intro to Athletic Training	1
KIN 585	Emergency Medical Responder	4
NUTR 400	Nutrition in Health and Well Being	4
PSYC 401	Introduction to Psychology	4
Credits		17
Spring		
BMS 508	Human Anatomy and Physiology II	4

ENGL 401	First-Year Writing	4
KIN 506	Concepts of Athletic Training for the Professional	4
KIN 507	Concepts of Athletic Training Lab	1
Inquiry Course		4
Credits		17
Second Year		
Fall		
KIN 658	Evaluation and Care of Athletic Training Injury I	4
KIN 658L	Evaluation and Care of Athletic Training Injury I Lab	1
KIN 662	Therapeutic Modalities in Athletic Training	4
KIN 663	Therapeutic Modalities in Athletic Training Laboratory	1
KIN 665	Laboratory Practicum in Athletic Training ((665A)) ¹	2
Credits		12
Spring		
KIN 652	Clinical Kinesiology	4
KIN 659	Evaluation and Care of Athletic Training Injury II	4
KIN 659L	Evaluation and Care of Athletic Training Injury II Lab	1
KIN 660	Therapeutic Exercise in Athletic Training	4
KIN 661	Therapeutic Exercise in Athletic Training Laboratory	1
KIN 665	Laboratory Practicum in Athletic Training ((665B)) ¹	2
Credits		16
Third Year		
Fall		
KIN 620	Physiology of Exercise	4
KIN 665	Laboratory Practicum in Athletic Training ((665C)) ¹	2
KIN 667	Pharmacology for Athletic Training	2
KIN 668	Ergogenic Aids in Sports	2
KIN 710	Organization and Administration of Athletic Training Programs	4
Credits		14
Spring		
KIN 665	Laboratory Practicum in Athletic Training ((665D)) ¹	2
KIN 670	General Medical Conditions in Athletics	4
KIN 715	Seminar in Athletic Training	4
Statistics		4
Credits		14
Fourth Year		
Fall		
KIN 665	Laboratory Practicum in Athletic Training ((665E)) ¹	2
KIN 718	Career Preparation in Athletic Training	4
KIN 780	Psychological Factors in Sport	4
Credits		10

Spring

Electives ³	16
Credits	16
Total Credits	116

¹ KIN 665 Laboratory Practicum in Athletic Training
The five sections (A-E) of this course serve many purposes, but the two main goals are to provide the students with athletic training clinical experiences to (1) learn and build foundational behaviors of professional practice and (2) synthesize and integrate their knowledge, skill and clinical decision-making into actual patient care. As such, the five sections represent a continuum of learning, skill and experience acquisition that occur over the five semesters of this course.

An integral part of this sequential learning is based on the fact that the student is normally taking certain athletic training classes prior to or concurrently with certain sections of KIN 665, so that the student has a specific, defined knowledge-base available to apply while in each section. When a student takes a laboratory practicum 'out-of-sequence' they may be expected to apply skills or asked for knowledge they have not yet learned in a class or lab. It is critical for the safety of the patients the student is interacting with that students MUST take the laboratory practicums in sequential order (A-E) based on the prerequisites noted in the course description.

² KIN 718 Career Preparation in Athletic Training, is the capstone course. As required by the University's Discovery Program, this course is designated as the "Capstone Experience" for the Major. To meet the standards and conditions of the Discovery Program as the Capstone Experience, it is the last required Athletic Training Major course. Following the criteria of the UNH Academic Affairs Committee, the course provides a student with the means to integrate and augment concepts, skills, and knowledge gained in all previous courses.

³ A student taking an average of 16 credits per semester will still need to return to UNH for the Spring Semester of their Senior Year to complete the final 16 credits needed to earn the 128 credits required for graduation.

As there are no athletic training classes or clinical experiences required during this semester, the student can concentrate their efforts and energies on studying for the Board of Certification Exam during this semester in preparation for becoming a Certified Athletic Trainer and entering the profession – many students take the Exam in January/February or April during this Spring Semester.

Coaching

- Coaching Minor (p. 195)

Coaching Minor

<https://chhs.unh.edu/kin/coaching-minor>

Description

The Department of Kinesiology offers a coaching minor. The coaching minor is an interdisciplinary curriculum designed to provide students interested in coaching at the youth, high school, or college levels with basic knowledge and skills necessary for competence in coaching. The minor consists of courses offered by several options within the Department of Kinesiology and recreation management and policy. The

coursework lays a theoretical and practical framework for students interested in coaching.

Admission to the minor is based on successful completion of KIN 565 Principles of Coaching (grade of C or better), and a minimum GPA of 2.0.

Requirements

Coaching Minor Requirements

Code	Title	Credits
KIN 565	Principles of Coaching	4
KIN 505	Activity, Injuries and Disease	4
KIN 650D	Internship in Coaching (one 4-credit internship or two 2-credit internships)	4
Select a minimum of two of the following courses:		4
KIN 521	Theory of Coaching Basketball	
KIN 522	Theory of Coaching Football	
KIN 523	Theory of Coaching Hockey	
KIN 525	Theory of Coaching Soccer	
KIN 528	Theory of Coaching Track and Field	
Select at least one of the following:		4
KIN 527	Scientific Foundations of Health and Fitness	
KIN 560	Sport Psychology	
RMP 560	Recreational Sport Management	
KIN 562	Sport Media Relations	
KIN 675	Motor Development and Learning	
KIN 740	Athletic Administration	
KIN 765	Advanced Topics in Coaching	
KIN 780	Psychological Factors in Sport	
Total Credits		20

Students will not be permitted to enroll in KIN 650D Internship in Coaching, until they have completed KIN 565 Principles of Coaching; KIN 505 Activity, Injuries and Disease and at least one theory of coaching class.

To graduate with a coaching minor, individuals must earn a grade of C- or better in all courses associated with the minor (not including KIN 565 Principles of Coaching, which will require a C or better).

Individuals will not be permitted to count coaching minor classes toward their major regardless of the major/degree program.

Communication Sciences and Disorders (COMM)

Communication Sciences and Disorders (CSD) is devoted to helping people overcome disabilities of speech, language, and hearing. The study of Communication Sciences and Disorders may begin in the freshman or sophomore year. Students learn about speech, language, and hearing disorders in the classroom and are involved in clinical observation in the on-campus Speech-Language-Hearing Center and can participate in research projects. Students are encouraged to take elective courses in linguistics, human development, learning theory, early childhood, health administration, special education, and various aspects of rehabilitation.

As this is a pre-professional degree, students generally pursue graduate studies in speech-language pathology or audiology at colleges or

universities offering graduate programs leading to a master's or doctoral degree and to subsequent certification by the American Speech-Language-Hearing Association (ASHA). Certified clinicians find employment opportunities in hospitals, schools, community speech and hearing clinics, and private practice. Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of the Communication Sciences and Disorders major.

<https://chhs.unh.edu/csd>

Programs

- Communication Sciences and Disorders Major (B.S.) (p. 196)
- Deaf and Hard of Hearing Studies Minor (p. 197)

Faculty

<https://chhs.unh.edu/directory/all>

Communication Sciences and Disorders Major (B.S.)

<https://chhs.unh.edu/csd/communication-sciences-and-disorders-bs>

Description

The Department of Communication Sciences and Disorders offers a bachelor of science degree in communication sciences and disorders.

Communication Sciences and Disorders is the profession devoted to helping people overcome disabilities of speech, language and hearing. The study of communication sciences and disorders may begin in the freshman or sophomore year. Students learn about speech, language, and hearing disorders through a combination of classroom instruction and observations in the on-campus Speech-Language-Hearing Center and elsewhere. Candidates for a bachelors degree in Communication Sciences and Disorders must satisfy all departmental as well as University Discovery and Writing Intensive requirements.

Requirements

Students must earn a grade of C or better in all COMM courses.

Code	Title	Credits
Required Courses		
COMM 401	American Sign Language I	4
PSYC 401	Introduction to Psychology	4
PSYC 402	Statistics in Psychology	4
LING 405	Introduction to Linguistics	4
PHYS 409	Investigating Physics	4
COMM 420	Survey of Communication Disorders	4
MATH 420	Finite Mathematics	4
COMM 504	Basic Audiology	4
BMS 507	Human Anatomy and Physiology I	4
COMM 521	Anatomy and Physiology of the Speech and Hearing Mechanisms	4

COMM 522	Language Acquisition	4
COMM 524	Clinical Phonetics	4
PSYC 581	Child Development	4
COMM 610	Voodoo Science	4
COMM 636	Speech and Hearing Science	4
COMM 705	Introduction to Auditory Perception and Aural Rehabilitation	4
KIN 706 & KIN 707	Neurology and Neurology Lab	6
COMM 723	Observation Skills in Speech-Language Pathology (satisfies 25 Observation Hours)	2
COMM 724	Senior Capstone: Professional Issues in Speech- Language Pathology	4
COMM 741	Speech-Language Pathology I	4
COMM 742	Speech-Language Pathology II	4
Total Credits		84

Major Electives:

Code	Title	Credits
COMM 405	Introduction to the Deaf World	4
COMM 740	Treatment of Adults with Acquired Brain Injury	4
COMM 795	Independent Study	1-8

Internal transfer applications are due and reviewed twice a year, October 1 and March 1.

Any questions regarding CSD curriculum call the department office (603) 862-2110.

Deaf and Hard of Hearing Studies Minor

<https://chhs.unh.edu/csd/deaf-and-hard-hearing-studies-minor>

Description

The minor in Deaf and Hard of Hearing Studies is intended to provide students with courses leading to specialized knowledge related to the fields of deafness and hearing loss. It will be of interest to students who intend to engage in teaching, counseling, rehabilitation, social work, and other professions in which contact with individuals who are deaf or hard of hearing may be expected. There may be some interest as well on the part of students majoring in TESOL and linguistics due to the bilingual aspect of the field. Finally, it will be an option for those students who wish to move on to graduate study in the fields of deaf education, rehabilitation counseling, speech-language pathology, and audiology.

How many credits are required? The minor in Deaf and Hard of Hearing Studies requires a minimum of 20 credits, five courses. Students in the minor must earn a grade of C or better for any course to count towards the required 20 credits. A maximum of 8 credits may be accepted in transfer from another institution if approved by the Minor Coordinator, Dr. Mary Jane Sullivan. Course substitutions are not allowed.

How long does it take to earn a minor in Deaf and Hard of Hearing Studies? It is important to plan ahead as not all of the minor courses are

offered both fall and spring semester. In order to complete the minor generally a minimum of 4 semesters would be needed.

Please note that minor requirements are different depending if the student is a Communication Sciences and Disorders Major or another major.

Requirements

The minor in Deaf and Hard of Hearing Studies requires a minimum of 20 credits (5 courses). The number of required and elective courses will vary depending upon a student's major. Students in the minor must earn a grade of C- or better for any course to count towards the required 20 credits. A maximum of 8 credits may be accepted in transfer from another institution if approved by the Minor Coordinator, Mary Jane Sullivan. Students are advised to take the Required Courses in the order listed below.

Note: Communication Sciences and Disorders majors may not use a course required of their major to fulfill both major and minor requirements. Course substitutions are not allowed. It is important to plan ahead as not all of the minor courses are offered both fall and spring semesters.

Code	Title	Credits
Communication Sciences & Disorders Majors:		
Required:		
COMM 405	Introduction to the Deaf World	4
COMM 502	American Sign Language II	4
CSD majors: Two major courses may be applied to minor		
COMM 401	American Sign Language I	4
ENGL/LING 405	Introduction to Linguistics	4
Choose one elective from the following:		
COMM 475	Have you Heard: Fundamentals of Hearing Loss	4
COMM 634	Conversational American Sign Language	4
COMM 795	Independent Study	4
COMM 779	Community Based Learning for Deaf and Hard of Hearing Studies	4
COMM 798	Special Topics	4

Code	Title	Credits
Non-Communication Sciences & Disorders Majors:		
Required:		
COMM 401	American Sign Language I	4
COMM 405	Introduction to the Deaf World	4
COMM 475	Have you Heard: Fundamentals of Hearing Loss	4
Choose two electives from the following:		
COMM 502	American Sign Language II	4
COMM 504	Basic Audiology	4
COMM 522	Language Acquisition	4
COMM 634	Conversational American Sign Language	4
COMM 705	Introduction to Auditory Perception and Aural Rehabilitation	4
COMM 779	Community Based Learning for Deaf and Hard of Hearing Studies	4

COMM 798	Special Topics
LING 405	Introduction to Linguistics

Exercise Science

Programs

- Exercise Science Major (B.S.) (p. 198)

Exercise Science Major (B.S.)

https://chhs.unh.edu/kin_es

Description

This curriculum prepares students for careers in health and fitness promotion and education programs in hospitals, sports medicine centers, wellness clinics, universities, and rehabilitation facilities. Students are also prepared for advanced degree programs in the health professions, basic biology fields, medicine, or other health-related fields. Students must earn a grade of C (2.0) or better in every required course. Successful completion of early and prerequisite courses is required before advancing to sequenced and higher-level coursework. All required courses must be completed before enrolling in KIN 650A Internship in Exercise Science. Interested students should consult with the major coordinator, Dain LaRoche, Dain.LaRoche@unh.edu.

Requirements

Major Requirements

Code	Title	Credits
BMS 507 & BMS 508	Human Anatomy and Physiology I and Human Anatomy and Physiology II	8
CHEM 403 & CHEM 404	General Chemistry I and General Chemistry II	8
KIN 520	Contemporary Perspectives in Exercise Science	4
KIN 527	Scientific Foundations of Health and Fitness	4
KIN 585	Emergency Medical Responder	4
KIN 620	Physiology of Exercise	4
KIN 621	Exercise Laboratory Techniques	4
KIN 650A	Internship in Exercise Science	8
KIN 704	Electrocardiography	4
KIN 705	Topics in Applied Physiology	4
KIN 720	Science and Practice of Strength Training	4
KIN 722	Applied Biomechanics	4
KIN 724	Exercise Metabolism: Acute and Chronic Adaptations	4
KIN 736	Fitness and Graded Exercise Testing	4
KIN 737	Exercise Prescription and Leadership in Healthy and Special Populations	4
KIN 794	Cardiopulmonary Pathologies	4
KIN 795	Practicum in Cardiac Rehabilitation	2
NUTR 400	Nutrition in Health and Well Being	4
PSYC 401	Introduction to Psychology	4
Select one of the following:		4

HHS #540	Statistics for Health and Human Service Professionals
PSYC 402	Statistics in Psychology
SOC 502	Statistics

Total Credits 90

Students in exercise science complete the series of Capstone courses

Code	Title	Credits
KIN 736	Fitness and Graded Exercise Testing ¹	4
KIN 737	Exercise Prescription and Leadership in Healthy and Special Populations ¹	4
KIN 650A	Internship in Exercise Science	8
Total Credits		16

¹ These courses give students practical experience in evaluating health and fitness and prescribing exercise to a wide range of clients. Specifically, students assess a number of disease risk factors, including blood pressure, blood chemistry, and body composition measures, and perform maximal graded exercise tests complete with electrocardiogram monitoring, as well as measure strength and flexibility. Students ultimately develop individualized exercise prescriptions for their clients and work with them one-on-one to improve their health and fitness. The internship experience is an off-campus, 10-week, 40-hours per week, full-time experience and can only be taken after all University and departmental courses are completed. Typically, this is taken during the summer after the student's senior spring academic term.

Degree Plan

Suggested Course Sequence

Course	Title	Credits
First Year		
Fall		
KIN 520	Contemporary Perspectives in Exercise Science	4
ENGL 401	First-Year Writing	4
BMS 507	Human Anatomy and Physiology I	4
PSYC 401	Introduction to Psychology	4
		Credits 16
Spring		
KIN 527	Scientific Foundations of Health and Fitness	4
KIN 585	Emergency Medical Responder	4
BMS 508	Human Anatomy and Physiology II	4
Discovery Course (INQ/HP)		4
		Credits 16
Second Year		
Fall		
KIN 620	Physiology of Exercise	4
CHEM 403	General Chemistry I	4
NUTR 400	Nutrition in Health and Well Being	4
Discovery Course: Statistics (QR)		4
		Credits 16

Spring

KIN 621	Exercise Laboratory Techniques	4
CHEM 404	General Chemistry II	4
Discovery Course (ETS)		4
Discovery Course (FPA)		4
	Credits	16

Third Year**Fall**

KIN 704	Electrocardiography	4
KIN 720	Science and Practice of Strength Training	4
KIN 724	Exercise Metabolism: Acute and Chronic Adaptations	4
Elective Course (e.g. BIOL 411)		4
	Credits	16

Spring

KIN 722	Applied Biomechanics	4
Discovery Course (HUMA)		4
Elective Course (e.g. BIOL 412)		4
Discovery Course - WI (WC)		4
	Credits	16

Fourth Year**Fall**

KIN 736	Fitness and Graded Exercise Testing	4
KIN 794	Cardiopulmonary Pathologies	4
KIN 795	Practicum in Cardiac Rehabilitation	2
Elective Course (e.g. PHYS 401)		4
	Credits	14

Spring

KIN 705	Topics in Applied Physiology	4
KIN 737	Exercise Prescription and Leadership in Healthy and Special Populations	4
Elective Course		4
Elective Course (e.g. PHYS 402)		4
	Credits	16

Summer

KIN 650A	Internship in Exercise Science	8
	Credits	8
	Total Credits	134

Health and Physical Education

Programs

- Health and Physical Education Major (B.S.) (p. 199)

Health and Physical Education Major (B.S.)

https://chhs.unh.edu/kin_pe

Description

The health and physical education (HPE) major provides a foundation for teaching through a four-year program (BS), or the UNH Department of Education fifth-year program leading to a masters of arts in teaching (MAT). Graduates become certified to teach kindergarten through grade 12 (K-12) health and physical education in the state of New Hampshire. This licensure is transferable to all other states in the U.S. Extensive supervised practicum experiences that provide teaching skills, including adaptive physical education programming, offers an excellent foundation for preparing high-quality teachers. The combination of health with physical education and adaptive physical education makes graduates highly marketable.

Internal UNH undergraduate transfer candidates must have a minimum GPA of 2.67 before admission to the major. The coursework for students choosing the four-year or five-year path to teaching certification is exactly the same until the final semester of the undergraduate program. The culminating capstone for students in the four-year teaching program is student teaching (EDUC 694D/KIN 694 Supervised Teaching in Health and Physical Education). Students also have the option of completing a concentration in adapted physical education through additional coursework designed to enhance teaching strategies and the programmatic needs of students with disabilities. Students choosing to do the fifth-year program complete a year-long internship, in lieu of student teaching.

Admission to the fifth year program requires a minimum GPA of 3.0. Students admitted early to the masters program (required GPA of 3.2 or greater) are eligible for dual credit at the undergraduate/graduate levels for up to 12 credit hours. This enables undergraduates to begin the masters program in their junior or senior year. For questions about the program, contact the program coordinator, Steve Wright, at (603) 862-4408, or steven.wright@unh.edu.

Requirements

Major Requirements

Code	Title	Credits
BMS 507	Human Anatomy and Physiology I	4
BMS 508	Human Anatomy and Physiology II	4
EDUC 700	Educational Structure and Change	4
EDUC 705	Contemporary Educational Perspectives	4
HDFS 746	Human Sexuality	4
KIN 500	Introduction to Health and Physical Education	2
KIN 501	First Aid: Responding to Emergencies	1
KIN 570	Elementary Physical Education Practicum	4
KIN 600	Movement and Gymnastics Exploration	4
KIN 601	Lifetime Sports	3
KIN 603	Team Sports	3
KIN 610	Elementary Physical Education Pedagogy	4
KIN 620	Physiology of Exercise	4
KIN 648	Current Issues in Teaching Health	4
KIN 653B	Biomechanical Analysis of Movement	2
KIN 655	Middle School and Secondary Physical Education Pedagogy	4

KIN 666	Middle School and Secondary Physical Education Practicum	4
KIN 671	Health Education Pedagogy	4
KIN 675	Motor Development and Learning	4
KIN 676	Adventure Activities	3
KIN 694	Supervised Teaching in Health and Physical Education	4-6
EDUC 694D	Supervised Teaching/Kinesiology	4
KIN 702	Health Content and Youth Risk Behavior	4
KIN 712	Health Education Practicum	4
KIN 781	Inclusion in Physical Education	4
NUTR 400	Nutrition in Health and Well Being	4
PSYC 402	Statistics in Psychology	4
or SOC 502	Statistics	
Total Credits		98-100

KIN 653B	Biomechanical Analysis of Movement	2
KIN 655	Middle School and Secondary Physical Education Pedagogy	4
KIN 702	Health Content and Youth Risk Behavior	4
Credits		14

Spring

HDFS 746	Human Sexuality	4
KIN 676	Adventure Activities	3
KIN 712	Health Education Practicum	4
KIN 781	Inclusion in Physical Education	4
Credits		15

Fourth Year**Fall**

KIN 666	Middle School and Secondary Physical Education Practicum	4
EDUC 705	Contemporary Educational Perspectives	4
Credits		8

Spring

KIN 694 & EDUC 694D	Supervised Teaching in Health and Physical Education and Supervised Teaching/Kinesiology	10
EDUC 700	Educational Structure and Change	4
Credits		14
Total Credits		100

Degree Plan

Recommended Major Sequencing of Courses

This list only includes major classes. Students should be registered for, and taking an average of 16 credits per semester to be 'on track' to graduate in 4 years. In most semesters, this means a student will be taking Discovery or elective courses to meet this 16 credit 'load'.

Course	Title	Credits
First Year		
Fall		
BMS 507	Human Anatomy and Physiology I	4
KIN 500	Introduction to Health and Physical Education	2
KIN 600	Movement and Gymnastics Exploration	4
Credits		10
Spring		
BMS 508	Human Anatomy and Physiology II	4
KIN 603	Team Sports	3
NUTR 400	Nutrition in Health and Well Being	4
Credits		11
Second Year		
Fall		
KIN 501	First Aid: Responding to Emergencies	1
KIN 610	Elementary Physical Education Pedagogy	4
KIN 648	Current Issues in Teaching Health	4
KIN 675	Motor Development and Learning	4
Credits		13
Spring		
KIN 570	Elementary Physical Education Practicum	4
KIN 601	Lifetime Sports	3
KIN 671	Health Education Pedagogy	4
PSYC 402	Statistics in Psychology	4
or SOC 502	or Statistics	
Credits		15
Third Year		
Fall		
KIN 620	Physiology of Exercise	4

Health Management and Policy (HMP)

Health management and policy is an interdisciplinary program, that provides students with a broad view of health and health care and policy, while developing analytical skills which are integrated within computer laboratories throughout the curriculum. Students are prepared to pursue careers in a wide range of healthcare organizations focusing on the business aspects and public health aspects of healthcare. Graduates work in private practice, long-term care, rehabilitation, hospitals, nursing homes, and other managed care organizations in such areas as finance, information systems, management, marketing, and operations, project management, as well as public health departments, community health, community-based and home-health agencies, mental health facilities, regulatory bodies, consulting companies, and insurance companies.

The department's undergraduate program maintains full certification by the Association of University Programs in Health Administration (AUPHA). Students have the opportunity to become student members in the American College of Healthcare Executives (ACHE), the Health Care Financial Management Association (HFMA), and the American Public Health Association (APHA), all of which are represented by student chapters at the University. The Health Management and Policy curriculum is approved under the New England Regional Student Program.

<https://chhs.unh.edu/hmp>

Programs

- Health Management and Policy Major (B.S.) (p. 201)
- Health Management Minor (p. 202)
- Public Health Minor (p. 203)

Faculty

<https://chhs.unh.edu/directory/all>

Health Management and Policy Major (B.S.)

<https://chhs.unh.edu/hmp/health-management-policy-bs>

Description

Academic Program

The Health Management and Policy (HMP) curriculum includes a variety of health, healthcare, and policy courses. Students work closely with their advisor and faculty to develop a plan of study. Along with completing major courses, students will be guided to complete the University requirements for writing intensive courses and Discovery courses to obtain the required 128 credits to graduate. Students are required to complete a core of introductory courses prior to their junior year in the HMP major. Upper-division (junior and senior) HMP courses are planned in a two-year sequence, (see course sequence). The curriculum prepares students for their 400 hour internship, as well as a variety of positions within healthcare after graduation. It is important to note that internal transfer students may require an extra year in the major due to the prescribed course sequence.

Requirements

Code	Title	Credits
Health Management and Policy Required Courses		
HMP 401	United States Health Care Systems ²	4
HMP 403	Introduction to Public Health	4
MATH 420	Finite Mathematics	4
Statistics: Any UNH statistics course satisfies the requirement ¹		
HMP 501	Epidemiology and Community Medicine	4
HMP 511	Introduction to Health Information Systems	4
HMP 621	Pre-practicum Seminar	2
HMP 622	Field Practicum in Organizational and Project Analysis, and Management Skills Development	3
HMP 624	Post Practicum Seminar	2
HMP 631	Health Issues Seminar	2
HMP 642	Health Economics	4
HMP 711	Health Systems Research I	4
HMP 712	Health Analytics	4
HMP 721	Managing Health Care Organizations	4
HMP 723	Health Planning	4
HMP 735	Social Marketing	4

HMP 740	Health Care Financial Management	4
HMP 742	Strategic Management for Health Care Organizations (HMP Track Course)	4
HMP 744		4
HMP 746	Health Policy	4
Select Track		8
Public Health Track		
HMP 569	Human Behavior and the Public Health	
HMP 715	Environmental Health	
OR		
Health Services Management		
HMP 722	Health Care Management II (Health Services Management Track)	
HMP 741	Health Care Financial Management II	
Honors in Major		
HMP 798H	Honors Project/Research Design ³	
HMP 799H	Honors Project/Research ⁴	
Total Credits		81

¹ AP Statistics does not meet the statistics requirement.

² For HMP majors only: HMP 401 United States Health Care Systems will not meet the social sciences requirement.

³ HMP 798H is taken for two credits Fall of senior year, if selected for Honors in Major.

⁴ HMP 799H is taken for four credits Spring of senior year, if completing the Honors in Major thesis.

Field Practicum

HMP 622 Field Practicum in Organizational and Project Analysis, and Management Skills Development is the required 400 hour 10-week field practicum, (or administrative internship), which constitutes an essential part of the HMP academic program. The field practicum occurs during the summer between junior and senior year, typically beginning in late May and ending in late August, requiring a full-time commitment of the student. Students must be an HMP major and must retain a cumulative GPA of 3.00 or higher to be granted permission to enroll in the course.

This experience allows students to explore an area of special interest in depth that integrates class work with a supervised field experience. Given sufficient timing of student requests, efforts will be made to arrange practica at distant sites based on special needs. Field practicum sites are selected by faculty with student involvement are often concentrated in central and Northern New England, but the experience could also be abroad.

Academic Requirements

HMP majors must obtain a minimum of a B- in all HMP core courses and prerequisite courses. Majors must have an overall grade-point average of 3.00 to remain in the major. Students not continuing to make progress in the major, as evidenced by a mixture of generally low grades, incomplete courses, and/or administrative failures resulting in a cumulative GPA lower than 3.0 may, upon determination by the Health Management and Policy faculty, be excluded from the major and participation in the Field Practicum. An exclusion from the major may also be necessary to resolve questions concerning major departmental requirements or University academic standards.

The academic action of *exclusion* could be a temporary action *if* a petition is completed by the student detailing the extenuating circumstances and providing supportive documentation. After the petition has been reviewed, a determination of denial or approval will be made by the Health Management and Policy faculty. Should a petition be granted *approval to remain in the major* due to extenuating circumstances, the student must demonstrate academic progress (B- in HMP courses and 3.0 GPA) the following semester or they will be excluded from the major without the option to return.

Internal Applications for HMP Major

Students interested in additional information or in applying for admission to the health management and policy major should attend an HMP information session, and/or contact the academic department coordinator. Efforts should be made to complete this process during the freshman year or early in the sophomore year to ensure sufficient time to complete the required courses (HMP 401, HMP 403, HMP 501, MATH 420, and Statistics). Admitted UNH students can apply to the major once the student meets the application requirements, a minimum cumulative GPA of 3.00 and at least two of the required courses completed with a B- or higher.

Honors in Major

The department offers an honors-in-major program. Students must meet the department's requirement of having an overall 3.7 grade-point average at UNH and a 3.7 grade-point average for required HMP courses taken by the end of the spring semester sophomore year to be invited to Honors-in-Major. Honors-in-major students take a total of three honors designated major courses during the junior year and senior year, as well as completing an honors thesis project during the senior year, HMP 798H and HMP 799H. Students work on the honors thesis with a faculty member within the HMP department who has knowledge in the specific topic. Students should contact the academic department coordinator for further information.

HMP 642	Health Economics	4
HMP 712	Health Analytics	4
Summer Junior Year		
HMP 622	Field Practicum in Organizational and Project Analysis, and Management Skills Development	3
Fall Senior Year		
HMP 624	Post Practicum Seminar	2
HMP 723	Health Planning	4
HMP 735	Social Marketing	4
HMP 744		4
Spring Senior Year		
HMP 631	Health Issues Seminar	2
HMP 742	Strategic Management for Health Care Organizations (HMP Track Course)	4
Select One Track		8
Public Health Track		
HMP 569	Human Behavior and the Public Health	
HMP 715	Environmental Health	
Or		
Health Services Management Track		
HMP 722	Health Care Management II	
HMP 741	Health Care Financial Management II	
Honors in Major		
HMP 798H	Honors Project/Research Design	
HMP 799H	Honors Project/Research	
Total Credits		81

Health Management Minor

<https://chhs.unh.edu/hmp/health-management-minor-0>

Description

The department of Health Management and Policy (HMP) offers an integrated minor in health management designed for students in majors outside of HMP. All courses must be completed with a C- or higher to be counted toward the minor. Students seeking to minor in health management should meet with the academic department coordinator to discuss the requirements.

Requirements

The health management minor includes the following courses:

Code	Title	Credits
Required Courses		
HMP 401	United States Health Care Systems	4
HMP 501	Epidemiology and Community Medicine	4
Must be taken before completing 600 and 700 level courses.		
Select Three of the Following: ¹		
HMP 642	Health Economics	4
HMP 711	Health Systems Research I	4
HMP 712	Health Analytics	4
HMP 721	Managing Health Care Organizations	4

Degree Plan

Code	Title	Credits
Health Management and Policy Introduction Major Core Courses		
Fall or Spring Freshmen Year:		
HMP 401	United States Health Care Systems	4
HMP 403	Introduction to Public Health	4
MATH 420	Finite Mathematics	4
Fall or Spring Sophomore Year		
HMP 501	Epidemiology and Community Medicine	4
Statistics: No AP Statistics. Any UNH statistics course satisfies the requirement		
Health Management and Policy Major Core Courses		
Fall Junior Year		
HMP 621	Pre-practicum Seminar	1
HMP 721	Managing Health Care Organizations	4
HMP 711	Health Systems Research I	4
HMP 740	Health Care Financial Management	4
HMP 746	Health Policy	4
Spring Junior Year		
HMP 511	Introduction to Health Information Systems	4
HMP 621	Pre-practicum Seminar	1

HMP 722	Health Care Management II ¹	4
HMP 735	Social Marketing	4
HMP 740	Health Care Financial Management	4
HMP 741	Health Care Financial Management II ¹	4

Prerequisite courses must be completed for all HMP courses. ¹

Public Health Minor

<https://chhs.unh.edu/hmp/public-health-minor-0>

Description

The department of Health Management and Policy offers a minor in public health. Public health deals with the health of populations and focuses on health promotion and disease prevention, as well as access to the medical system. The minor introduces students to many of the foundation areas of public health and provides basic exposure to key concepts and skills in the five core disciplines of public health, as articulated by the Council on Education for Public Health. The minor is open to any baccalaureate student outside of the Health Management and Policy major at UNH. Students interested in this field may decide to continue their education with the Master of Public Health (MPH), which is also offered through HMP.

Requirements

The public health minor includes the following courses:

Code	Title	Credits
Required Courses		
HMP 401	United States Health Care Systems	4
HMP 403	Introduction to Public Health	4
HMP 501	Epidemiology and Community Medicine	4
HMP 569	Human Behavior and the Public Health	4
Select one of the following: ¹		
HMP 505	Public Health: History and Practice	4
HMP 712	Health Analytics	4
HMP 715	Environmental Health	4
HMP 735	Social Marketing	4
HMP 746	Health Policy	4
HDFS 586	Families at Risk	4
KIN 702	Health Content and Youth Risk Behavior	4
OT 513	Stressed Out: The Science and Nature of Human Stress	4
RMP 490	Recreation and Leisure in Society	4
SW 525	Social Welfare Policy: History of Social and Economic Justice	4
SW 714	Drugs and Alcohol: Use, Misuse and Addiction	4

¹ All prerequisite courses must be met for any listed courses.

Human Development and Family Studies (HDFS)

The department's mission is to support the well-being of individuals and families through research, teaching, and service. Programs emphasize

both theoretical and practical knowledge about development across the lifespan, family dynamics, the social and economic conditions that support or impede families, teacher and parent education, and prevention and intervention programs that aid individuals and families. The department is committed to acknowledging and supporting diversity, to providing an educational environment that stresses excellence and innovation, and to developing exemplary programs to serve students, helping professionals, and the larger community.

The department offers three areas of study for undergraduate majors: child development, family support, and lifespan development. Candidates for degree requirements in any of the department options must satisfy all University Discovery Program requirements in addition to satisfying specific program requirements.

The department offers two types of optional year-long internships, which students can apply for during their junior year. The child development concentration offers students a preschool-third grade teacher preparation (P-3) internship. The family support and lifespan concentration offers the family internship, which is required for Certified Family Life Educators (CFLE).

<https://chhs.unh.edu/hdfs/>

Programs

- Human Development and Family Studies Major (B.S.) (p. 203)
- Adolescent and Youth Development Minor (p. 207)
- Child Life Minor (p. 207)
- Human Development and Family Studies Minor (p. 207)

Faculty

<https://chhs.unh.edu/directory/all>

Human Development and Family Studies Major (B.S.)

<https://chhs.unh.edu/hdfs/bs-human-development-and-family-studies>

Description

The mission of the Department of Human Development and Family Studies is to support the well-being of individuals and families through research, teaching, and service. The department is committed to acknowledging and supporting diversity, to providing an educational environment that stresses excellence and innovation, and to developing exemplary programs serving both students and the larger community.

The bachelor of science degree in human development and family studies has three concentrations. Each specialization has entry-level criteria and specific course requirements. All require close consultation with a faculty advisor.

- Child Development/Early Childhood Education Teaching Preparation
- Family Support/Provisional Certified Family Life Educator
- Lifespan Development

The department offers two optional year-long internships, which students can apply for during their junior year. The child development

concentration offers students an early childhood teacher preparation internship, and the family support and lifespan concentrations offer the family internship, which is required for Certified Family Life Educators (CFLE).

Requirements

Major Requirements

Core courses required of each human development and family studies concentrations are:

Code	Title	Credits
HDFS 525	Human Development	4
HDFS 545	Intimate Relationships and Families	4
Select a minimum of 36 Human Development and Family Studies credits, with 8 or more credits at the 700 level required		36
Select a senior capstone experience ¹		2
Select 20 credits of supporting coursework in consultation with adviser ²		20
Select an undergraduate statistics course		4
Total Credits		70

¹ Each human development and family studies concentration has a capstone experience incorporated into the program.

² Supporting courses must be 500 level or above.

Candidates for a degree must satisfy all of the University Discovery requirements in addition to satisfying the requirements of their human development and family studies concentration.

Concentrations:

Family Support/Provisional CFLE Concentration (p. 204)

Lifespan Development Concentration (p. 205)

Child Development Concentration (p. 205)

Family Support/Provisional CFLE Concentration

This concentration is intended for students interested in working with children, adolescents, adults, and families. Students in the family support concentration develop knowledge and skills to prepare them to provide individual and family support, direct services, and family life education and programs.

Family Internship

In the family internship (HDFS 782 Family Internship), students will apply knowledge gained from their academic studies in a supervised environment. The internship involves a commitment of sixteen hours per week for two semesters, plus a 2-credit seminar (HDFS 792 Family Internship Seminar), which meets every other week for a full academic year. Some internship sites may require additional applications or a criminal background check before placement is finalized. Arrangements for criminal background checks are the responsibility of the student and the requesting organization, not the Department of Human Development and Family Studies. Students apply for the internship during the spring semester of their junior year. Internship applicants must have completed 20 credits of departmental coursework prior to their senior year. Internship courses (HDFS 782 Family Internship/HDFS 792 Family

Internship Seminar) count toward the 20 credits required in supporting courses

Certified Family Life Educator

Students in the family support concentration who are accepted to the family internship are encouraged to apply for provisional status as a Certified Family Life Educator (CFLE). Family life educators work in a variety of settings including social services, health services, child care, family support, youth programs, parent education, junior and senior high schools, and universities and colleges. The CFLE certification provides an individual with expertise in a broad range of issues that constitute family life education and increases their professional credibility by validating their education and experience. The National Council on Family Relations (NCFR) has approved the Department of Human Development and Family Studies' family support program as meeting the standards and criteria required for CFLE certification. Students may apply to NCFR for provisional CFLE designation upon completion of required coursework. (See marked courses in the table below.) Upon meeting additional requirements listed on the NCFR website, students can apply for full certification after graduation.

Requirements for the Family Support Concentration

Code	Title	Credits
HDFS 525	Human Development ¹	4
HDFS 545	Intimate Relationships and Families ¹	4
HDFS 641	Parenting Across the Life Span	4
HDFS 746	Human Sexuality ¹	4
HDFS 757	Race, Class, Gender, and Families (capstone) ¹	4
HDFS 760	Family Programs and Policies ¹	4
HDFS 794	Families and the Law ¹	4
	or HDFS 776 Children, Adolescents and the Law	
Select one of the following statistics courses:		4
PSYC 402	Statistics in Psychology	
SOC 502	Statistics	
HHS #540	Statistics for Health and Human Service Professionals	
Select one course from each of the following groups:		8
Group I:		
HDFS 623	Developmental Perspectives on Infancy and Early Childhood	
HDFS 624	Developmental Perspectives on Adolescence and Early Adulthood	
HDFS 625	Adult Development and Aging	
Group II:		
HDFS 553	Personal and Family Finance for Family Life Professionals	
HDFS 586	Families at Risk	
Total Credits		40

¹ Required for provisional CFLE certification.

Supporting Courses

Supporting courses are intended to provide an individualized component of the HDFS curriculum. Because HDFS is interdisciplinary, this allows students to explore related areas that contribute to their academic and professional goals. Therefore, supporting courses may be any course that meets all the following criteria:

1. 500-level or above
2. Relates to the study of individuals or families
3. Eight HDFS credits may also be used as supporting courses as long they are not required for the student's concentration
4. Contributes to the student's goals and/or academic interests
5. Approved by an HDFS adviser

Courses that meet these criteria are non-required HDFS, psychology, sociology, social work, women's studies, education, and communication sciences and disorders.

Lifespan Development Concentration

This concentration is intended for students with a broad interest in working with families. The lifespan development concentration provides knowledge about specific life stages of individuals within the context of family systems with a focus on system dynamics, diverse family systems, gender, and cultural differences. This plan of study is designed particularly for those expecting to attend graduate school and those who desire a general background in lifespan development and family dynamics.

Requirements for the Lifespan Development Concentration

Code	Title	Credits
HDFS 525	Human Development	4
HDFS 545	Intimate Relationships and Families	4
HDFS 623	Developmental Perspectives on Infancy and Early Childhood	4
HDFS 624	Developmental Perspectives on Adolescence and Early Adulthood	4
HDFS 625	Adult Development and Aging	4
HDFS 641	Parenting Across the Life Span	4
HDFS 746	Human Sexuality	4
HDFS 757	Race, Class, Gender, and Families (Capstone)	4
HDFS 794	Families and the Law ¹	4
or HDFS 776	Children, Adolescents and the Law	
Select one of the following statistics courses:		4
PSYC 402	Statistics in Psychology	
SOC 502	Statistics	
HHS #540	Statistics for Health and Human Service Professionals	
Total Credits		40

¹ Required for provisional CFLE certification.

Supporting Courses—Lifespan Development

Supporting courses are intended to provide an individualized component of the HDFS curriculum. Because HDFS is interdisciplinary, this allows students to explore related areas that contribute to their academic and professional goals. Therefore, supporting courses may be any course that meets all the following criteria:

1. 500-level or above
2. Relates to the study of individuals or families
3. Eight HDFS credits may also be used as supporting courses as long they are not required for the student's concentration.

4. Contributes to the student's goals and/or academic interests
5. Approved by an HDFS adviser

Courses that meet these criteria are non-required HDFS, psychology, sociology, social work, women's studies, education, and communication sciences and disorders.

Child Development Concentration

This concentration is intended for students who have a broad interest in working with children ranging in age from birth to age eight. The child development concentration has four major foci: child development, teaching methodology and curriculum development, developmentally appropriate learning environments for young children, and home-school-community relations.

Requirements for the Child Development Concentration

Code	Title	Credits
HDFS 525	Human Development	4
HDFS 545	Intimate Relationships and Families	4
HDFS 623	Developmental Perspectives on Infancy and Early Childhood	4
HDFS 635	Teaching and Learning in Early Childhood Settings	4
HDFS 709	Child Development Internship	4
HDFS 734	Curriculum for Young Children	4
HDFS 743	Families, Schools, and Community	4
HDFS 771	Observation and Assessment of Young Children	4
Select one additional HDFS Course 500 or above		4
Select one of the following statistics courses:		4
PSYC 402	Statistics in Psychology	
SOC 502	Statistics	
HHS #540	Statistics for Health and Human Service Professionals	
Total Credits		40

Supporting Courses—Child Development

Supporting courses are intended to provide an individualized component of the HDFS curriculum. Because HDFS is interdisciplinary, this allows students to explore related areas that contribute to their academic and professional goals. Therefore, supporting courses may be any course that meets all the following criteria:

1. 500-level or above
2. Relates to the study of individuals or families
3. Eight (8) HDFS credits may also be used as supporting courses as long they are not required for the student's concentration.
4. Contributes to the student's goals and/or academic interests
5. Approved by an HDFS adviser

Courses that meet these criteria are non-required HDFS, psychology, sociology, social work, women's studies, education, and communication sciences and disorders.

Child Development: Prekindergarten—Third Grade Teacher Preparation Program

The Early Childhood Education P-3 Teacher Preparation (P-3) program prepares students for a career in teaching young children. Course work for this program is designed to maximize in-classroom mentorship and to provide a broad range of exposure across the prekindergarten to 3rd-

grade levels. This competitive program within the child development specialization in the Human Development and Family Studies Department is approved by the New Hampshire State Board of Education.

Requirements and instructions for the application process for this program are detailed below. Students who wish to be considered for the P-3 Program must indicate their interest at the time of application to the major so that an appropriate plan of study can be arranged.

Application Requirements

Juniors in the child development concentration who have maintained a minimum overall GPA of 3.2, and a departmental GPA of 3.2 are eligible to apply. Please note that this is a competitive program with limited enrollment. Those accepted into the program must maintain this level of achievement throughout the program. Students must be prepared to have their own transportation for off-campus placements as needed.

Applications are available through the department website <http://chhs.unh.edu/hdfs/undergraduate-forms> and are due by March 1st of each year. Completed applications will be reviewed by the child development faculty. Admission decisions will be made by mid-March. Provisional admission may be given to those who have not yet taken and passed the Praxis Core Academic Skills for Educators test (or who have not received approval from the New Hampshire Department of Education for a Praxis Core Waiver Request) at the time of application in mid-February. Final admission will be given pending the submission of a passing Praxis core test score (or approved waiver) by the last day of final exams at the end of the junior year.

A Note about Obtaining State Teacher Certification

For detailed information about the State of New Hampshire Department of Education Certification requirements, please visit <http://education.nh.gov/certification/documents/edtestinginfo.pdf>.

Although students may graduate from UNH with a bachelor's degree in Human Development and Family Studies, without the required set of passing test scores, and having completed the P-3 coursework along with all student teaching requirements, they will not be eligible to apply for the New Hampshire State Teaching Certification. This is a state of New Hampshire requirement; not a condition for graduation from UNH. In order to fulfill a teaching contract with a public school district, a prospective teacher must be certified by the state in which he/she is to be employed.

In addition to the Praxis core, all P-3 teacher program candidates are expected to take the Praxis II for Education of Young Children (5024) and the New Hampshire Foundations of Reading test prior to graduation.

Prekindergarten to 3rd grade (P-3) Internship Course Descriptions

P-3 Internship Course HDFS 785 Seminar for Student Teachers is a fall semester seminar-based course intended to prepare students, as teacher candidates, for the student teaching experience in the spring semester. This course emphasizes students' continued development as learners, researchers, and collaborators. Discussions and projects focus on the ways in which these three roles are developed within the classroom and school community. Students meet as a cohort in weekly/bi-weekly seminars on campus. Students should expect to spend a minimum of five hours per week in their assigned classroom (60+ hours). Other expectations for this course include, but not limited to, preparing a resume observing at other sites, attending professional conferences, starting a professional portfolio to document their achievement of

professional teaching standards, completing additional assignments and readings.

HDFS 786 Seminar for Student Teachers and HDFS 788 Student Teaching Young Children provide the student teaching experience in the spring semester of the senior year. Students should expect to spend a minimum of twenty-five hours per week (a minimum of 325+ hours total) in their assigned classrooms, gradually assuming increasing teaching responsibilities, culminating in the assumption of two to three lead-teaching weeks. Additional hours outside of actual classroom/program operation hours are expected for meeting and planning with cooperating teachers, preparing for teaching, and attending parent conferences and other school functions, as well as attending professional conferences. Seminars provide continued opportunity for reflection on students' development as teacher candidates, reflecting on classroom practices, identifying teaching strengths and weaknesses, and planning their first professional appointment as teachers of young learners. Students should be prepared to meet weekly after school hours, and to complete and present their professional portfolio to faculty and related professionals in the field.

Code	Title	Credits
Requirements for Child Development Concentration P-3 Program		
HDFS 525	Human Development	4
HDFS 545	Intimate Relationships and Families	4
HDFS 623	Developmental Perspectives on Infancy and Early Childhood	4
HDFS 635	Teaching and Learning in Early Childhood Settings (56 classroom hours)	4
HDFS 709	Child Development Internship (140 classroom hours)	4
HDFS 734	Curriculum for Young Children	4
HDFS 743	Families, Schools, and Community	4
HDFS 771	Observation and Assessment of Young Children	4
HDFS 785	Seminar for Student Teachers (- Fall Semester)	2
HDFS 786	Seminar for Student Teachers (- Spring Semester)	2
HDFS 788	Student Teaching Young Children (- Spring Semester)	8
Select one of the following statistics courses:		4
PSYC 402	Statistics in Psychology	
SOC 502	Statistics	
HHS #540	Statistics for Health and Human Service Professionals	
Additional Requirements for the P-3 Program		
EDUC 500	Exploring Teaching	4
MATH 601	Exploring Mathematics for Teachers I	4
EDUC 741	Exploring Mathematics with Young Children	4
EDUC 706	Introduction to Reading in the Elementary School	4
EDUC 760	Introduction to Young Children with Special Needs	4
or EDUC 751A	Educating Exceptional Learners: Elementary	
EDUC 703M	Teaching Elementary Social Studies	4
EDUC 703F	Teaching Elementary School Science	4
Total Credits		76

Adolescent and Youth Development Minor (HDFS)

<https://chhs.unh.edu/hdfs/adolescent-and-youth-development-minor-requirements>

Description

The departments of Human Development and Family Studies and Recreation Management and Policy offer an interdisciplinary minor designed to give students an opportunity to develop knowledge and skills regarding adolescence and youth development. The two required courses offer a foundation in theory, research, and practice, and students choose three additional courses in order to better prepare students to work with this age group.

Interested? Contact Dr. Erin Hiley Sharp (erin.sharp@unh.edu) in Human Development and Family Studies or Dr. Cindy Hartman (cindy.hartman@unh.edu) in Recreation Management and Policy.

Requirements

Required Courses for HDFS Majors - Adolescence and Youth Minor

Code	Title	Credits
HDFS 624	Developmental Perspectives on Adolescence and Early Adulthood	4
RMP 668	Youth Culture and Programs (Choose three courses from the following list:)	4
Choose three courses from the following list:		
EDUC 556	Mentoring Adolescents with Disabilities in the Transition to Work	2
EDUC 717	Growing up Male in America	4
HDFS 707	Practicum (Working with Adolescents)	1-6
HDFS 776	Children, Adolescents and the Law	4
KIN 565	Principles of Coaching	4
RMP 563	Recreation Management and Policy Practicum	2
RMP 560	Recreational Sport Management	4
RMP #730	Camp Administration and Leadership	4
SOC 525	Juvenile Crime and Delinquency	4
SW 705	Child and Adolescent Risks and Resiliency: Program, Policy and Practice	4

¹ Only one practicum may be applied toward the minor.

Other adolescent or youth-based courses as approved by minor coordinator. Some courses may require prerequisites or permission.

Child Life Minor (HDFS)

<https://chhs.unh.edu/human-development-family-studies/program/minor/child-life>

Description

The department of Human Development and Family Studies offers a minor in Child Life Curriculum. Students who are interested in the minor should contact their department advisor.

Requirements

Required Courses for Child Life Minor

Code	Title	Credits
HDFS 565	Introduction to Child Life ¹	4
or SW 565	Introduction to Child Life	
HDFS 623	Developmental Perspectives on Infancy and Early Childhood	4
Select three (12 credits) from the Following List:		8
HDFS 624	Developmental Perspectives on Adolescence and Early Adulthood	4
HDFS 635	Teaching and Learning in Early Childhood Settings	4
HDFS 641	Parenting Across the Life Span	4
HDFS 697	Special Topics (Child Life Design and Programing)	1-6
HDFS 707	Practicum ²	1-6
HDFS 709	Child Development Internship	4
HDFS 734	Curriculum for Young Children	4
NURS 535	Death and Dying	4
THDA 583	Introduction to Puppetry	4
Total Credits		46-56

¹ Offered every other spring.

² Internship under the supervision of a CCLS. Contingent on approval from instructor and securing an internship site.

Human Development and Family Studies Minor

<https://chhs.unh.edu/hdfs/minor-human-development-and-family-studies>

Description

The department offers a minor in human development and family studies to interested students in related majors.

Requirements

Code	Title	Credits
HDFS 525	Human Development	4
HDFS 545	Intimate Relationships and Families	4
Select three additional courses chosen in consultation with a departmental adviser		12
Total Credits		20

Individual course grades must be C or above, and the overall grade-point average for the 20 human development and family studies credits must be at least 2.0.

Interdisciplinary Health

- Interdisciplinary Health Minor (p. 208)

Interdisciplinary Health Minor

https://chhs.unh.edu/kin_pe/interdisciplinary-health-minor

Description

The central focus of the Interdisciplinary Health minor is to prepare future educators for employment in schools, community health centers, and/or corporate settings.

Requirements

Interdisciplinary Health Minor Requirements

Code	Title	Credits
NUTR 400	Nutrition in Health and Well Being	4
KIN 648	Current Issues in Teaching Health	4
KIN 702/802 or NUTR 610	Health Content and Youth Risk Behavior Nutrition Education and Counseling	4
KIN 712/812	Health Education Practicum	4
HDFS 746	Human Sexuality	4
Total Credits		20

Kinesiology (KIN)

The mission of the Department of Kinesiology is to generate, transmit, and apply knowledge about the role of physical activity (including exercise, movement, outdoor adventure experiences, and sport) in the advancement of health in society. The department has several teaching, research, and service functions that support this mission, including the preparation of professionals in the five majors described below. While programs vary in emphasis, each curriculum offers students fundamental knowledge in the following areas: the biological, psychological, and sociocultural foundations and consequences of physical activity; the pedagogical and rehabilitative aspects of physical activity; and the management and marketing of delivery systems in the field. Each program makes extensive use of field experiences and internships that blend theory with practice.

The department offers five areas of study for majors: athletic training, exercise science, health and physical education, outdoor education, and sport studies. Candidates for degree requirements in any of the department majors must satisfy all University Discovery Program requirements in addition to satisfying specific program requirements.

<https://chhs.unh.edu/kin>

Programs

- Applied Human Anatomy & Physiology (p. 193)
- Athletic Training (p. 194)
- Coaching (p. 195)
- Exercise Science (p. 198)
- Health and Physical Education (p. 199)

- Interdisciplinary Health (p. 208)
- Kinesiology (p. 208)
- Outdoor Adventure Leadership (p. 213)
- Outdoor Education (p. 214)
- Sport Studies (p. 220)

Faculty

<https://chhs.unh.edu/directory/all>

Kinesiology Minor

<https://chhs.unh.edu/kinesiology/program/minor/kinesiology>

Description

The Department of Kinesiology offers an interdisciplinary curriculum for nonmajors, which is designed to provide students with the basic knowledge of human movement and sport sciences. The minor consists of courses offered by several options within the department.

Requirements

Kinesiology Minor Requirements

1. Complete a minimum of 20 credits approved by the department minor advisor. All must be KIN courses.
2. Must have a C- (or better) in all graded courses. Pass/Fail option may NOT be used. Courses designated Credit/Fail MAY be used.
3. No more than 8 credits may satisfy BOTH major and minor requirements.
4. No more than 6 of the 20 credits may be in activity or coaching courses.

Please note: The designation of the completed minor will be "Kinesiology" which means that you *cannot* minor in any of the majors (i.e. athletic training, exercise science, health and physical education, outdoor education, or sport studies). *However*, you may create an emphasis by carefully selecting appropriate courses so that anyone looking at your final UNH transcript will be able to see the emphasis.

Nursing (NURS)

The undergraduate nursing program is nationally accredited by:

The Commission on Collegiate Nursing Education

The Department of Nursing reflects the mission and goals of the University and focuses on the uniqueness of each individual. The department's mission is to enhance the health of individuals, families, groups, and communities. The philosophy expresses the beliefs of the faculty regarding person, environment, health, nursing, and education. The curricular goal is to guide nursing students in developing knowledge and skills essential to the present and future practice of nursing. Graduates are prepared to provide care to individuals and groups, help people identify and meet their health care needs, be effective colleagues on the health care team and shape the future of health care.

<https://chhs.unh.edu/nursing>

Programs

- Nursing Major (B.S.) (p. 209)

Faculty

<https://chhs.unh.edu/directory/all>

Nursing Major (B.S.)

<https://chhs.unh.edu/nursing/nursing-bs>

Description

The curricula are divided into biological, social sciences, and humanities as a foundation for courses in the major, and nursing courses, which emphasize relationship-based care, reflective thinking, clinical decision making, and the application of evidence-based guidelines to develop quality and safe clinical skills. Clinical experiences are offered in area health facilities, community health agencies, and a state-of-the-art simulation laboratory. The senior year culminates in a capstone practicum, NURS 721C Integrating Professional Nursing Practice Clinical, in which students apply curricular concepts in a precepted clinical experience. Candidates for the nursing degree must satisfy all of the University Discovery Program requirements in addition to satisfying major requirements.

The nursing program faculty believe learning is a creative process wherein students are active participants in their education, growth, and development as professional nurses. Faculty members are facilitators and mentors to students within a supportive, scholarly environment.

Honors-in-major courses are offered to interested nursing students who have achieved a minimum grade-point average of 3.75 in NURS courses and cumulative GPA of 3.4 at the end of the sophomore year in nursing. In addition to NURS 641 Translating Research for Practice, (must be taken at the honors level) students must successfully complete 8 additional credits of honors coursework drawn from the following courses:

Code	Title	Credits
Select two courses from the following:		
NURS 612	Care of the Adult with Acute Illness II	
NURS 627	Clinical Judgment in Nursing	
NURS 705	Contemporary Leadership within Health Care Systems	

Honors-in-major students must successfully complete:

Code	Title	Credits
NURS 794	Special Topics (spring semester junior year)	1
NURS 797	Honors Thesis (fall semester senior year)	1
NURS 797	Honors Thesis (spring semester senior year)	4
Total Credits		6

These self-directed learning experiences, related to the student's interests, are designed to help students acquire advanced knowledge and skills to undertake inquiry or scholarly projects. Students must submit a

project description to a faculty adviser at the beginning of the senior year. Students present the results of this study at the Nursing Inquiry Day.

A grade of C or better in high school chemistry is required as well as biology or physics. The following prerequisite courses must be completed successfully prior to enrollment in NURS 500 Introduction to Professional Nursing:

Code	Title	Credits
ENGL 401	First-Year Writing	4
BMS 507 & BMS 508	Human Anatomy and Physiology I and Human Anatomy and Physiology II	8
PSYC 401	Introduction to Psychology	4
BMS 501	Microbes in Human Disease ¹	4
Total Credits		20

¹ Must be taken prior to or concurrent with NURS 500 Introduction to Professional Nursing

A course in statistics must be completed prior to, or taken concurrent with, NURS 641 Translating Research for Practice.

Prerequisite courses require grades of C or better and only one prerequisite course may be repeated one time in order to progress. Most of the prerequisite courses also meet Discovery requirements. Major courses require a minimum grade of C. Nursing courses may not be repeated. A cumulative grade-point average of 2.5 must be maintained throughout the program.

Students are responsible for their own transportation to clinical agencies, uniforms, professional equipment, health insurance coverage, yearly criminal background checks, drug and alcohol screening, fingerprinting, yearly health assessment, and select immunizations and titers. Students must maintain certification in cardiopulmonary resuscitation at the Healthcare Provider level. All clinical documents must be received by July 1st before the sophomore year, except flu vaccine, which is due by October 15th, and remain up to date until graduation. Clinical documents cannot expire during the academic year; documents that must be submitted yearly must be dated between May 1 and June 30. Students will be assessed a late fee if clinical documents are not received by the due date. Students will be dropped from nursing courses if documentation is not received by the first day of class. Additional costs associated with the program include, but are not limited to, simulation laboratory fees, fees associated with program requirements, and attendance at professional meetings.

Requirements

Major Requirements

Code	Title	Credits
NURS 500	Introduction to Professional Nursing	2
NURS 504	Disease and Drugs I	4
NURS 505	Diseases and Drugs II	4
NURS 506	Human Development, Interaction and Learning Across the Lifespan	4
NURS 516	Health Assessment and Nursing Fundamentals	4
NURS 516C	Health Assessment and Nursing Fundamentals Clinical	2
NURS 517C	Clinical Integration	2

NURS 601	Function and Wellbeing of Older Adults	2
NURS 611	Care of the Adult with Acute Illness I	4
NURS 611C	Care of the Adult with Acute Illness I Clinical	2
NURS 612	Care of the Adult with Acute Illness II	4
NURS 612C	Care of the Adult with Acute Illness II Clinical	2
NURS 616	Living with Mental Illness	2
NURS 616C	Living with Mental Illness Clinical	2
NURS 621	Maternal and Newborn Nursing	2
NURS 621C	Maternal Newborn Nurs Clin	2
NURS 627	Clinical Judgment in Nursing	4
NURS 641	Translating Research for Practice	4
NURS 702	Child Health Nursing	2
NURS 702C	Child Health in the Community Clinical	2
NURS 704	Public Health Nursing	4
NURS 704P	Public Health Nursing Project	2
NURS 705	Contemporary Leadership within Health Care Systems	4
NURS 711	Clinical Judgment in Complex Illness	2
NURS 721	Integrating Professional Nursing Practice	2
NURS 721C	Integrating Professional Nursing Practice Clinical	6

NURS 517C	Clinical Integration (plus lab)	2
NURS 601	Function and Wellbeing of Older Adults	2
Credits		16

Third Year

Fall

NURS 611	Care of the Adult with Acute Illness I (plus lab)	4
NURS 611C	Care of the Adult with Acute Illness I Clinical	2
NURS 616	Living with Mental Illness ²	2
NURS 616C	Living with Mental Illness Clinical	2
NURS 641	Translating Research for Practice	4
Discovery/Elective		4

Credits		18
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Spring

NURS 612	Care of the Adult with Acute Illness II (plus lab)	4
NURS 612C	Care of the Adult with Acute Illness II Clinical	2
NURS 621	Maternal and Newborn Nursing (plus lab) ²	2
NURS 621C	Maternal Newborn Nurs Clin	2
NURS 627	Clinical Judgment in Nursing (writing intensive)	4
Discovery/Elective		4

Credits		18
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Fourth Year

Fall

NURS 702	Child Health Nursing	2
NURS 702C	Child Health in the Community Clinical	2
NURS 704	Public Health Nursing	4
NURS 704P	Public Health Nursing Project	2
NURS 711	Clinical Judgment in Complex Illness (plus lab)	2
Discovery/Elective		4

Credits		16
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Spring

NURS 705	Contemporary Leadership within Health Care Systems	4
NURS 721	Integrating Professional Nursing Practice	2
NURS 721C	Integrating Professional Nursing Practice Clinical	6
Credits		12

Total Credits		128
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¹ HHS #540 Statistics for Health and Human Service Professionals, PSYC 402 Statistics in Psychology, SOC 502 Statistics, MATH 439 Statistical Discovery for Everyone

² May be taken fall or spring semester.

Degree Plan

Degree Plan

Course	Title	Credits
First Year		
Fall		
BMS 507	Human Anatomy and Physiology I	4
ENGL 401	First-Year Writing	4
Discovery/Inquiry		8
Credits		16
Spring		
BMS 508	Human Anatomy and Physiology II	4
PSYC 401	Introduction to Psychology	4
Discovery/Inquiry		8
Credits		16
Second Year		
Fall		
BMS 501	Microbes in Human Disease	4
NURS 500	Introduction to Professional Nursing	2
NURS 504	Disease and Drugs I	4
NURS 516	Health Assessment and Nursing Fundamentals (plus lab)	4
NURS 516C	Health Assessment and Nursing Fundamentals Clinical	2
Credits		16
Spring		
Statistics ¹		4
NURS 505	Diseases and Drugs II	4
NURS 506	Human Development, Interaction and Learning Across the Lifespan	4

Occupational Therapy (OT)

Occupational therapy enables individuals of all ages to engage in everyday activities across the life span in the areas of work, self-care, home management, and leisure. The main goal of occupational therapy is to support people as they gain or regain skills and abilities to participate

effectively within their natural context. This process often involves adapting tasks or an environment to optimize a person's ability to fulfill his/her social roles and engage in those activities that are meaningful and support health and wellbeing. A program of studies in occupational therapy includes a foundation in the liberal arts; biological, behavioral, and health sciences; and discipline-specific studies in occupational science and occupational therapy.

The occupational therapy program is accredited by the Accreditation Council for Occupational Therapy Education (ACOTE).

Graduates from an accredited program are eligible to sit for the certification examination for the occupational therapist administered by the National Board for Certification in Occupational Therapy, Inc. (NBCOT). After successful completion of this exam, the individual will be a registered occupational therapist (OTR). Most states require licensure in order to practice; however, state licenses are usually based on the results of the NBCOT certification examination.

<https://chhs.unh.edu/ot>

Programs

- Occupational Therapy Major (B.S.) (p. 211)
- Disabilities Minor (p. 212)

Faculty

<https://chhs.unh.edu/directory/all>

Occupational Therapy Major (B.S.)

<https://chhs.unh.edu/ot/undergraduate-program>

Description

Combined Bachelor of Science/Master of Science Program

The University of New Hampshire Department of Occupational Therapy offers a combined bachelor's degree/master's degree program. The Professional Master's Degree Program is accredited by the Accreditation Council for Occupational Therapy Education (mailing address: ACOTE, C/o Accreditation Department, American Occupational Therapy Association (AOTA), 4720 Montgomery Lane, Suite 200, Bethesda, MD 20814-3449; telephone: 301-652-6611 X2914; website: www.acoteonline.org (<http://www.acoteonline.org>). Students must complete the professional master's degree in occupational therapy to be eligible to take the National Board Certification of Occupational Therapists examination, which is required to practice as an occupational therapist. Students may enter as first-year students or transfer within UNH into the BS/MS program during the sophomore year, space permitting in the program. Students interested in transferring into this program should contact the Department of Occupational Therapy for information about transfer requirements and application deadlines.

Requirements

Students begin the BS/MS curriculum with preprofessional courses, which include courses in biological and social sciences as well as occupational therapy. In addition to meeting the University Discovery Program requirements, students take the following courses during the first three years of the program.

Core Curriculum

Code	Title	Credits
BMS 507	Human Anatomy and Physiology I	4
BMS 508	Human Anatomy and Physiology II	4
OT 500	Behavior and Development of Children	4
OT 501	Developmental Tasks of Adulthood	4
OT 510	Exploring Occupational Therapy and Occupation	4
OT 610	Occupation, Identity, Disability	4
KIN 652	Clinical Kinesiology	4
KIN 706 & KIN 707	Neurology and Neurology Lab	6
PSYC 401	Introduction to Psychology	4
Select one statistics course from the following:		4
HHS #540	Statistics for Health and Human Service Professionals	
PSYC 402	Statistics in Psychology	
SOC 502	Statistics	
Select one health or social policy course from the following:		4
HDFS 760	Family Programs and Policies	
HDFS 776	Children, Adolescents and the Law	
HDFS 794	Families and the Law	
HMP 401	United States Health Care Systems	
HMP 403	Introduction to Public Health	
HMP 505	Public Health: History and Practice	
HMP 744		
HMP 746	Health Policy	
POLT 500	American Public Policy	
RMP 663	Recreation and Event Management	
SW 525	Social Welfare Policy: History of Social and Economic Justice	
SW 705	Child and Adolescent Risks and Resiliency: Program, Policy and Practice	
Experiential learning/occupation-based course ¹		3-4
Total Credits		49-50

(Details on satisfying these requirements are provided by the student's academic adviser and are outlined in the OT Department Policy and Procedure Manual. All students receive a copy of the manual in their first year, and it is also available on the OT student organization site online.)

Volunteer or work experience in a health and human service organization is recommended, although not required.

¹ Students should work with their advisor to identify an experiential learning/occupation-based learning course. This is a course that requires cognitive learning that is translated into a motor skill. Many courses can meet this requirement.

Professional Curriculum

Students in the BS/MS curriculum with a GPA of 3.0 or higher transition into the professional program during their undergraduate education. The following courses are required.

Code	Title	Credits
OT 710	OT Practice and Professional Roles	4
OT 745	Administration and Management for Occupational Therapy Practice	4
OT 752 & 752L	Human Movement and Environmental Effects on Everyday Occupations and Human Movement Lab	5
OT 744	Fieldwork and Professionalism - Level 1	1
OT 753	Mind Body Systems: Neurologically-based Function and Dysfunction—Pediatric Conditions	4
OT 757	Mind Body Systems: Neurologically-based Function and Dysfunction—Adult Conditions	4
OT 760 & 760L	Psychosocial Evaluation and Intervention and Psychosocial Evaluation and Intervention Lab	5
OT 762 & 762L & 762R	Occupational Therapy Evaluation and Intervention for Children and Occupational Therapy Evaluation and Intervention for Children Lab and Occupational Therapy Evaluation and Intervention for Children Recitation	4
OT 763 & 763L & 763R	Occupational Therapy Evaluation and Intervention for Adults and Occupational Therapy Evaluation and Intervention for Adults Lab and Occupational Therapy Evaluation and Intervention for Adults Recitation	5
OT 785	Research Methods and Application to Practice	4
OT 792	Level I Fieldwork	1
Select one of the following:		5
OT 730 & 730L	Assistive Technology for Enhancing Occupational Performance and Assistive Technology for Enhancing Occupational Performance Lab	
OT 771 & 771L	Enabling Participation in Community Groups and Enabling Participation in Community Groups Lab	
Capstone:		
OT 741	Human Occupation ¹	4
Total Credits		50

¹ This course also fulfills the writing intensive in major course.

At the end of the senior year, students are awarded a bachelor of science degree in occupational science. Students then apply to the Graduate School as advanced-standing students in the professional master's program. An overall minimum grade point of 3.0 is required for admission to the master's degree program, and students must attain a minimum grade of B- in all OT classes, and meet professional behavior expectations. Students must have no more than 8 credits of B- coursework in OT 700-level courses. Please refer to the Graduate Catalog for additional information about the master's program and the

final 1.5 years (three semesters) of the professional occupational therapy curriculum including fieldwork requirements.

Students entering as first-year undergraduate students have 5.5 academic years (11 semesters) to complete the professional curriculum, including level II fieldwork. They then will be eligible to sit for the certification examination administered by the National Board of Certification of Occupational Therapists (NBCOT). A felony conviction may affect a graduate's ability to complete fieldwork, sit for the NBCOT certification examination, and/or obtain state licensure.

Students are responsible for transportation to off-campus practicum and fieldwork locations.

Curriculum review and revision is undertaken annually. The department works closely with students during academic advising sessions and shares information about any policy and requirement changes during registration periods as well as throughout the academic year. Students also are expected to take an active role in verifying expectations and should check with their department advisers each September for updated policies and requirements. Program requirements and policies for retention in the major are in the OT Department Policy and Procedure Manual, which is available online.

Disabilities Minor

<https://chhs.unh.edu/ot/interdisciplinary-disabilities-studies-minor>

Description

About the Program

The purpose of the interdisciplinary disability minor is to prepare undergraduate students to apply their unique disciplinary skills to work with and support individuals with disabilities and their families to become fully engaged members of their communities, and to improve their quality of life. The minor also helps to prepare students to work in an interdisciplinary service delivery environment. A secondary purpose is to create a core group of interdisciplinary faculty to work collaboratively with students on issues related to disability. The 20-credit hours curriculum consists of five to eight courses including a writing-intensive course from the student's major. The minor offers students a unique opportunity to explore disability from several vantage points, including an overview of the disability experience, societal barriers individuals face, service delivery systems, disciplinary perspectives, current research, and relevant legislation.

Requirements

Code	Title	Credits
Required Course		
One of the following courses is required from the student's major or any other disability related intensive course outside of the major with permission:		4
EDUC 750	Introduction to Exceptionality	
OT 444	Living and Doing with Technology	
OT 610	Occupation, Identity, Disability	
RMP #444	Building a Culture of Peace	

Electives

Select four to seven elective courses of the following: 16

EDUC 556	Mentoring Adolescents with Disabilities in the Transition to Work
EDUC 750	Introduction to Exceptionality
EDUC 754	Contemporary Issues in Developmental Disabilities
EDUC 760	Introduction to Young Children with Special Needs
INTR 438	A Socio-cultural Perspective on the Deaf Community
KIN 781	Inclusion in Physical Education
NUTR 740	Nutrition for Children with Special Needs
OT 444	Living and Doing with Technology
OT 610	Occupation, Identity, Disability
OT 685	Psychosocial Disorders and Everyday Life
OT 722	Introduction to Assistive Technology
OT 724	Assistive Technology and Physical Disabilities
OT 726	Assistive Technology and Sensory, Communicative, and Cognitive Disabilities
RMP #444	Building a Culture of Peace
RMP 501	Recreation Services for Individuals with Disabilities
SW 712	Understanding Developmental Disabilities
SW, OT, EDUC, KIN, NUTR, RMP	Independent Study with a disability focus ¹
COMM 405	Introduction to the Deaf World
COMM 475	Have you Heard: Fundamentals of Hearing Loss
Total Credits	20

¹ The purpose of the independent study is to explore a topic that provides a detailed focus on an important issue related to individuals with disabilities. A student may also choose to engage in a small-scale research project to investigate an issue that affects individuals with disabilities. Each project will be negotiated with the student's departmental faculty adviser and the coordinator of the minor program.

Please note: Additional elective courses may be added in the future as deemed appropriate and approved by disabilities studies coordinator.

Also note: Students must achieve C- or better and a 2.00 grade-point average in courses that the minor department approves. Courses taken on a pass/fail basis may not be used for a minor. No more than 8 credits used to satisfy major requirements may be used for a minor. There is no limit on the number of overlapping credits allowed between minors. Students should declare the intent to earn a minor as early as possible and no later than the end of the junior year. During the final term, an application should be made to the dean to have the minor shown on the academic record.

Outdoor Adventure Leadership

- Outdoor Adventure Leadership Minor (p. 213)

Outdoor Adventure Leadership Minor

https://chhs.unh.edu/kin_oe/outdoor-education-minor2nd-major-options

Description

Outdoor Adventure Leadership Minor:

The purpose of the minor in outdoor adventure leadership is to complement major courses of study that prepare students for professional fields that work in outdoor environments across human service, natural resources, educational, or recreation sectors. It will provide an orientation to the technical, risk management, and leadership skills required for personal preparedness and program organization involving backcountry and facilities-based adventure activities. In addition, the minor seeks to improve the standards for fieldwork in professional fields that use the outdoors by offering high-quality training that employs current risk management principles that govern engagement in outdoor activities.

Program Objectives:

- Provide the highest quality professional preparation in outdoor technical skills
- Surpass national standards so students can pursue certifications if desired
- Cultivate life-long learners who are motivated to seek continuous improvement
- Improve quality and help to reduce risks across professional fields that depend on a common skillset
- Expand participation in outdoor activities both on campus and in public and private sectors
- Enhance the experiences of future participants by emphasizing best practices that validate a range of life experiences, identities, and goals

Requirements

Minor Requirements

Code	Title	Credits
Select one course from the following:		4
RMP 511	Issues of Wilderness and Nature in American Society	
KIN/RMP 515	History of Outdoor Pursuits in North America	
KIN 550	Outdoor Education Philosophy and Methods	
Required courses:		
KIN 444C	Amped Up: Social and Psychological Perspectives on Adventure ¹	4
or KIN 551	Adventure Programming: Backcountry Based Experiences	
KIN 540	Top Rope Rock Climbing	4
KIN 541	Management of Challenge Courses	4
KIN 552	Adventure Programming: Water Based Experiences	3
Select one course from the following:		2-4
KIN 539	Artificial Climbing Wall Management	
KIN 542	Sea Kayaking	
KIN 543	Winter Adventure Programming	
KIN 545	High Angle Rescue	
KIN 546	White Water Canoeing	
KIN 547	Lead Rock Climbing	
KIN 548	Winter Expedition Programming	

KIN 549	Wilderness Navigation	
KIN 681	Theory of Adventure Education	
KIN 798	Special Topics	
Total Credits		21-23

Students must earn grades of C or better in all courses. No more than 8.0 credits used by the student to satisfy major requirements may be used for the minor. At the beginning of his/her final semester, students must complete and submit a Certification of Completion of Minor form to their college dean's office.

¹ Prerequisite: Participation in one of UNH's pre-orientation programs (CONNECT, PAWS, PROVES, Marine Immersion, etc.) is a recommended experience when taking KIN 444C in the fall semester.

Outdoor Education

Programs

- Outdoor Education Major (B.S.) (p. 214)

Outdoor Education Major (B.S.)

https://chhs.unh.edu/kin_oe

Description

The outdoor education major is an accredited, award-winning, internationally recognized program preparing students for careers in outdoor education, adventure programming, wilderness therapy, and other educational/organizational settings. In addition to providing rich course content, this interdisciplinary program gives ample opportunity for practical application and field experience in the New Hampshire seacoast and White Mountains areas. Students must earn a grade of C (2.0) or better in every major course. In addition, they must complete 50 days of documented leadership experience prior to beginning a required internship. Interested students should contact the undergraduate coordinator, Nate Fitch, nate.fitch@unh.edu.

Students in outdoor education complete KIN 650B Internship in Outdoor Education as the capstone course for the major. This course integrates the knowledge and skills learned in all previous major courses and experiences into practical applications students will use as they prepare to enter the profession. Students complete their internships at regional and national organizations upon completion of all other courses and prerequisites.

Requirements

Major Requirements

Code	Title	Credits
KIN 444C	Amped Up: Social and Psychological Perspectives on Adventure ¹	4
or KIN 551	Adventure Programming: Backcountry Based Experiences	
KIN 540	Top Rope Rock Climbing	4
KIN 541	Management of Challenge Courses	4
KIN 543	Winter Adventure Programming	2-4

or KIN 548	Winter Expedition Programming	
KIN 550	Outdoor Education Philosophy and Methods	4
KIN 552	Adventure Programming: Water Based Experiences	3
KIN 681	Theory of Adventure Education	4
KIN 682	Experiential Teaching and Leadership	4
KIN 686	Wilderness Emergency Medical Care	4
KIN 687	Career and Professional Development Practicum	4
KIN 786	Organization and Administration of Outdoor Education Programs	4
KIN 650B	Internship in Outdoor Education ²	2-8
Select one of the following:		4
ENGL 501	Introduction to Creative Nonfiction	
ENGL 502	Professional and Technical Writing	
ENGL 503	Persuasive Writing	
Elective Courses		
Select at least one of the following:		2-4
KIN 539	Artificial Climbing Wall Management	
KIN 542	Sea Kayaking	
KIN 545	High Angle Rescue	
KIN 546	White Water Canoeing	
KIN 547	Lead Rock Climbing	
KIN 549	Wilderness Navigation	
KIN 693	Teaching Assistantship	
KIN 782	Therapeutic Applications of Adventure Programming	
KIN 798	Special Topics	
Cognate Requirement		
Select 16 credits - related core of courses or minor ³		16
Total Credits		65-75

¹ Participation in one of UNH's pre-orientation programs (CONNECT, PAWS, PROVES, Marine Immersion, etc.) is a recommended experience when taking KIN 444C in the fall semester.

² Proof of 50 days of leadership experience is required prior to taking this course.

³ Core of courses emphasizing the particular area or population in outdoor education of interest to student, e.g., business, education, psychology, social work (selected with the assistance of an adviser).

Degree Plan

Suggested Course Sequence

Course	Title	Credits
First Year		
Fall		
ENGL 401	First-Year Writing	4
KIN 444C or KIN 551	Amped Up: Social and Psychological Perspectives on Adventure or Adventure Programming: Backcountry Based Experiences	4
KIN 540	Top Rope Rock Climbing (Fall only)	4
KIN 515	History of Outdoor Pursuits in North America	4
Credits		16

Spring		
KIN 552	Adventure Programming: Water Based Experiences	3
Outdoor Education Elective ¹		4
Credits		7
Second Year		
Fall		
KIN 541	Management of Challenge Courses	4
KIN 550	Outdoor Education Philosophy and Methods	4
KIN 686	Wilderness Emergency Medical Care	4
Outdoor Education Elective ¹		4
Credits		16
Spring		
Choose One:		2-4
KIN 543	Winter Adventure Programming (2 CR, Spring)	
KIN 548	Winter Expedition Programming (4 CR, Spring)	
Outdoor Education Elective ¹		2-4
Credits		4-8
Third Year		
Fall		
KIN 682	Experiential Teaching and Leadership	4
Minor or Outdoor Education Elective ¹		4
Choose One:		4
ENGL 501	Introduction to Creative Nonfiction	
ENGL 502	Professional and Technical Writing	
ENGL 503	Persuasive Writing	
Credits		12
Spring		
KIN 681	Theory of Adventure Education	4
KIN 687	Career and Professional Development Practicum	4
Minor or Outdoor Education Elective ¹		4-8
Credits		12-16
Fourth Year		
Fall		
KIN 682	Experiential Teaching and Leadership	4
Minor or Outdoor Education Elective ¹		4-8
Credits		8-12
Spring		
KIN 786	Organization and Administration of Outdoor Education Programs (Spring only)	4
Minor or Outdoor Education Elective ¹		4-8
Credits		8-12
Total Credits		83-99

- ¹ Outdoor Education Electives:
 KIN 539 Artificial Climbing Wall Management (2 CR)
 KIN 542 Sea Kayaking (2 CR)
 KIN 545 High Angle Rescue (2 CR)
 KIN 546 White Water Canoeing (2 CR)
 KIN 547 Lead Rock Climbing (2 CR)
 KIN 545 High Angle Rescue (2 CR)
 KIN 782 Therapeutic Applications of Adventure Programming (4 CR)
 KIN 549 Wilderness Navigation (4 CR)
 KIN 693 Teaching Assistantship (2 CR)
 KIN 798 Special Topics (varied Credit)

³ **Internship**

The final requirement for a degree in Outdoor Education is the completion of KIN 650B Internship in Outdoor Education, which is an internship that is a minimum of 400 hours in duration. Students will typically complete this requirement after their final semester. We encourage students to seek paid professional positions to fulfill this final requirement. Often, students' internships lead directly to full-time jobs with their host organizations.

Recreation Management and Policy (RMP)

As the fabric of life in contemporary society grows in complexity, people are increasingly turning to leisure and recreation services to find meaning, renewal, and enrichment. Recreation services can improve public health and wellness, promote sustainable environments, develop a sense of community, and enhance the quality of life of all citizens. Recreation professionals work in diverse settings, including human services, health care, natural recreation resource areas such as parks, and commercial recreation businesses. Population and economic projections suggest that recreation service industries will continue to expand and thereby continue to provide numerous professional career opportunities.

The Department of Recreation Management and Policy maintains two national accreditations. Our core is nationally accredited by the Council on Accreditation of Parks, Recreation, Tourism, and Related Professions (COAPRT). Further, our therapeutic recreation option is accredited by the Committee on Accreditation of Recreational Therapy Education (CARTE). CARTE is an approved accreditation program under the Commission on Accreditation of Allied Health Education Programs (CAAHEP). The department's curriculum supports a broad-based education and an opportunity to acquire specialized professional knowledge and skills. Graduates are employed in a broad range of settings, such as community recreation agencies, resorts, conference centers, youth services agencies, hospitals, rehabilitation centers, and long-term care facilities.

Curriculum Structure

Students entering the major may choose either an option in program and event management, which includes the professional core and required courses related to program and event management, or the therapeutic recreation option, which includes the professional core and required courses in therapeutic recreation. Candidates for a degree in recreation management and policy must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major option.

Study Abroad Opportunities

The University of New Hampshire approved study abroad program list is available on the Center for International Education website (<https://www.unh.edu/global/education-abroad>). This site includes a wide variety of destinations, coursework, and activities to meet the diverse needs of UNH students. Students who wish to attend a program not included in the approved list must complete a UNH One-time Study Abroad Approval Petition (https://www.unh.edu/global/sites/default/files/cie/media/individual_study_abroad_info_sheet_.pdf). Interested students in the major should consult with their recreation management and policy academic adviser about sites, timing, and coursework that may be most compatible with degree requirements.

Professional Internship

A supervised internship (RMP 764 Internship) is required of all majors and serves as their **major capstone requirement**. The internship is designed to create a bridge between theory and practical application. Students, working with their advisers and the internship coordinator, select an appropriate setting based on their professional and career interests. They must register for a 10-16 credit full-time internship that ranges from 10 to 16 weeks and is under the supervision of a qualified professional. Specific requirements are identified in the *Internship Manual* available from the Department of Recreation Management and Policy.

Criteria for Admission and Retention

Recreation Management and Policy Admission: The recreation management and policy major has two options, therapeutic recreation and program and event management. **Internal transfer students** should obtain major and option materials from the Department of Recreation Management and Policy 108 Hewitt Hall or online (TR Option (http://chhs.unh.edu/sites/chhs.unh.edu/files/departments/recreation_management_and_policy/Curriculum/rmp_tr_packet.pdf), PEM Option (http://chhs.unh.edu/sites/chhs.unh.edu/files/departments/recreation_management_and_policy/Curriculum/rmp_pem_packet.pdf)). After reading over the materials students should apply online (https://unh.az1.qualtrics.com/jfe/form/SV_3xwh78dQKCqqdwx).

Application Deadlines

Program and event management: This option prepares students for supervisory or middle management positions and emphasizes planning, leadership, and administrative concepts in settings such as youth sport organizations, recreation resource management, business and entrepreneurial recreation, municipal recreation, campus recreation, residential communities, festivals and events planning, employee services recreation, recreational sports agencies, youth service agencies, and resorts. Students must maintain a 2.50 semester GPA once admitted into the RMP/PEM Option. Admission decisions are made after the student completes the online application process and has a meeting with the PEM option coordinator. If you have questions about the program and event management option, please contact S (neh34@unh.edu)ean McLaughlin (sean.mclaughlin@unh.edu).

To apply, please complete the online transfer application form (https://unh.az1.qualtrics.com/jfe/form/SV_3xwh78dQKCqqdwx).

PEM transfer applications are accepted throughout the year and decisions are made on a rolling admission basis.

Therapeutic recreation: Internal transfer applications are accepted online throughout the year and admissions decisions are made once each

semester. Students must apply by December 1st for Fall admission or March 15th for Spring admission. Admission applications received beyond these deadlines will be considered for the following admission cycle.

The therapeutic recreation option prepares students for work primarily in clinical, allied health facilities such as hospitals, rehabilitation centers, mental health programs, and extended care facilities as well as inclusive community recreation programs. Admission decisions are based upon the content of the online application as well as a personal interview with the therapeutic recreation option coordinator. Students must have a minimum cumulative grade point average of 2.75 to be considered for admission into the major and it is highly recommended that students have completed or are enrolled in BMS 507 Human Anatomy and Physiology I or BMS 508 Human Anatomy and Physiology II at the time of application. If you have questions about the therapeutic recreation option, please contact Dr. Allison Wilder (allison.wilder@unh.edu).

To apply, please complete the online transfer application form (https://unh.az1.qualtrics.com/jfe/form/SV_3xwh78dQKCqqdwx).

We ask students to go through a short informational meeting with the therapeutic recreation option coordinator in order to better understand the RMP curriculum and the profession prior to submitting an application for the major. We want students to be prepared to be active and satisfied participants in the RMP major. It is strongly recommended that you attend an informational session prior to submitting your application. These informational sessions take place throughout the academic year and may take the form of either group or individual meetings. To find out the schedule of meetings, please contact Dr. Allison Wilder. (allison.wilder@unh.edu)

Recreation Management and Policy Retention

Students within the major are required to maintain a minimum 2.5 grade-point average every semester. In addition, majors must obtain a grade of C (2.0) or better in RMP courses and a grade of C- (1.67) or better in all other courses specifically required by the department.

<https://chhs.unh.edu/rmp>

Faculty

<https://chhs.unh.edu/directory/all>

Recreation Management and Policy Major: Program and Event Management Option (B.S.)

<https://chhs.unh.edu/rmp/program-and-event-management-bs>

Description

This option prepares students for managerial positions in commercial, public, and nonprofit organizations that provide recreation and leisure services. Curriculum design emphasizes the effective and efficient planning, delivery, and evaluation of leisure-based programs, services, and enterprises. Applied experience is a component of most courses, in addition to a required practicum and the 10-16 week full-time internship

under professional supervision. Depending upon the RMP electives and the career support emphasis or minor chosen, students may expect to find employment in a broad range of settings. Recent graduates have found employment in the areas of conference and event planning, municipal park and recreation services, recreational sports, commercial and entrepreneurial recreation businesses, youth-serving agencies, resorts, camps, and natural resource management positions in state and federal agencies.

Requirements

Core Requirements

All majors must complete a core curriculum of seven courses.

Code	Title	Credits
RMP 490	Recreation and Leisure in Society ¹	4
RMP 501	Recreation Services for Individuals with Disabilities	4
RMP 557	Program and Event Design	4
RMP 563	Recreation Management and Policy Practicum	2
RMP 654	Professional Development and Ethics	2
RMP 724	Grantsmanship, Evaluation, and Research	4
RMP 764	Internship	10-16

¹ RMP majors cannot count RMP 490 Recreation and Leisure in Society toward the University Social Sciences requirement.

Program and Event Management Option - Course Requirements:

Code	Title	Credits
RMP 559	Program and Event Marketing	4
RMP 661	Recreation and Event Leadership	4
RMP 663	Recreation and Event Management	4
RMP 772	Law and Public Policy in Leisure Services	4
Statistics - select one of the following:		4
PSYC 402	Statistics in Psychology	
SOC 502	Statistics	
ADMN 420	Business Statistics	
MATH 439	Statistical Discovery for Everyone	
RMP Electives - select three of the following: ¹		12
RMP 511	Issues of Wilderness and Nature in American Society	
RMP 515	History of Outdoor Pursuits in North America	
KIN 515	History of Outdoor Pursuits in North America	
RMP 560	Recreational Sport Management	
RMP 593	Special Topics (as offered)	
RMP 603	New Hampshire Ski Industry Management	
RMP 668	Youth Culture and Programs	
RMP 680	Festival and Event Planning	
RMP 711	Recreation Resource Management	
RMP #730	Camp Administration and Leadership	
RMP 750	Aging, Advocacy, and Active Learning	
RMP #768	Theories and Philosophies of Youth Development	

RMP 770	Management and Design of Recreation and Park Facilities	
RMP 775	Entrepreneurial and Commercial Recreation	
RMP 793	Advanced Topics (as offered)	
Minor or Emphasis requirement		18-20
Total Credits		50-52

¹ RMP courses completed to fulfill the elective course requirement may not be used to fulfill the emphasis area requirement; unless prior approval from the student's academic advisor is granted.

Professional Internship

A supervised internship (RMP 764 Internship) is required of all majors and serves as their **major capstone requirement**. The internship is designed to create a bridge between theory and practical application. Students, working with their advisers and the internship coordinator, select an appropriate setting based on their professional and career interests. They must register for a 10-16 credit full-time internship that ranges from 10 to 16 weeks and is under the supervision of a qualified professional. Specific requirements are identified in the *Internship Manual* available from the Department of Recreation Management and Policy.

Recreation Management and Policy Major: Therapeutic Recreation Option (B.S.)

<https://chhs.unh.edu/rmp/therapeutic-recreation-bs>

Description

Therapeutic recreation utilizes recreation to assist people with disabilities or illnesses to develop and use their leisure in ways that enhance health, independence, and well-being. Therapeutic recreation recognizes the importance of quality of life and uses activities to remediate or rehabilitate functional abilities. Therapeutic recreation services are provided in a variety of settings, including hospitals, long-term care facilities, residential treatment facilities, schools, home health care, community recreation, correctional facilities, rehabilitation centers, camp and outdoor education centers, and adult day programs. Observation and applied experience is a component of several courses. Students complete a 14-16-week full-time clinical internship under the supervision of a certified therapeutic recreation specialist (CTRS). The Bureau of Labor Statistics occupational outlook reports the "employment of recreational therapists is projected to grow 13 percent from 2012 to 2022, about as fast as the average for all occupations. As the large baby-boom generation ages, they will need recreational therapists to help treat age-related injuries and illnesses, such as strokes. Recreational therapists will also be needed to help patients manage chronic conditions such as diabetes and obesity (Bureau of Labor Statistics). A CNN Money report identifies recreation therapy among the top ten "best jobs for saving the world." In particular, they note the profession's high benefit to society and high personal job satisfaction (CNN Money Magazine). On the job front, interested readers may also wish to review an article on Recreational Therapy published on Monster.com at <https://www.monster.com/career-advice/article/recreational-therapists-help-patients-play-to-win-0615> (2015).

Upon successful completion of this option, students are prepared to meet sitting requirements for the National Council for Therapeutic Recreation Certification Examination. Students/graduates who pass the NCTRC exam and attain the CTRS are eligible to seek licensure to practice in the state of New Hampshire.

Students may be required to submit to a criminal background check.

Requirements

Core Requirements

All majors must complete a core curriculum of seven courses.

Code	Title	Credits
RMP 490	Recreation and Leisure in Society ¹	4
RMP 501	Recreation Services for Individuals with Disabilities	4
RMP 557	Program and Event Design	4
RMP 563	Recreation Management and Policy Practicum	2
RMP 654	Professional Development and Ethics	2
RMP 724	Grantsmanship, Evaluation, and Research	4
RMP 764	Internship	10-16

¹ RMP majors cannot count RMP 490 Recreation and Leisure in Society toward the University Social Sciences requirement.

Code	Title	Credits
Therapeutic Recreation Option - Course Requirements		
RMP 500	Therapeutic Recreation Methods in Physical Rehabilitation Settings	1
RMP 502	Foundations of Therapeutic Recreation	4
RMP 503	Therapeutic Recreation Rehabilitation Principles & Interventions	4
RMP 504	Therapeutic Recreation Mental Health Principles and Interventions	4
RMP 612	Therapeutic Communication and Facilitation Techniques in Therapeutic Recreation	4
RMP 613	Interventions and Documentation in Therapeutic Recreation	3
RMP 614	Assessment and Treatment Planning in Therapeutic Recreation	4
RMP 615	Clinical Lab in Therapeutic Recreation	2
RMP 705	Management and Policy in Therapeutic Recreation	4
Required Support Courses		
BMS 507	Human Anatomy and Physiology I	4
BMS 508	Human Anatomy and Physiology II	4
HDFS 525	Human Development	4
KIN 652	Clinical Kinesiology	4
KIN 653A	Musculoskeletal Assessment	2
PSYC 561	Abnormal Behavior	4
Statistics - Select one of the following:		4
PSYC 402	Statistics in Psychology	
SOC 502	Statistics	

Professional Internship

A supervised internship RMP 764 is required of all majors and serves as their **major capstone requirement**. The internship is designed to create a bridge between theory and practical application. Students, working with their advisers and the internship coordinator, select an appropriate setting based on their professional and career interests. They must register for a 14-16 credit full-time internship that ranges from 14 to 16 weeks and is under the supervision of a qualified professional. Specific requirements are identified in the *Internship Manual* available from the Department of Recreation Management and Policy.

Adolescent and Youth Development Minor (RMP)

<https://chhs.unh.edu/hdfs/adolescent-and-youth-development-minor-requirements>

Description

The departments of Recreation Management and Policy and Human Development and Family Studies offer an interdisciplinary minor designed to give students an opportunity to develop knowledge and skills regarding adolescence and youth development. The two required courses offer a foundation in theory, research, and practice, and students choose three additional courses in order to better prepare students to work with this age group.

Interested? Contact one of the Minor Coordinators: Dr. Cindy Hartman (cindy.hartman@unh.edu) in Recreation Management and Policy or Dr. Erin Hiley Sharp (erin.sharp@unh.edu) in Human Development and Family Studies.

Requirements

All students must complete the following:

Code	Title	Credits
RMP 668	Youth Culture and Programs	4
HDFS 624	Developmental Perspectives on Adolescence and Early Adulthood	4
Students must select three supporting courses (12 credits) approved by a minor advisor. Potential supporting courses toward this minor include:		
EDUC 556	Mentoring Adolescents with Disabilities in the Transition to Work	2
EDUC 717	Growing up Male in America	4
HDFS 707	Practicum	1-6
HDFS 776	Children, Adolescents and the Law	4
KIN 565	Principles of Coaching	4
RMP 563	Recreation Management and Policy Practicum	2
RMP 560	Recreational Sport Management	4
RMP #730	Camp Administration and Leadership	4
SOC 525	Juvenile Crime and Delinquency	4
SW 705	Child and Adolescent Risks and Resiliency: Program, Policy and Practice	4

Other adolescent or youth-based courses as approved by minor coordinator.

RMP majors may use RMP 668 Youth Culture and Programs to meet both major and minor requirements.

Social Work (SW)

The Department of Social Work's undergraduate program is accredited by the Council on Social Work Education (CSWE) and must meet rigorous academic standards to retain this accreditation. Social work majors pursue a program that encompasses the professional social work competencies of professional identity, critical thinking, knowledge of diversity and human rights, social, environmental and economic justice, social welfare policy and services, social work practice with all client system sizes, human behavior in the social environment, research, and ethics.

According to the National Association of Social Workers (NASW), "The social work profession provides ethical, practical, and compassionate leadership to help people confront and resolve personal and social challenges" through their work with individuals, families, small groups, organizations, and communities. All social work majors complete a field internship under the direction of a qualified supervisor.

<https://chhs.unh.edu/sw>

Programs

- Social Work Major (B.S.) (p. 219)
- Gerontology Minor (p. 220)

Faculty

<https://chhs.unh.edu/directory/all>

Social Work Major (B.S.)

<https://chhs.unh.edu/sw/social-work-bs>

Description

The Department of Social Work's undergraduate program is accredited by the Council on Social Work Education (CSWE) and must meet rigorous academic standards to retain this accreditation. Social work majors pursue a program that encompasses the professional social work competencies of professional identity, critical thinking, knowledge of diversity and human rights, social, environmental and economic justice, social welfare policy and services, social work practice with all client system sizes, human behavior in the social environment, research, and ethics.

According to the National Association of Social Workers (NASW), "The social work profession provides ethical, practical, and compassionate leadership to help people confront and resolve personal and social challenges" through their work with individuals, families, small groups, organizations, and communities. All social work majors complete a field internship under the direction of a qualified supervisor.

The Department of Social Work's undergraduate program offers both a major and a minor in social work. It is a specialized degree that prepares graduates for generalist social work practice with a solid foundation in the liberal arts and in the knowledge, skills, and value base of social work. Through the mastery of core competencies, social work graduates apply

their education working with individuals, families, groups, organizations, and communities. In addition, the program prepares qualified students to pursue graduate education in schools of social work and related fields.

To connect the theoretical and conceptual content of the classroom with the practice world, students must complete 40 hours of volunteer service in an approved agency/program setting by the end of the semester prior to applying to the field. Twenty of the forty hours must be in the same agency/program. The remaining hours may be across multiple sites/programs. This experience may be paid or volunteer and must be pre-approved by the student's faculty adviser. The service hours must be completed post high school and by the end of the semester prior to field application. In addition, students complete a 450-hour internship over two semesters during the senior year. This is the senior capstone experience. The field placement in the final year of the baccalaureate program is arranged between the student and the field education coordinator. Evaluation of this senior field placement is one tool that measures student achievement of program competencies. Students are required to pay a liability insurance fee for their off-campus field education experience. In compliance with CSWE accreditation standards, the B.S. in social work program does not grant social work course credit for life or work experience.

Social work majors earn a B.S. degree in social work. Graduates are eligible for practice in a variety of social work settings throughout the United States. In addition, qualified graduates are eligible to apply for advanced standing in M.S.W. programs that offer advanced standing. Depending upon the program, this can mean earning the M.S.W. in one calendar year versus two academic years.

Requirements

Academic Program

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of the social work major. Social work majors are required to take:

Code	Title	Credits
Required Courses		
SW 424	Introduction to Social Work	4
SW 525	Social Welfare Policy: History of Social and Economic Justice	4
SW 550	Human Behavior and Social Environment I	4
SW 551	Human Behavior and Social Environment II	4
SW 601	Research Methods in Social Work	4
SW 622	Social Work Practice: Interventions with Individuals and Families	4
SW 623	Social Work Practice: Interventions with Groups, Organizations and Communities	4
SW 625	Social Welfare Policy in a Global Context	4
Senior Capstone Course Sequence		
SW 640	Social Work Field Experience I	5
SW 640A	Social Work Field Experience I: Seminar	3
SW 641	Social Work Field Experience II	5
SW 641A	Social Work Field Experience II: Seminar	3
Total Credits		48

Students must maintain a 2.0 and earn a C or better in the 12 social work major courses. In addition, students are expected to successfully complete four additional courses as part of a liberal arts foundation for the major. Students choose one course from an approved list of courses in two different categories: anthropology/sociology and zoology and then must choose two additional courses from an approved list of diversity courses. These four courses may also satisfy University Discovery requirements. Students wishing to minor in social work are required to take:

Code	Title	Credits
SW 424	Introduction to Social Work	4
SW 525	Social Welfare Policy: History of Social and Economic Justice	4
Select any three other courses offered by the department ¹		12
Total Credits		20

¹ Excluding SW 640 Social Work Field Experience I, SW 641 Social Work Field Experience II.

Students interested in either a major or minor in social work should consult with the undergraduate program coordinator, Martha Byam, Pettee Hall, Room 231, (603) 862-1077.

Gerontology Minor

<https://chhs.unh.edu/sw/gerontology-minor>

Description

The gerontology interdisciplinary minor provides students with the opportunity to examine and evaluate the aging process as it affects the individual and society within the United States. Through a multidisciplinary course selection, students develop an understanding of aging from a variety of perspectives with a focus on how people age physically, cognitively, emotionally, and socially. Students are encouraged to analyze the historical and philosophical foundation from which policies, programs, and professional activities affecting the aged are developed, implemented, and evaluated. The purpose of this minor is to prepare students as they enter their career fields on the effects that the growing elderly population will have in every component of modern life.

Requirements

To complete a minor in gerontology students are required to take a minimum of 20 credits (five courses).

GERO 795 Independent Study, is not a required course but is used by students and faculty as an option for creating an individual experience relating to aging. A faculty member must approve and oversee (mentor) the student's work in GERO 795 Independent Study. Additionally, the GMM coordinator must also approve of the proposal and retain a copy. A copy of the proposal and the final copy will be kept in the student's major academic folder.

Other courses available to students are courses within the various University colleges containing a 50 percent focus on aging in the United States and approved by the GMM coordinator with reviews by the Gerontology Minor Advisory Board.

Students who wish to discuss or find out more about the minor may make an appointment with the GMM Coordinator, College of Health and Human Services, Department of Social Work.

Code	Title	Credits
Required courses:		
GERO 500	I'm Old, So What! An introduction to aging in the United States	4
KIN 607	Biology of Aging	4
Select 3 additional courses. Some of the accepted courses are the following:		12
NURS 535	Death and Dying	
OT 501	Developmental Tasks of Adulthood	
PSYC #582	Adult Development and Aging	
PSYC 741	Advanced Topics	
SW 625	Social Welfare Policy in a Global Context	
SW #701	Women and Aging	
Total Credits		20

An updated list of University-wide approved courses may be picked up in the Gerontology Minor Coordinator's office, College of Health & Human Services, Department of Social Work, Pettee Hall.

Sport Studies

Programs

- Sport Studies Major (B.S.) (p. 220)

Sport Studies Major (B.S.)

https://chhs.unh.edu/kin_ss

Description

Sport Studies is an interdisciplinary major that provides a foundation for careers in the sport industry. Students may prepare for careers in school, college, and professional athletic administration/management, coaching, marketing, and sports media. The program also prepares majors for graduate study in areas such as sport law and sport psychology. Sport Studies students are encouraged to pursue a second major or minor in a complementary discipline, such as business, journalism, or psychology.

Majors take a core of foundation courses as well as electives in applied areas such as sport marketing, athletic administration, and sport psychology. Majors must earn a grade of B- or better in KIN 565 Principles of Coaching and KIN 580 Sport Industry, and a grade of C or better in each required University and Kinesiology course. All majors must complete a minor or 20 credits of prior-approved coursework in supporting areas such as business, psychology, or education. In addition, an internship experience or independent study is required. An internship experience is strongly recommended since it is often critical to career development. Interested students should consult with the program coordinator, Heather Barber, Heather.Barber@unh.edu.

Requirements

Major Requirements

Code	Title	Credits
PSYC 401	Introduction to Psychology	4
ADMN 420	Business Statistics	4
or PSYC 402	Statistics in Psychology	
or SOC 502	Statistics	
KIN 560	Sport Psychology	4
KIN 562	Sport Media Relations	4
KIN 565	Principles of Coaching	4
KIN 580	Sport Industry	4
KIN 740	Athletic Administration	4
KIN 741	Social Issues in Contemporary Sports	4
KIN 761	Senior Seminar Sport Studies ²	4
Cognate Requirement ¹		20
Electives		
Advisor approved KIN electives ³		16
KIN 505	Activity, Injuries and Disease	
KIN 521	Theory of Coaching Basketball	
KIN 522	Theory of Coaching Football	
KIN 523	Theory of Coaching Hockey	
KIN 525	Theory of Coaching Soccer	
KIN 528	Theory of Coaching Track and Field	
KIN 561	History of American Sport and Physical Culture	
KIN 561W	History of American Sport and Physical Culture	
KIN 630	Sport Facility and Event Management	
KIN 643	Social Media Marketing in Sport	
KIN 650C	Internship in Sport Studies	
KIN 668	Ergogenic Aids in Sports	
KIN 693	Teaching Assistantship	
KIN 696	Independent Study	
KIN 720	Science and Practice of Strength Training	
KIN 743	Sport Marketing	
KIN 765	Advanced Topics in Coaching	
KIN 780	Psychological Factors in Sport	
KIN 798	Special Topics	
Total Credits		72

¹ Select a minimum of 20 credits from other departments. All courses must be approved in advance by faculty advisor.

² Majors must complete a minimum of 150 hours of industry experience before they can take KIN 761 Senior Seminar Sport Studies. Students must be enrolled as a sport studies major for one full semester before taking KIN 761 Senior Seminar Sport Studies. See advisor for details.

³ Include 4 credits of KIN 650C Internship in Sport Studies or KIN 696 Independent Study.

Internal transfers to sport studies must have a 2.5 GPA as well as a minimum grade of C in PSYC 401 Introduction to Psychology, Statistics (PSYC, SOC, DS) and a minimum grade of B- in both KIN 565 Principles of Coaching and KIN 580 Sport Industry.

Degree Plan

Recommended Major Sequencing of Courses

This list only includes major classes. Students should be registered for, and taking an average of 16 credits per semester to be 'on track' to graduate in 4 years. In most semesters, this means a student will be taking Discovery or elective courses, to meet this 16 credit 'load'.

Course	Title	Credits
First Year		
Fall		
KIN 580	Sport Industry	4
PSYC 401	Introduction to Psychology	4
ENGL 401	First-Year Writing	4
		Credits
		12
Spring		
KIN 565	Principles of Coaching	4
or KIN 562	or Sport Media Relations	
		Credits
		4
Second Year		
Fall		
KIN 562	Sport Media Relations	4
or KIN 565	or Principles of Coaching	
PSYC 402	Statistics in Psychology	4
or SOC 502	or Statistics	
or ADMN 420	or Business Statistics	
		Credits
		8
Spring		
KIN 560	Sport Psychology	4
Sport Studies Elective ¹		4
		Credits
		8
Third Year		
Fall		
KIN 650C	Internship in Sport Studies	2-4
2 Sport Studies Electives ¹		8
		Credits
		10-12
Spring		
KIN 740	Athletic Administration	4
or KIN 741	or Social Issues in Contemporary Sports	
Sport Studies Elective ¹		4
		Credits
		8
Fourth Year		
Fall		
KIN 761	Senior Seminar Sport Studies	4
KIN 650C	Internship in Sport Studies	2-4
Sport Studies Elective ¹		4
		Credits
		10-12
Spring		
KIN 740	Athletic Administration	4
or KIN 741	or Social Issues in Contemporary Sports	
		Credits
		4
		Total Credits
		64-68

¹ 16 required credits of electives including 4 credits from KIN 650C Internship in Sport Studies or KIN 696 Independent Study.

College of Life Sciences and Agriculture

Jon M. Wraith, Dean

Kimberly J. Babbitt, Associate Dean

Theodore E. Howard, Associate Dean

The College of Life Sciences and Agriculture (COLSA) provides students a fundamental education in the agricultural, biological, life, natural, and social sciences. Advanced technical and professional courses are offered to prepare students for graduate school or entry-level positions in their chosen field. Preparation can vary from fundamental studies of cancer cells to community service planning, resource protection to genetic engineering, and molecular biology to biotechnology.

A blend of Discovery and foundational science courses, careful selection of supportive upper level courses, and ample opportunities to engage in internships, research, and study abroad experiences ensures graduates develop the background and experiences necessary to be competitive in the job market. Potential employers include federal, state, and local governments, consulting firms and industrial organizations. Graduates are employed as watershed, soil, and natural resource managers, associates in biomedical and agricultural research laboratories, marketing analysts and extension specialists, nutrition supervisors and environmental regulators, and information educators and communication experts. Community governments employ graduates as service planners and land-use specialists, teachers in traditional education, public health technicians, and urban pest control specialists. Positions are available in private and commercial organizations in production agriculture, food processing, landscaping, agribusiness, sales, and private planning. Graduates may also pursue entrepreneurial careers.

Additionally, COLSA prepares students for advanced study in their chosen field of interest where graduate study is required for attaining their career goals.

Degrees

The college offers three undergraduate degrees: the bachelor of arts, the bachelor of science, and the bachelor of science in forestry. Some of the courses prescribed in these degree programs partially fulfill the University's Discovery requirements. Students should see their advisers for specific information.

General Science Certification

Students majoring in biochemistry, molecular and cellular biology, biomedical science, biology, environmental conservation and sustainability, environmental sciences, forestry, wildlife and conservation biology, or zoology may seek certification to teach science at the middle, junior, or high school level.

For further information, contact the coordinator of teacher education in the Department of Education.

Academic Advising

A member of the faculty whose area of interest is closely related to the student's is appointed as an adviser to assist the undergraduate in planning his or her academic program. Further advising is also available in the dean's office, Rudman Hall.

Undeclared Status

Students may select a major upon entering the college or wait until registration for the sophomore year. Students who are uncertain about choosing a specific major may remain undeclared during their freshman year. In most cases, they should take the following courses, after which they should be ready to declare a major:

Course	Title	Credits
Fall		
LSA 400	Freshmen Seminar	1
BIOL 412	Introductory Biology: Evolution, Biodiversity and Ecology	4
CHEM 403	General Chemistry I	4
Discovery Program requirement		4
Discovery Program Requirement or an introductory course in any department in the college		4
Credits		17
Spring		
BIOL 411	Introductory Biology: Molecular and Cellular	4
CHEM 404	General Chemistry II	4
MATH 424B	Calculus for Life Sciences	4
Discovery Program requirement		4
Credits		16
Total Credits		33

Undeclared freshmen should explore possible majors by taking courses in the areas or programs that interest them most. They should talk to faculty, students, and their adviser concerning requirements, job opportunities, etc. in the various programs and should be prepared to declare a major when they register for the first semester of the sophomore year.

UNH-EcoQuest New Zealand Study Abroad Program

The Department of Natural Resources and the Environment offers highly motivated students the opportunity to study abroad through the UNH-EcoQuest New Zealand applied field studies program. Students engage in a unique multidisciplinary, research-oriented program and receive grade-point average credit for a semester abroad. Four fully integrated courses (NR 660 Ecology and Biogeography of New Zealand, NR 661 Restoration Ecology and Ecosystem Management in New Zealand, NR 662 Environmental Policy, Planning and Sustainability in New Zealand, and NR 663 Applied Directed Research in New Zealand for 16 credit hours) focus on the ecological, resource management, and conservation and sustainability issues important to the natural environment, economy, and culture of New Zealand. Alternatively, students may participate in a two-course (NR 660 Ecology and Biogeography of New Zealand, NR 662 Environmental Policy, Planning and Sustainability in New Zealand for 8 credits hours) summer session. Contact Donna Dowal, (603) 862-2036.

Degrees

Bachelor of Arts

The bachelor of arts degree is available in Sustainable Agriculture and Food Systems, and Zoology. Students must accumulate 128 credits, attain a 2.0 cumulative grade-point average, satisfy Discovery requirements, and complete a foreign language requirement (see University Academic Requirements for specific B.A. language

requirements). Check individual departmental listings for specific major requirements and minimum acceptable grades in major courses.

Bachelor of Science

The bachelor of science degree is available in all departments or programs. University requirements are the same as for the bachelor of arts degree, except that a foreign language is not required and minimum acceptable grades may differ in some programs. Check individual departmental or program listings for specific major requirements.

<https://colsa.unh.edu/>

Departments

- Agriculture, Nutrition, and Food Systems (<http://catalog.unh.edu/undergraduate/life-sciences-agriculture/programs-study/agriculture-nutrition-food-systems>)
- Biological Sciences (<http://catalog.unh.edu/undergraduate/life-sciences-agriculture/programs-study/biological-sciences>)
- Molecular, Cellular, and Biomedical Sciences (<http://catalog.unh.edu/undergraduate/life-sciences-agriculture/programs-study/molecular-cellular-biomedical-sciences>)
- Natural Resources and the Environment (<http://catalog.unh.edu/undergraduate/life-sciences-agriculture/programs-study/natural-resources-environment>)

Programs of Study

- Agribusiness (p. 224)
- Animal Science (ANSC) (p. 224)
- Biochemistry, Molecular and Cellular Biology (BMCB) (p. 228)
- Biology (p. 231)
- Biomedical Science (BMS) (p. 234)
- Community and Environmental Planning (CEP) (p. 244)
- Ecogastronomy (p. 246)
- Environmental and Resource Economics (EREC) (p. 247)
- Environmental Conservation and Sustainability (p. 249)
- Environmental Sciences (p. 252)
- Equine Studies (p. 255)
- Forestry (p. 258)
- Genetics (GEN) (p. 260)
- GeoSpatial Analysis (p. 266)
- Green Real Estate (p. 267)
- Marine, Estuarine, and Freshwater Biology (MEFB) (p. 268)
- Neuroscience and Behavior (NSB) (p. 270)
- Nutrition (NUTR) (p. 272)
- Sustainable Agriculture and Food Systems (SAFS) (p. 278)
- Sustainable Energy (p. 284)
- Tourism Management (p. 284)
- Water Resources Management (p. 285)
- Wetland Ecology (p. 286)
- Wildlife and Conservation Biology (p. 286)
- Zoology (ZOOL) (p. 288)

Agribusiness

Programs

- Agribusiness Minor (p. 224)

Agribusiness Minor

<http://colsa.unh.edu/interdisciplinary-minors/agribusiness-minor>

Description

The agribusiness minor is designed to provide students in disciplines other than environmental and resource economics with training in the economics and management of agricultural and other natural resource business firms. This program prepares students to work for private companies, governmental agencies, or nonprofit, nongovernmental organizations. Students who are interested in operating their own businesses will also find this minor very useful. The courses in the agribusiness minor emphasize the applications of economic and business management principles.

Requirements

Code	Title	Credits
Required Courses		
EREC 411	Environmental and Resource Economics Perspectives (or equivalent) ¹	4
ABM 407 or MKTG 550	Applied Marketing Survey of Marketing	4
ABM 508	Managerial Accounting	4
EREC 606	Land Economics Perspectives: Uses, Policies, and Taxes	4
EREC 601	Agribusiness Economics and Management	4
Total Credits		20

¹ EREC 411 cannot be taken for credit if credit has been earned for ECON 402.

For additional information, contact John M. Halstead, Environmental and Resource Economics Program Coordinator, 168 James Hall, (603) 862-3914.

Animal Science (ANSC)

The undergraduate program in animal science is designed to prepare students for a variety of careers by providing strong fundamental and applied education in animal nutrition, reproduction, genetics, physiology, health, and large animal management. On-campus animal facilities available to provide practical experience with agricultural animals include the Fairchild Dairy Teaching and Research Center, the Lou and Lutz Smith Equine Center, the nearby organic dairy housed at the Burley-Demeritt Farm, two hoop barns for small livestock species, and aquaculture facilities. Program graduates may be employed in farm ownership, management, marketing, the pharmaceutical industry, agribusiness, finance, manufacturing, public relations, extension, vocational education, or consulting. The animal science B.S. is designed for students interested in animal agriculture. Students who

are considering continuing their studies through graduate school or veterinary school are advised to take the recommended additional courses in chemistry, math, and physics.

<https://colsa.unh.edu/agriculture-nutrition-food-systems>

Programs

- Animal Science Major (B.S.) (p. 225)
- Animal Science Major: Dairy Management Option (B.S.) (p. 226)
- Animal Science Minor (p. 227)
- Dairy Management Minor (p. 227)

Faculty

<https://colsa.unh.edu/agriculture-nutrition-food-systems/faculty-staff-directory>

Animal Science Major (B.S.)

<https://colsa.unh.edu/agriculture-nutrition-food-systems/program/bs/animal-science-major>

Description

The Animal Science B.S. is designed for students interested in animal agriculture. Students who are considering continuing their studies through graduate school are advised to take the recommended additional courses in Chemistry, Math and Physics. The Animal Science B.S. is one of many pathways for admission to veterinary school. Because admission to veterinary school is highly competitive due to the limited number of available spaces and the high standards for admission, students are advised to choose an academic program that deeply interests them. Simply taking the prerequisite courses required by veterinary schools without considering alternate career goals is not advisable.

Requirements

Major Requirements

Code	Title	Credits
Foundation Courses		
BIOL 411	Introductory Biology: Molecular and Cellular	4
BIOL 412	Introductory Biology: Evolution, Biodiversity and Ecology	4
CHEM 403	General Chemistry I	4
CHEM 404	General Chemistry II	4
BIOL 528	Applied Biostatistics I	4
or BIOL #555	Experimental Design and Analysis Laboratory (EDAL)	
BMS 503 & BMS 504	General Microbiology and General Microbiology Laboratory	5
BMCB 501	Biological Chemistry ¹	5
Requirements for All Animal Science Majors		
AAS 439	Fundamentals of Animal Health	2
ANSC 406	Careers in Animal Science	1

ANSC 421	Animal Agriculture Today	4
ANSC 511	Anatomy and Physiology	4
ANSC 512	Anatomy and Physiology	4
ANSC 543	Technical Writing in Animal Sciences (or equivalent) ²	2
ANSC 609	Principles of Animal Nutrition	4
ANSC 612	Genetics of Domestic Animals	4
Ethics Course		
ANSC 602	Animal Rights and Societal Issues	4
Disease Course		
ANSC 625	Diseases of Small Ruminants, Swine, Poultry, and Camelids	4
Reproduction Course		
Select one of the following:		4
ANSC 701	Physiology of Reproduction	
ANSC 715	Physiology of Lactation	
ANSC 724	Reproductive Management and Artificial Insemination	
BMS 702	Endocrinology	
Major Electives		
Select 3 electives from the following: ³		9-14
AAS 574	Dairy Cattle Disease Seminar	
ANSC 504	Equine Science	
ANSC 507	Survey of Equine Training Techniques	
ANSC 510	Integration of Culture and Agriculture in Ireland: Past, Present, and Future	
ANSC 600	Field Experience	
ANSC 620	Equine Diseases	
ANSC 625	Diseases of Small Ruminants, Swine, Poultry, and Camelids	
ANSC 650	Dairy Industry Travel Course	
ANSC 698	Cooperative for Real Education in Agricultural Management (CREAM)	
ANSC 701	Physiology of Reproduction	
ANSC 708	Ruminant Nutritional Physiology	
ANSC 710	Dairy Nutrition	
ANSC 715	Physiology of Lactation	
ANSC 724	Reproductive Management and Artificial Insemination	
ANSC 725	Equine Sports Medicine	
ANSC 727	Advanced Dairy Management I	
ANSC 728	Advanced Dairy Management II	
ANSC 750	Collaborative Farm Design and Development	
ANSC 795	Investigations	
ANSC 796	Equine Senior Seminar	
ANSC 799	Honors Senior Thesis	
AAS 402	Introduction to Livestock and Poultry Management	
AAS 421	Large Animal Behavior and Handling Techniques	
AAS 423	Dairy Selection	
AAS 425	Introduction to Dairy Herd Management	
AAS 426	Equine Conformation and Lameness	
AAS 432	Introduction to Forage and Grassland Management	

AAS 434	Equipment and Facilities Management
AAS 527	Companion Animal Diseases
AAS 546	Animal Business Applications
AAS 547	Applied Equine Management
AAS 548	Applied Animal Business: Concepts and Practices
AAS 574	Dairy Cattle Disease Seminar
ADMN 502	Financial Accounting
BMCB 753	Cell Culture
BMS 602	Pathogenic Microbiology
BMS 623	Histology: Microscopic Cellular Structure and Function
BMS 702	Endocrinology
BMS 703	Infectious Disease and Health
BMS 704	Pathologic Basis of Disease
BMS 705	Immunology
BMS 706	Virology
BMS 718	Mammalian Physiology
CMN 500	Public Speaking
CMN 600	Public Speaking as a Civic Art
EREC 411	Environmental and Resource Economics Perspectives
EREC 680	Agricultural and Food Policy
MGT 580	Introduction to Organizational Behavior
SAFS 632	Urban Agriculture
SAFS #642	Team Experience in Agroecosystems Management (TEAM - Organic)
SAFS 729/ BIOL 829	Agricultural Waste Management
ZOOL 610	Principles of Aquaculture
ZOOL #611	Principles of Aquaculture Lab
ZOOL 613	Animal Behavior
ZOOL 777	Neuroethology

Total Credits 76-81

- ¹ Students interested in graduate school should take 2 semesters of Organic Chemistry (CHEM 651/CHEM 653 and CHEM 652/CHEM 654) and one semester of General Biochemistry (BMCB 658/BMCB 659) in place of BMCB 501.
- ² ENGL 501 Introduction to Creative Nonfiction, ENGL 502 Professional and Technical Writing, ENGL 503 Persuasive Writing or ENGL 419 Introduction to Literary Analysis
- ³ Two courses must be selected at the 500 level or above. For classes less than 3 credits, 2 must be taken together to count as 1 elective.

Capstone Experience

The capstone requirement must be completed during the senior year, and may be satisfied through a course (e.g., ANSC 698 Cooperative for Real Education in Agricultural Management (CREAM), ANSC 728 Advanced Dairy Management II, ANSC 750 Collaborative Farm Design and Development, or ANSC 799 Honors Senior Thesis), created work, product, or some form of experiential learning (e.g., mentored research projects, and other special student activities).

GPA Requirements for All Students in Animal Science

Students will be required to earn a C- or better in all required courses for the animal science major to receive credit toward graduation. Students failing to do this will need to retake the course in order to receive credit.

Requirements for Animal Science Students Interested in Graduate/Veterinary School

Code	Title	Credits
BMCB 658 & BMCB 659	General Biochemistry and General Biochemistry Lab	5
CHEM 651 & CHEM 653	Organic Chemistry I and Organic Chemistry Laboratory	5
CHEM 652 & CHEM 654	Organic Chemistry II and Organic Chemistry Laboratory	5
MATH 424B	Calculus for Life Sciences	4
PHYS 401	Introduction to Physics I	4
PHYS 402	Introduction to Physics II	4

Students interested in veterinary medicine should consult the pre-veterinary medicine program website (<https://colsa.unh.edu/molecular-cellular-biomedical-sciences/pre-vet-program>).

Animal Science Major: Dairy Management Option (B.S.)

<https://colsa.unh.edu/agriculture-nutrition-food-systems/program/bs/animal-science-major-dairy-management-option>

Description

The ANSC: dairy management option is designed to provide students with solid training in areas important to the successful management of a dairy enterprise, for employment in related agribusinesses (e.g., pharmaceutical and feed industries), or for those wishing to pursue additional training leading to the M.S. or Ph.D. degree in dairy science or its related disciplines. Dairy management students receive training in areas such as nutrition, reproduction, diseases, genetics, lactation physiology, forages, agribusiness finance, personnel management, computer science, and public relations. The Fairchild Dairy Teaching and Research Center and the Burley-DeMerritt Organic Dairy Research Farm are modern dairy facilities. The Fairchild Dairy houses 85 lactating Holstein cows plus a similar number of non-lactating animals. The Burley-DeMerritt Farm houses 50 lactating Jersey cows plus a small number of non-lactating animals. For additional information and answers to questions regarding the option in dairy management, email Dr. Peter Erickson.

Requirements

Major Requirements

Code	Title	Credits
Foundation Courses		
BIOL 411	Introductory Biology: Molecular and Cellular	4

BIOL 412	Introductory Biology: Evolution, Biodiversity and Ecology	4
CHEM 403	General Chemistry I	4
CHEM 404	General Chemistry II	4
BIOL 528 or BIOL #555	Applied Biostatistics I Experimental Design and Analysis Laboratory (EDAL)	4
BMS 503 & BMS 504	General Microbiology and General Microbiology Laboratory	5
Select from the following:		5
BMCB 501 or BMCB 658 & BMCB 659	Biological Chemistry General Biochemistry and General Biochemistry Lab	

Requirements for All Animal Science/Dairy Management Option Majors

AAS 425	Introduction to Dairy Herd Management	4
AAS 439	Fundamentals of Animal Health	2
ANSC 406	Careers in Animal Science	1
ANSC 511	Anatomy and Physiology	4
ANSC 512	Anatomy and Physiology	4
ANSC 543	Technical Writing in Animal Sciences (or equivalent) ¹	2
ANSC 609	Principles of Animal Nutrition	4
ANSC 612	Genetics of Domestic Animals	4
Total Credits		55

¹ ENGL 501 Introduction to Creative Nonfiction, ENGL 502 Professional and Technical Writing, ENGL 503 Persuasive Writing or ENGL 419 Introduction to Literary Analysis (WI)

Students are responsible for the completion of the animal science foundation courses and the requirements for all animal science majors (both lists of courses above).

Students interested in graduate school should take two semesters of Organic Chemistry and one semester of Biochemistry.

Animal Science: Dairy Management Option B.S. students must also complete:

Code	Title	Credits
AAS 423	Dairy Selection	2
AAS 432	Introduction to Forage and Grassland Management	3
AAS 574	Dairy Cattle Disease Seminar	2
ANSC 602	Animal Rights and Societal Issues	4
ANSC 650	Dairy Industry Travel Course	1
ANSC 698	Cooperative for Real Education in Agricultural Management (CREAM) (two-semester course)	4
ANSC 708	Ruminant Nutritional Physiology	3
ANSC 710	Dairy Nutrition	4
ANSC 715 or ANSC 724	Physiology of Lactation Reproductive Management and Artificial Insemination	4
ANSC 727	Advanced Dairy Management I	4
ANSC 728	Advanced Dairy Management II (will also fulfill the Capstone requirement)	4

EREC 411	Environmental and Resource Economics Perspectives	4
Total Credits		39

GPA Requirements for All Students in Animal Science

Students will be required to earn a C- or better in the foundation courses and all required courses for the animal science major to receive credit toward graduation. Students failing to do this will need to retake the course in order to receive credit.

Animal Science Minor

<https://colsa.unh.edu/agriculture-nutrition-food-systems/program/minor/animal-science>

Description

A minor in Animal Science consists of a minimum of 20 credits of Animal Science (ANSC) courses. No more than 7 credits may be taken in the Thompson School of Applied Science (AAS) and at the 400-level. Students must receive a minimum grade of C- in any course used for the minor. Students failing to do this will need to retake the course in order to receive credit. No courses taken on a pass (credit)/fail basis may count toward the minor. Students who transfer from other institutions may petition the animal science program faculty for course approval. No more than eight credits used to satisfy major requirements may be used for the minor.

Students wanting to declare a minor in animal science must meet with animal science minor coordinator Dr. Elizabeth Boulton DVM, DACVS as early as possible and no later than first semester of their junior year.

Students must complete a minor completion form during their final semester at UNH.

Requirements

Code	Title	Credits
Required courses for minor		
ANSC 421	Animal Agriculture Today	4
ANSC 609	Principles of Animal Nutrition	4
ANSC 612	Genetics of Domestic Animals	4
One ANSC Disease Course		2-4
AAS 574	Dairy Cattle Disease Seminar	
ANSC 620	Equine Diseases	
ANSC 625	Diseases of Small Ruminants, Swine, Poultry, and Camelids	
Additional ANSC Courses		4-6

Dairy Management Minor

<https://colsa.unh.edu/agriculture-nutrition-food-systems/program/minor/dairy-management>

Description

A minor in Dairy Management consists of 20 credits with C- or better and a 2.0 grade point average in subjects that the minor department approves. Courses taken on the pass/fail basis cannot be used for a minor. No more than 8 credits used to satisfy major requirements may be used for the minor.

Requirements

Code	Title	Credits
Required Courses		12
AAS 425	Introduction to Dairy Herd Management	
ANSC 710	Dairy Nutrition	
ANSC 715	Physiology of Lactation	
Select 8 credits from the following:		8
AAS 423	Dairy Selection	
AAS 574	Dairy Cattle Disease Seminar	
ANSC 650	Dairy Industry Travel Course	
ANSC 698	Cooperative for Real Education in Agricultural Management (CREAM) (must be taken for 2 semesters)	
ANSC 728	Advanced Dairy Management II	

Biochemistry, Molecular and Cellular Biology (BMCB)

The field of biochemistry, molecular and cellular biology (BMCB) encompasses a broad range of the life sciences, from biophysics and biochemistry to applied biology and medicine. The B.S. in biochemistry, molecular and cellular biology is designed for students to gain a solid foundation in biology, chemistry, physics, and math, along with advanced knowledge in molecular biology, biochemistry, cell biology, and genetics. The program offers cutting-edge research opportunities in the areas of structural biology, cell signaling pathways, cancer biology, gene regulation, neurobiology, cellular structure and function, proteomics and glycomics, and lipid metabolism. BMCB students are highly-motivated and seek exposure to cutting-edge techniques and "hands-on" experience through laboratory- and research-based opportunities. Graduates are "profession-ready" people who are well-prepared for entry-level positions in biomedical research or in the biotechnology and pharmaceutical industries, for graduate education, or for post-baccalaureate professional programs (e.g., medical school, veterinary school, dental school, etc.).

The curriculum provides most of the required and recommended courses for students seeking admission to graduate schools and to professional schools in medicine, dentistry, veterinary medicine, and pharmacy. Students who major in BMCB can also use their training in conjunction with advanced degrees in law and business. Students obtaining the B.S. in BMCB enjoy excellent job prospects immediately upon graduation. There is currently a demand for skilled research technicians in biotechnology companies, pharmaceutical companies, government agencies, forensics, academic research laboratories, and hospitals. Graduates also have knowledge that is valuable in the fields of management, sales, marketing, regulatory affairs, technical writing, and science journalism. With additional courses in education, the B.S. in

BMCB also qualifies graduates to teach at the elementary, junior high, and high school levels.

Faculty participating in the BMCB major combine a passion for teaching and student advising with strong research expertise in their chosen discipline. BMCB faculty are committed to providing independent research experiences for undergraduate students, and many faculty have well-funded research programs utilizing state-of-the-art equipment and techniques. On-campus research facilities that students can use to enhance their research experience include the Hubbard Center for Genome Studies (<http://hcgs.unh.edu>) and the Center for Comparative and Molecular Endocrinology (<http://unh.edu/cme>).

Pre-Professional Health Programs

Students interested in postgraduate careers in the health care professions (e.g., medical, dental, physician assistant, pharmacy, etc.) should visit the Pre-Professional Health Programs Advising Office (<http://www.unh.edu/uacc/premed-advising>) online or in person (Hood House, Room 102). Students interested in veterinary medicine should consult the Pre-Veterinary Medicine Program (<https://colsa.unh.edu/molecular-cellular-biomedical-sciences/pre-vet-program>) website. While many of the prerequisite courses required by professional schools are also requirements of the BMCB major, students should consult with their faculty adviser to create a plan of study that best prepares them for pursuing a career in one of these health professions.

<https://colsa.unh.edu/molecular-cellular-biomedical-sciences>

Programs

- Biochemistry, Molecular and Cellular Biology Major (B.S.) (p. 228)
- Biochemistry, Molecular and Cellular Biology Minor (p. 231)

Faculty

<https://colsa.unh.edu/molecular-cellular-biomedical-sciences/people>

Biochemistry, Molecular and Cellular Biology Major (B.S.)

<https://colsa.unh.edu/molecular-cellular-biomedical-sciences/program/bs/biochemistry-molecular-cellular-biology-major>

Description

The Biochemistry, Molecular & Cellular Biology (BMCB) major provides you with conceptual competence and practical laboratory and analytical skills to understand the molecular and cellular foundations of life. Your BMCB degree will prepare you for immediate employment as a research technician or for entry into graduate school or into professional programs in medicine, dentistry or other allied health professions.

The BMCB program offers advanced coursework and laboratories in diverse topics

- Cancer biology
- Cell & developmental biology
- Cell culture & tissue engineering
- Endocrinology

- Molecular biology techniques
- Pharmacology
- Physical biochemistry
- Protein structure, function & proteomics

BMCB majors participate in experiential learning activities

- Many courses have integrated laboratory experiences to foster inquiry-based learning and to train creative and critical thinkers
- Independent research experiences in faculty research laboratories provide exposure to cutting-edge techniques and instrumentation
- Job preparation can be enhanced by internships with regional biotechnology and pharmaceutical companies
- Summer undergraduate research fellowships at U.S. or international academic institutions combine travel with research opportunities outside UNH

BMCB graduates have been successful in many careers

- Research technicians and laboratory technicians
 - Biotechnology and pharmaceutical companies
 - Government agencies
 - Forensics laboratories
 - Academic research laboratories
 - Hospitals
- Science journalists and technical writers
- Healthcare
- Scientific supply companies
- Sales and marketing
- Regulatory agencies
- Primary and secondary school educators (with additional coursework in education)

BMCB graduates are well prepared for post-baccalaureate education in

- M.S. and doctoral programs in a large variety of disciplines
- Professional health programs
 - Medical
 - Dental
 - Pharmacy
 - Physician's Assistant and other allied health programs

Note: The BMCB major is designed so you can complete in four years all of the prerequisite courses needed to seek admission to graduate schools or health professional schools.

Requirements

Students in the Biochemistry, Molecular and Cellular Biology (BMCB) major take eight Foundation courses, four Bioscience Core courses, five BMCB Core courses, and three Major Elective courses. One capstone experience, supervised and approved within the major, is required of all seniors. In addition, all other University academic requirements must be completed, including those for the Discovery Program (<https://catalog.unh.edu/undergraduate/university-academic-requirements/discovery-program>) and the University Writing Requirement. (<http://www.unh.edu/undergrad-catalog/gi.cfm?thisid=28&masterid=27&headingid=27/#28>)

A grade of C-minus or better is required in Statistics and all Bioscience Core, BMCB Core, and Major Elective courses.

Foundation Core Courses

Code	Title	Credits
CHEM 403	General Chemistry I ¹	4
CHEM 404	General Chemistry II	4
CHEM 547 & CHEM 549	Organic Chemistry I and Organic Chemistry Laboratory	5
CHEM 548 & CHEM 550	Organic Chemistry II and Organic Chemistry Laboratory	5
MATH 424B	Calculus for Life Sciences ^{2, 3}	4
BIOL 528	Applied Biostatistics I ³	4
PHYS 401	Introduction to Physics I ⁴	4
PHYS 402	Introduction to Physics II ⁴	4

¹ Fulfills the Physical Science Discovery requirement

² Fulfills Quantitative Reasoning Discovery requirement

³ MATH 425 and MATH 426 can be substituted for MATH 424B and BIOL 528

⁴ PHYS 407 and PHYS 408 can be substituted for PHYS 401 and PHYS 402

Bioscience Core Courses

Code	Title	Credits
BIOL 411	Introductory Biology: Molecular and Cellular ⁵	4
BIOL 412	Introductory Biology: Evolution, Biodiversity and Ecology	4
BMS 503 & BMS 504	General Microbiology and General Microbiology Laboratory	5
GEN 604	Principles of Genetics	4

⁵ BIOL 411 fulfills the Biological Science Discovery requirement, Discovery Laboratory requirement, and the Discovery Inquiry requirement

BMCB Core Courses

Code	Title	Credits
BMCB 401	Professional Perspectives in Biochemistry, Molecular and Cellular Biology	1
BMCB 605	Eukaryotic Cell and Developmental Biology	4
BMCB 751	Principles of Biochemistry	4
BMCB 752	Principles of Biochemistry	4
GEN 704 or GEN 771	Genetics of Prokaryotic Microbes Molecular Genetics	4-5

BMCB Major Electives

A total of three **unique** major electives is required: one Laboratory Techniques course and two Major Elective courses.

Laboratory Techniques Courses (Pick one)

Code	Title	Credits
BMCB 753	Cell Culture	5
BMCB 754	Molecular Biology Research Methods	5
BMCB 755	Laboratory in Biochemistry and Molecular Biology	5

Bioscience Major Electives (Pick two)

Code	Title	Credits
BMCB 750	Physical Biochemistry	3
BMCB 753	Cell Culture ⁶	5
BMCB 754	Molecular Biology Research Methods ⁶	5
BMCB 755	Laboratory in Biochemistry and Molecular Biology ⁶	5
BMCB 760	Pharmacology	4
BMCB 763	Biochemistry of Cancer	4
BMCB #783	Proteomics for Biological Discoveries	4
BMCB 794	Protein Structure and Function	4
ANSC 701	Physiology of Reproduction	4
ANSC 715	Physiology of Lactation	4
BMS 702	Endocrinology	4
BMS 704	Pathologic Basis of Disease	4
BMS 705 & BMS 715	Immunology and Immunology Laboratory	5
BMS 706 & BMS 708	Virology and Virology Laboratory	5
BMS 718	Mammalian Physiology	4
CHEM 755	Advanced Organic Chemistry	3
GEN 704	Genetics of Prokaryotic Microbes ⁶	5
GEN 706	Human Genetics	4
GEN 711	Genomics and Bioinformatics	4
GEN 713	Microbial Ecology and Evolution	4
GEN 715	Molecular Evolution	4
GEN 717	Molecular Microbiology	5
GEN 771	Molecular Genetics ⁶	4
NUTR 750	Nutritional Biochemistry	4
PSYC 731	Brain and Behavior	4
ZOOL 777	Neuroethology	3

⁶ If course was used to fulfill BMCB Core or Laboratory Technique requirement, course cannot count as Bioscience Major Elective.

Approved BMCB Capstone Courses

The capstone explores areas of interest based on the integration of prior learning. The capstone requirement may be satisfied through a course, created work or product, or some form of experiential learning (e.g., honors thesis, mentored research project, or other special student activity).

Code	Title	Credits
BMCB 750	Physical Biochemistry	3
BMCB 760	Pharmacology	4
BMCB 763	Biochemistry of Cancer	4
BMCB #783	Proteomics for Biological Discoveries	4
BMCB 794	Protein Structure and Function	4

BMCB 795	Investigations in Molecular and Cellular Biology (4- 1-4 credit minimum)	
BMCB 795W	Investigations in Molecular and Cellular Biology (4- 1-4 credit minimum)	
BMCB 799	Senior Thesis (4-credit minimum)	1-4
BMS 799H	Senior Honors Thesis (4-credit minimum)	1-4
INCO 790	Advanced Research Experience (4-credit minimum)	1-4

For a Capstone experience not listed above, such as an internship, submit a Capstone Approval form **prior** to beginning the experience.

Degree Plan**SAMPLE Course Sequence for Biochemistry, Molecular, and Cellular Biology**

Course	Title	Credits
First Year		
Fall		
BMCB 401	Professional Perspectives in Biochemistry, Molecular and Cellular Biology	1
ENGL 401	First-Year Writing	4
CHEM 403	General Chemistry I	4
BIOL 411	Introductory Biology: Molecular and Cellular Discovery Course	4
		Credits
		17
Spring		
CHEM 404	General Chemistry II	4
BIOL 412	Introductory Biology: Evolution, Biodiversity and Ecology	4
MATH 424B	Calculus for Life Sciences	4
Discovery Course		4
		Credits
		16
Second Year		
Fall		
CHEM 547 & CHEM 549	Organic Chemistry I and Organic Chemistry Laboratory	5
BMS 503 & BMS 504	General Microbiology and General Microbiology Laboratory	5
BIOL 528	Applied Biostatistics I	4
PHYS 401	Introduction to Physics I	4
		Credits
		18
Spring		
CHEM 548 & CHEM 550	Organic Chemistry II and Organic Chemistry Laboratory	5
GEN 604	Principles of Genetics	4
PHYS 402	Introduction to Physics II	4
Discovery Course		4
		Credits
		17
Third Year		
Fall		
BMCB 751	Principles of Biochemistry	4
BMCB Core or Lab Techniques course		4-5
Discovery Course		4

Elective (any course)	4
Credits	16-17
Spring	
BMCB 605 Eukaryotic Cell and Developmental Biology	4
BMCB 752 Principles of Biochemistry	4
BMCB Core or Lab Techniques course	4-5
Discovery Course	4
Credits	16-17
Fourth Year	
Fall	
Major Elective (possible Capstone)	4
Discovery Course	4
Elective (any course)	4
Elective (any course)	4
Credits	16
Spring	
Elective (any course)	4-5
Major Elective	4
Elective (any course)	4
Credits	12-13
Total Credits	128-131

Biochemistry, Molecular and Cellular Biology Minor

<https://colsa.unh.edu/molecular-cellular-biomedical-sciences/program/minor/biochemistry-molecular-cellular-biology>

Description

Students who wish to develop focused competencies in biochemistry, molecular biology, and/or cell biology can complement their major academic program with a minor in biochemistry, molecular and cellular biology (BMCB).

Requirements

Complete 20 credits from the courses listed below, with a grade of C- or better. A C average (2.00) is required in courses that the minor department approves.

No more than 8 credits used to satisfy major requirements may be used for the minor.

4 credits of BMCB 795 (*Investigations*) may be used toward the minor. Pass/fail courses may not be used for the minor.

It is the student's responsibility to complete a Certification of Completion of Minor form (<http://www.unh.edu/registrar/forms/minorform.pdf>) during their final semester at UNH.

Code	Title	Credits
BMCB 605	Eukaryotic Cell and Developmental Biology	4
BMCB 750	Physical Biochemistry	3
BMCB 751	Principles of Biochemistry	4
BMCB 752	Principles of Biochemistry	4
BMCB 753	Cell Culture	5
BMCB 754	Molecular Biology Research Methods	5

BMCB 755	Laboratory in Biochemistry and Molecular Biology	5
BMCB 760	Pharmacology	4
BMCB 763	Biochemistry of Cancer	4
BMCB #783	Proteomics for Biological Discoveries	4
BMCB 794	Protein Structure and Function	4
BMCB 795	Investigations in Molecular and Cellular Biology (4-1-4 credit maximum)	4
GEN 704	Genetics of Prokaryotic Microbes	5
GEN 771	Molecular Genetics	4

Biology

<https://colsa.unh.edu/biological-sciences>

Description

UNH's location and facilities provide unique opportunities for the study of biology due to its access to the seacoast, the Shoals Marine Laboratory (<http://marine.unh.edu/SML>), the lakes region of NH, and White Mountain National Forest. The Biology faculty strongly believe in a hands-on approach to teaching and active involvement of undergraduates in research. We have a wide range of faculty expertise, including freshwater, estuarine and marine biology, aquaculture, physiology, neurobiology, and behavior. A Biology degree provides the background for a variety of professional positions in the public and private sectors, and provides an excellent foundation for students seeking to apply for graduate, medical, or veterinary school.

Programs

- Biology Major (B.S.) (p. 231)
- Biology Minor (p. 233)
- Plant Biology Minor (p. 234)

Faculty

<https://colsa.unh.edu/biological-sciences/people>

Biology Major (B.S.)

<https://colsa.unh.edu/biological-sciences/program/bs/biology-major>

Description

The biology major is designed to provide a strong, broad education in biological sciences to students interested in the life sciences. The biology major integrates theoretical and practical (hands-on laboratory and field work) courses in different aspects of the biology of animals, microbes, and plants. The curriculum is designed to reflect the diversity of biological systems in nature. It encompasses the study of structural and functional relationships of living organisms at the molecular, cellular, and organismal level, the interactions of living systems with the environment and with each other, and the evolutionary relationships of various forms of life. The goal is to create a facilitative environment for those with a scholarly interest in the biological sciences, and to extend their understanding, awareness, and appreciation of the diversity of the biological sciences.

The major is aimed at promoting excellence in biological science education by involving undergraduate students in strong interaction with faculty both in the classroom and in research laboratories, and encouraging the development of quality undergraduate programs in all aspects of biology.

The biology major prepares students for graduate work in the biological and medical fields, and for job opportunities in industry (biomedical, pharmaceutical, environmental, and biotechnological) and governmental research, and secondary school teaching. Completion of the four-year undergraduate program plus a fifth-year internship will be necessary for biology teaching certification. Students who plan to enter medical, dental, or related professional schools are advised to confer with their faculty adviser to build the requirements for these programs into their academic majors.

Courses in the biology major are selected from departments that constitute the biological sciences community at UNH. The flexibility of the curriculum allows student choice of a wide selection of courses in various departments. Students in the major take a biology core curriculum consisting of introductory and upper-level science courses. They must also take seven additional courses in the biological sciences; three of these must be selected from course lists in three broad categories.

While students are advised to declare the biology major as incoming first-year students to assure adequate program planning, transfer into the program at a later stage is also possible. Since several of the other biological sciences majors share the same biology core curriculum, it is quite easy to change to or from these other majors.

Requirements

Biology Core Curriculum

The biology courses in the core curriculum constitute an integrated sequence of courses imparting basic skills and concepts of biology to expose students to the breadth of knowledge inherent in the biological sciences. The biology core allows a student to obtain a broad background in biology, and in the related physical sciences and math.

Code	Title	Credits
Core Curriculum Courses		
BIOL 400	Professional Perspectives on Biology ¹	1
BIOL 412	Introductory Biology: Evolution, Biodiversity and Ecology	4
BIOL 411	Introductory Biology: Molecular and Cellular	4
BIOL 541	General Ecology	4
BMS 503 & BMS 504	General Microbiology and General Microbiology Laboratory	5
GEN 604	Principles of Genetics	4
CHEM 403 & CHEM 404	General Chemistry I and General Chemistry II	8
MATH 424B or MATH 425	Calculus for Life Sciences or Calculus I	4
BIOL 528	Applied Biostatistics I	4
PHYS 401 & PHYS 402	Introduction to Physics I and Introduction to Physics II	8
CHEM 545 & CHEM 546	Organic Chemistry and Organic Chemistry Laboratory ²	

BMCB 658 & BMCB 659 General Biochemistry and General Biochemistry Lab ²

Total Credits 46

¹ BIOL 400 Professional Perspectives on Biology is required only for first-year biology majors.

² Students exploring pre-health professions should take a full year of Organic Chemistry (CHEM 651/653 and CHEM 652/654) in place of CHEM 545/CHEM 546 and BMCB 658/BMCB 659.

Biology Electives

In addition to the biology core curriculum, students must complete seven biology elective courses. One course must be taken from each of the three categories/disciplines; the other four electives can be chosen from the category lists or can be any other biological sciences course with approval of the student's adviser. At least two of these must be courses with labs. The last four courses must be 500-level or above. There must be one animal-identified course (A) and one plant-identified course (P). One capstone experience, supervised and approved within the major, is required of all seniors. The capstone requirement is completed in the senior year, and may be satisfied by a course (C), created work or product, or some form of experiential learning (e.g., honors thesis, mentored research project, and other special student activity). A complete list of approved courses in each category/discipline is available from the student's adviser, the Department of Biological Sciences office, and the biology website at colsa.unh.edu/dbs/biology. (<http://colsa.unh.edu/dbs/biology>) Corequisite lecture and lab courses count as one course.

Code	Title	Credits
Category 1: Form and Function (Morphology, Anatomy and Physiology)		
ANSC 511	Anatomy and Physiology (A)	4
ANSC 512	Anatomy and Physiology (A)	4
ANSC 701	Physiology of Reproduction (A)	4
BIOL 701	Plant Physiology (P)	5
BIOL 702	Techniques in Plant Physiology and Biochemistry (P, C)	4
BIOL 758	Plant Anatomy (P)	5
BMS 507	Human Anatomy and Physiology I (A)	4
BMS 508	Human Anatomy and Physiology II (A)	4
BMS 702	Endocrinology	4
NR 625	Physiological Ecology	4
BMS 718	Mammalian Physiology (A)	4
ZOOL 518	Vertebrate Morphology (A)	5
ZOOL 625	Principles of Animal Physiology (A, ZOOL 626 Lab optional)	3
ZOOL 773	Physiology of Fish (A)	4
ZOOL 777	Neuroethology	3
MEFB 754	Anatomy and Function of Marine Vertebrates (SML, A)	4
BioSM 1650	Whales, Seals and Sharks (SML, A)	3
Category 2: Genetics/Development (including molecular biology and bioinformatics)		
ANSC 612	Genetics of Domestic Animals (A)	4
BMCB 605	Eukaryotic Cell and Developmental Biology	4
GEN 704	Genetics of Prokaryotic Microbes	5
GEN 705	Population and Quantitative Genetics	4

GEN 706	Human Genetics (A)	4
GEN 711	Genomics and Bioinformatics	4
GEN 771	Molecular Genetics	4
GEN 772	Evolutionary Genetics of Plants (P, C)	4
GEN 774	Techniques in Plant Genetic Engineering and Biotechnology (P, C)	4
ZOOL 529	Developmental Biology (A)	4
ZOOL 736	Genes and Behavior (A, C)	4

Category 3: Evolution, Ecology and Biodiversity (including population biology)

BIOL 510	Mushrooms, Molds, and Mildews: Introduction to the Fungal Kingdom	4
BIOL 704	Plant-Microbe Interactions	3
BIOL 720	Plant-Animal Interactions	4
BIOL 752	Mycology	4
BIOL 566	Systematic Botany (P)	4
GEN 715	Molecular Evolution	4
MEFB 525	Introduction to Aquatic Botany (P)	4
MEFB 527	Aquatic Animal Diversity (A)	4
MEFB 717	Lake Ecology	4
MEFB 722	Marine Phycology (P, C)	4
MEFB 725	Marine Ecology (C)	4
MEFB 747	Aquatic Plants in Restoration/Management (P)	4
NR 506	Forest Entomology (A)	4
NR 642	Introduction to Biogeography	4
NR 660	Ecology and Biogeography of New Zealand	5
NR 663	Applied Directed Research in New Zealand (C)	4
NR 712	Mammalogy (A)	4
NR 713	Quantitative Ecology	4
NR 765	Community Ecology	4
ZOOL 542	Ornithology (A)	4
ZOOL 613	Animal Behavior (A)	5
ZOOL 628	Marine Invertebrate Evolution and Ecology (A)	5
ZOOL 690	Evolution (C)	4
ZOOL 710	Ichthyology (A)	4
ZOOL 733	Behavioral Ecology (A, C)	4
ZOOL 745	Biology and Diversity of Insects (A, C)	4
MEFB 510	Field Ornithology (SML, A)	4
MEFB 630	Biodiversity and Biology of Marine Invertebrates (SML, A)	4
MEFB 674	Ecology and Marine Environment (SML)	4
MEFB 714	Field Animal Behavior (SML, A, C)	4
BIOSM 1780	Evolution and Marine Diversity (SML)	4

Other Elective Options

BIOL 700	Current and Controversial Issues in Biology	4
BMS 602 & BMS 603	Pathogenic Microbiology and Pathogenic Microbiology Laboratory	5
BMS 655	Human and Animal Parasites (A)	3
BMS 703	Infectious Disease and Health	4
BMS 706 & BMS 708	Virology and Virology Laboratory	5
BMS 711	Toxicology	4
HMP 501	Epidemiology and Community Medicine	4

NSB 727	Animal Communication (A)	4
NSB 728	Research Methods in Animal Behavior (A)	4
PSYC 531	Psychobiology	4
SAFS 651	Plant Pathology (P)	4
ZOOL 610	Principles of Aquaculture	4
ZOOL 726	Conservation Behavior	4
ZOOL 750	Biological Oceanography	4

Note: It is strongly recommended that students participate in an exchange semester at another university, or in a field-oriented program or internship. There are many exchange opportunities available in which a full semester of credits toward the major may be earned. It is further recommended that students explore possibilities of one or more semesters of independent investigation (research projects). For details, students should contact their adviser. Financial support is available for most of these programs. In addition, students can explore the courses at the Shoals Marine Laboratory (SML), which provides an excellent setting for several "field-oriented" courses during the summer. Often there is financial support available for the SML programs. (See the SML website at <https://marine.unh.edu/SML> or the Cornell website at <http://www.shoalsmarinelaboratory.org> for details.)

One 600, 695, 795, or 796 experience totaling three or more credits or any two 795-796 experiences of two credits each can fulfill one course requirement in any category with adviser approval. A Petition for Academic Variance approved by the chair of the Department of Biological Sciences is required to count 795-796 experiences for more than one major-required course. Students should check the biology website colsa.unh.edu/dbs/biology (<http://colsa.unh.edu/dbs/biology>) and the UNH online catalog for updates and current course offerings.

Academic Requirements

To receive the B.S. degree in biology, students must complete 128 credit hours with at least a 2.0 cumulative grade-point average. Courses must include all UNH Discovery Program requirements, biology core curriculum requirements, seven additional courses from the biological sciences, and a capstone experience or course. The capstone explores areas of interest based on the integration of prior learning. Departments are responsible for certifying that graduating seniors have met the capstone requirement for their majors. A minimum grade of C- is required in all biological science courses that are counted toward the requirements for a degree in biology. Students who expect to compete successfully for post-baccalaureate programs should attain a cumulative GPA of 3.0 or higher by the end of the sophomore year and maintain it at that level.

Biology Minor

<https://colsa.unh.edu/biological-sciences/program/minor/biology>

Description

The Biology Minor is designed to give students a broad background in basic biological theories and processes, while providing experiences in ecology, evolution, and organismal diversity.

Requirements

Code	Title	Credits
Required Courses		
BIOL 411	Introductory Biology: Molecular and Cellular	4
BIOL 412	Introductory Biology: Evolution, Biodiversity and Ecology	4
BIOL 541 or ZOO 690	General Ecology (both are writing intensive) Evolution	4
Two courses dealing with organismal surveys ¹		
Animal Survey Course: Choose one		4-5
MEFB 527	Aquatic Animal Diversity	
ZOO 542	Ornithology	
ZOO 628	Marine Invertebrate Evolution and Ecology	
ZOO 710	Ichthyology	
ZOO 745	Biology and Diversity of Insects	
NR 712	Mammalogy	
Plant or Fungus Survey Course: Choose one		4
Plant Survey Courses:		
BIOL 566	Systematic Botany	
MEFB 525	Introduction to Aquatic Botany	
MEFB 722	Marine Phycology	
Fungus Survey Course:		
BIOL 752	Mycology	

¹ One must focus on animals, and the other on plants or fungi

Plant Biology Minor

<https://colsa.unh.edu/dbs/biology/plant-biology-minor>

Description

The Minor in Plant Biology is designed to provide a broad introduction to plant biology and why plants are important to humans, while providing a framework for understanding plant diversity, function, and behavior. Two electives allow the opportunity to choose a specialized area of plant biology that is of interest. Five courses are required for the minor, of which no more than two can overlap with major requirements.

Requirements

The requirements for the plant biology minor are:

Code	Title	Credits
Required course:		4
BIOL 409	Introductory Botany	
Choose one of the following two 400-level courses that deal with plant value to humans:		4
BIOL 408	Plants and Civilization	
SAFS 421	Introductory Horticulture	
Choose one of the following 500-level courses that deal with plant biodiversity:		4
MEFB 525	Introduction to Aquatic Botany	

BIOL 566 Systematic Botany

Choose two additional plant-based courses at the 500 level or higher, including BIOL or MEFB 795 (must be taken for 4 credits).¹

¹ Course options include BIOL 566 (when MEFB 525 is taken), BIOL 701, BIOL 702, BIOL 709, BIOL 758, GEN 772, GEN 774, MEFB 525 (when BIOL 566 is taken), MEFB #616, MEFB 727, MEFB 625, MEFB 722, MEFB 747.

The minimum acceptable grade in these courses is a C-; the average grade for these courses must be a C or better.

For advice on course selection, students should see the chair of the Department of Biological Sciences, Spaulding Hall Rm 117, or (603) 862-3205.

Biomedical Science (BMS)

The Biomedical Science (BMS) major focuses on fundamental concepts in biological sciences as they apply to human and animal health, medicine, and disease. Students attracted to Biomedical Science have a profound interest in human and animal physiology and diseases. The BMS major encompasses three options: Medical Laboratory Sciences (MLS), Medical Microbiology (MM), and Medical and Veterinary Sciences (MVS). Each of the options in the BMS major is based on solid foundational and advanced courses in chemistry and the biological sciences. BMS:MLS focuses on the laboratory diagnosis of human disease, BMS:MM focuses on infectious agents and host response, and BMS:MVS focuses on health and manifestations of disease in animals, including humans. For descriptions of each option and their curricular details, visit <http://colsa.unh.edu/mcbs/biomedical/biomedical-science-bs>.

Faculty in the BMS major have expertise in many areas of biomedical science, including physiology, cell biology, infectious diseases, veterinary pathology, and laboratory medicine. The biomedical science faculty strongly encourage students to complement their academic courses with experiential learning opportunities through internships, field experience, and independent research projects conducted with biomedical research faculty. On-campus facilities include state-of-the-art research and teaching laboratories and the New Hampshire Veterinary Diagnostic Laboratory (<https://nhvdl.unh.edu>) (NHVDL) that provides unique learning opportunities for students interested in veterinary medicine, pathobiology, and laboratory diagnostics.

There is high demand for skilled biomedical scientists as research technicians in biotechnology companies, pharmaceutical companies, government agencies, forensics, academic research laboratories, and hospitals, so BMS majors enjoy excellent job prospects upon graduation. The BMS curriculum also provides graduates with the required and recommended courses for admission to most graduate schools and professional schools of medicine, veterinary medicine, dentistry, public health, and pharmacy, as well as to physician assistant and pathology assistant programs. BMS graduates have a knowledge base that is valuable in the fields of sales, marketing, regulatory affairs, technical writing, patent law, and scientific journalism. With additional courses in education, the B.S. in biomedical science also qualifies graduates to teach at the elementary, junior high, and high school levels.

Pre-Professional Health Programs

Students interested in postgraduate careers in the health care professions (e.g., medical, dental, physician's assistant, pharmacy,

etc.) should visit the Pre-Professional Health Programs Advising Office (<http://www.unh.edu/uacc/premed-advising>). Students interested in veterinary medicine should consult the Pre-Veterinary Medicine Program (<https://colsa.unh.edu/molecular-cellular-biomedical-sciences/pre-vet-program>) website. While many of the prerequisite courses required by professional schools are also requirements of the biomedical science major, students should consult with their faculty adviser to create a plan of study that best prepares them for pursuing a career in one of these health professions.

<https://colsa.unh.edu/molecular-cellular-biomedical-sciences>

Programs

- Biomedical Science Major: Medical and Veterinary Sciences Option (B.S.) (p. 235)
- Biomedical Science Major: Medical Laboratory Sciences Option (B.S.) (p. 238)
- Biomedical Science Major: Medical Microbiology Option (B.S.) (p. 241)
- Biomedical Science Minor (p. 243)

Faculty

<https://colsa.unh.edu/molecular-cellular-biomedical-sciences/people>

Biomedical Science Major: Medical and Veterinary Sciences Option (B.S.)

<https://colsa.unh.edu/molecular-cellular-biomedical-sciences/program/bs/biomedical-science-major-medical-veterinary>

Description

The **Biomedical Science: Medical and Veterinary Sciences (BMS:MVS)** program is founded on the principles of the One Health Initiative (<http://www.onehealthinitiative.com>), which unites human and veterinary medicine. This rigorous academic program meets requirements for entry into veterinary school, medical school, and graduate school in the area of biomedical science or for a career as a research scientist in either the biotechnology/pharmaceutical sector or government and academic research labs.

You will select elective courses from three major areas of study:

- biomedical systems
- pathobiology and disease
- public health and environmental issues

As a BMS:MVS major, you have many opportunities for career-relevant learning experiences including:

- NH Veterinary Diagnostic Laboratory (<https://nhvdl.unh.edu>) located on the UNH campus
- UNH Agricultural Experiment Station (<https://colsa.unh.edu/nhaes>) farm facilities

- independent research in laboratories of UNH biomedical science faculty
- experience in local hospitals
- internships in biotechnology and pharmaceutical companies in the Greater Boston area

Careers or post-baccalaureate education of previous Medical & Veterinary Sciences graduates include:

- **research scientists/laboratory technicians**
 - biotechnology and pharmaceutical companies
 - academic biomedical research programs
 - forensic laboratories
- **state and federal government employment**
 - public health laboratories
 - health inspector (e.g., Food and Drug Administration)

BMS:MVS graduates are prepared for post-baccalaureate education in:

- **professional health programs**
 - veterinary school (<https://colsa.unh.edu/molecular-cellular-biomedical-sciences/pre-vet-program>)
 - medical school (<http://www.unh.edu/uacc/premed-advising/explore-medicine>)
 - allied health programs (physician assistant (<http://www.unh.edu/uacc/premed-advising/explore-physician-assistant>) or pathologist's assistant (<http://www.pathassist.org>))
- **graduate programs**
 - biomedical science
 - pathology
 - public health

Requirements

Students in the Medical and Veterinary Sciences (MVS) option take eight Foundation courses, five Bioscience Core courses, three MVS Core courses, and seven MVS Major Elective courses. One capstone experience, supervised and approved within the major, is required of all seniors. In addition, all other university academic requirements must be completed, including those for the Discovery Program (<http://www.unh.edu/undergrad-catalog/gi.cfm?thisid=242&masterid=27&headingid=27/#242>) and the University Writing Requirement (<http://www.unh.edu/undergrad-catalog/gi.cfm?thisid=28&masterid=27&headingid=27/#28>).

A grade of C-minus or above is required in all courses within the major, which includes Foundation courses, Bioscience Core, BMS-MVS Core and BMS-MVS Major Electives.

Students applying to health profession schools need a full year of English. ENGL 415C, ENGL 419, ENGL 501, ENGL 502 or ENGL 503 should be taken in addition to ENGL 401. For further details, visit the Pre-Professional Health Program Advising Office (<http://www.unh.edu/uacc/premed-advising>) on-line or in person (Hood House, Room 102).

Foundation Courses

Code	Title	Credits
CHEM 403	General Chemistry I ¹	4
CHEM 404	General Chemistry II	4
CHEM 651 & CHEM 653	Organic Chemistry I and Organic Chemistry Laboratory	5
CHEM 652 & CHEM 654	Organic Chemistry II and Organic Chemistry Laboratory	5
MATH 424B	Calculus for Life Sciences ²	4
BIOL 528	Applied Biostatistics I	4
PHYS 401	Introduction to Physics I	4
PHYS 402	Introduction to Physics II	4

¹ CHEM 403 fulfills the Physical Science Discovery requirement

² MATH 424B fulfills the Quantitative Reasoning Discovery requirement

Bioscience Core Courses

Code	Title	Credits
BIOL 411	Introductory Biology: Molecular and Cellular ³	4
BIOL 412	Introductory Biology: Evolution, Biodiversity and Ecology	4
BMS 503 & BMS 504	General Microbiology and General Microbiology Laboratory	5
GEN 604	Principles of Genetics	4
BMCB 658 & BMCB 659	General Biochemistry and General Biochemistry Lab	5

³ BIOL 411 fulfills the Biological Science Discovery requirement, Discovery Laboratory requirement, and the Discovery Inquiry requirement.

BMS-MVS Core Courses

Code	Title	Credits
BMS 401	Professional Perspectives in Biomedical Sciences	1
BMS 507 or ANSC 511	Human Anatomy and Physiology I Anatomy and Physiology	4
BMS 508 or ANSC 512	Human Anatomy and Physiology II Anatomy and Physiology	4

BMS-MVS Major Elective Courses

A total of seven **unique** major elective courses are required. At least two courses must be taken in each of the following subject areas: biomedical systems, pathobiology and disease, and health and environmental issues. One additional course is taken from any of the three major elective subject areas.

Biomedical Systems Electives

Recommended Courses

Code	Title	Credits
BMS 702	Endocrinology	4
BMS 718	Mammalian Physiology	4
BMCB 605	Eukaryotic Cell and Developmental Biology	4
BMCB 760	Pharmacology	4

GEN 717	Molecular Microbiology	5
NUTR 750	Nutritional Biochemistry	4

Other Appropriate Courses

Code	Title	Credits
BMS 623	Histology: Microscopic Cellular Structure and Function	4
BMS 740	Human Microbiome	4
ANSC 609	Principles of Animal Nutrition	4
ANSC 612	Genetics of Domestic Animals	4
ANSC 698	Cooperative for Real Education in Agricultural Management (CREAM)	4
ANSC 701	Physiology of Reproduction	4
ANSC 708	Ruminant Nutritional Physiology	3
ANSC 710	Dairy Nutrition	4
ANSC 715	Physiology of Lactation	4
ANSC 724	Reproductive Management and Artificial Insemination	4
BMCB 753	Cell Culture	5
BMCB 754	Molecular Biology Research Methods	5
BMCB 794	Protein Structure and Function	4
CHE 762	Biomedical Engineering	4
GEN 704	Genetics of Prokaryotic Microbes	5
GEN 705	Population and Quantitative Genetics	4
GEN 706	Human Genetics	4
GEN 711	Genomics and Bioinformatics	4
GEN 713	Microbial Ecology and Evolution	4
GEN 715	Molecular Evolution	4
GEN 771	Molecular Genetics	4
KIN 684 & KIN 685	Emergency Medical Care: Emergency Medical Technician (EMT) and Emergency Medical Care: EMT Lab	5
ZOOL 613	Animal Behavior	5
ZOOL 777	Neuroethology	3

Pathobiology and Disease Electives

Recommended Courses

Code	Title	Credits
BMS 602	Pathogenic Microbiology	3
BMS 655	Human and Animal Parasites	3
BMS 704	Pathologic Basis of Disease	4
BMS 705	Immunology	3
BMS 711	Toxicology	4
BMS 719	Host-Microbe Interactions	4
BMCB 763	Biochemistry of Cancer	4

Other Appropriate Courses

Code	Title	Credits
BMS 644	Clinical Hematology	3
BMS 650	Molecular Diagnostics	4
BMS 656	Immunohematology	3
BMS 658	Medical Biochemistry	3
BMS 703	Infectious Disease and Health	4

BMS 706	Virology	3
BMS 712	Grand Rounds (4-credit minimum)	2
BMS 720	Mycology, Parasitology, and Virology	3
NUTR 773	Clinical Nutrition	4
AAS 527	Companion Animal Diseases	2
AAS 574	Dairy Cattle Disease Seminar	2

Health and Environmental Issues Electives**Recommended Courses**

Code	Title	Credits
BMS 716	Public Health: Food- and Water-borne Diseases	4
BMS 730	Ethical Issues in Biomedical Science	4
ANTH 610	Medical Anthropology: Illness and Healing	4
BIOL 541	General Ecology	4
HMP 401	United States Health Care Systems ⁴	4
HMP 501	Epidemiology and Community Medicine	4
NR 435	Contemporary Conservation Issues and Environmental Awareness ⁴	4
SOC #635	Medical Sociology	4

⁴ Only one 400-level course may be taken to fulfill a Major Elective requirement.

Other Appropriate Courses

Code	Title	Credits
ANTH 685	Gender, Sexuality and HIV/AIDS in Sub-Saharan Africa	4
CLAS 525	Greek and Latin Origins of Medical Terms	4
HMP 505	Public Health: History and Practice	4
HMP 569	Human Behavior and the Public Health	4
HMP 642	Health Economics	4
NR 650	Principles of Conservation Biology	4
PSYC 531	Psychobiology	4
PSYC 737	Behavioral Medicine	4

Other Major Electives

Code	Title	Credits
BMS 799	Senior Thesis (4-credit minimum)	1-4
BMS 799H	Senior Honors Thesis (4-credit minimum)	1-4

BMS: MVS Capstone

The capstone explores areas of interest based on the integration of prior learning. The capstone requirement may be satisfied through a course, created work or product, or some form of experiential learning (e.g., honors thesis, mentored research project, or other special student activity). The capstone requirement can only be fulfilled once a student has senior standing in the major.

Approved BMS:MVS Capstone Courses

Code	Title	Credits
BMS 635	Preceptorial in Prehospital Care (4-credit minimum)	2
BMS 702	Endocrinology	4
BMS 704	Pathologic Basis of Disease	4

BMS 711	Toxicology	4
BMS 718	Mammalian Physiology	4
BMS 719	Host-Microbe Interactions	4
BMS 740	Human Microbiome	4
BMS 795	Investigations in Biomedical Science (4-credit minimum)	1-8
BMS 795W	Investigations in Biomedical Science (4-credit minimum)	1-8
BMS 799	Senior Thesis (4-credit minimum)	1-4
BMS 799H	Senior Honors Thesis (4-credit minimum)	1-4
ANSC 698	Cooperative for Real Education in Agricultural Management (CREAM)	4
BMCB 753	Cell Culture	5
INCO 790	Advanced Research Experience	1-4
NUTR 750	Nutritional Biochemistry	4
Other 795 Investigations course in the biological sciences		

For a Capstone experience not listed above, such as an internship, submit a Capstone Experience Approval form **prior** to beginning the experience.

Degree Plan**SAMPLE Course Sequence for Medical and Veterinary Sciences**

Course	Title	Credits
First Year		
Fall		
BMS 401	Professional Perspectives in Biomedical Sciences	1
BIOL 411	Introductory Biology: Molecular and Cellular	4
ENGL 401	First-Year Writing	4
CHEM 403	General Chemistry I	4
Discovery Course		4
Credits		17
Spring		
BIOL 412	Introductory Biology: Evolution, Biodiversity and Ecology	4
MATH 424B	Calculus for Life Sciences	4
CHEM 404	General Chemistry II	4
Discovery Course		4
Credits		16
Second Year		
Fall		
GEN 604	Principles of Genetics	4
CHEM 651 & CHEM 653	Organic Chemistry I and Organic Chemistry Laboratory	5
BMS 507 or ANSC 511	Human Anatomy and Physiology I or Anatomy and Physiology	4
Discovery Course		4
Credits		17
Spring		
BMS 503 & BMS 504	General Microbiology and General Microbiology Laboratory	5

CHEM 652 & CHEM 654	Organic Chemistry II and Organic Chemistry Laboratory	5
BMS 508 or ANSC 512	Human Anatomy and Physiology II or Anatomy and Physiology	4
Discovery Course		4
Credits		18
Third Year		
Fall		
BMCB 658 & BMCB 659	General Biochemistry and General Biochemistry Lab	5
PHYS 401	Introduction to Physics I	4
BIOL 528	Applied Biostatistics I	4
Major Elective		3-4
Credits		16-17
Spring		
Major Elective		4
PHYS 402	Introduction to Physics II	4
Major Elective		4
Discovery Course		4
Credits		16
Fourth Year		
Fall		
Major Elective (Capstone)		4
Major Elective		4
Discovery Course		4
Elective (any course)		4
Credits		16
Spring		
Major Elective		4
Major Elective		4
Elective (any course)		4
Credits		12
Total Credits		128-129

Biomedical Science Major: Medical Laboratory Sciences Option (B.S.)

<https://colsa.unh.edu/molecular-cellular-biomedical-sciences/program/bs/biomedical-science-major-medical-laboratory>

Description

The Biomedical Science: **Medical Laboratory Science (BMS:MLS) program** provides you with the medical knowledge and understanding of diagnostic technology needed for a fulfilling career in the biomedical sciences, including as an American College of Clinical Pathology-certified Medical Laboratory Scientist.

As a Biomedical Science: Medical Laboratory Science major, you will:

- learn to determine the presence, extent, or absence of human disease through understanding the diagnostic testing that medical professionals use to make these determinations (*70% of physician decisions are based on diagnostic testing results*)

- obtain hands-on experience by performing immunological, biochemical, molecular, and microbiological procedures that aid in the diagnosis, treatment, and prevention of disease

Unique features of the MLS option include:

- the only 4-year degree program in NH that includes a path for students to become certified as Medical Laboratory Scientists (MLS) by the American Society of Clinical Pathology (ASCP (<http://www.ascp.org>)), and is accredited by the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS (<http://www.naacls.org>))
- **Certified Medical Laboratory Scientists** are in high demand and easily find employment in hospitals and medical centers throughout the country
- the MLS program is affiliated with Dartmouth Hitchcock Medical Center and NorDx/Maine Medical Center

Careers or post-baccalaureate education of previous Medical Laboratory Science graduates include:

- **Certified Medical Laboratory Scientists (ASCP) in diagnostic testing laboratories in hospitals and industry**
- **research scientists/laboratory technicians**
 - biotechnology and pharmaceutical companies
 - biomedical research facilities
 - forensic laboratories
 - hospital reference laboratories
 - government public health laboratories
- **secondary school educators** (with additional coursework in education)
- **diagnostic product development**
- **sales and marketing**
- **state and federal government agencies** (e.g., U.S. Food and Drug Administration).
- **professional health programs**
 - medical school (<https://www.unh.edu/uac/premed-advising/explore-medicine>)
 - allied health programs (physician assistant (<https://www.unh.edu/uac/premed-advising/explore-physician-assistant>), pathologists' assistant (<http://www.pathassist.org>), pharmacy (<https://www.unh.edu/uac/premed-advising/explore-pharmacy>))
 - pharmacist, or pathologist's assistant programs)
- **graduate programs**
 - microbiology
 - biomedical science
 - biochemistry
 - public health
 - business administration

Requirements

The Medical Laboratory Sciences (MLS) program is NAACLS (<https://www.naacls.org/Home.aspx>) accredited and follows accreditation requirements. Students in this option take four Foundation courses, five Bioscience Core courses, six required BMS:MLS core courses, and five Major Elective courses. One capstone experience, supervised

and approved within the major, is required of all seniors. The capstone explores areas of interest based on the integration of prior learning. In addition, all other University academic requirements must be completed, including those for Discovery Program (<https://catalog.unh.edu/undergraduate/university-academic-requirements/discovery-program>) and the University Writing Requirement (<https://catalog.unh.edu/undergraduate/university-academic-requirements/writing>).

A grade of C-minus or above is required in BMS:MLS Core Courses.

Foundation Courses

Code	Title	Credits
CHEM 403	General Chemistry I	4
CHEM 404	General Chemistry II	4
CHEM 545 & CHEM 546	Organic Chemistry and Organic Chemistry Laboratory ¹	5
Select one of the following:		
BIOL 528	Applied Biostatistics I	4
PSYC 402	Statistics in Psychology	4
SOC 502	Statistics	4
MATH 439	Statistical Discovery for Everyone	4

Bioscience Core Courses

Code	Title	Credits
BMS 508	Human Anatomy and Physiology II	4
GEN 604	Principles of Genetics	4
BMCB 658 & BMCB 659	General Biochemistry and General Biochemistry Lab	5
Select one of the following:		4-5
BMS 503 & BMS 504	General Microbiology and General Microbiology Laboratory	5
BMS 501	Microbes in Human Disease	4
Select one of the following:		
BMS 507	Human Anatomy and Physiology I	4
BIOL 411	Introductory Biology: Molecular and Cellular ¹	4

¹ Students applying to health profession schools need a full year of English, a full year of Introductory Biology, and a full year of Organic Chemistry. ENGL 502 or ENGL 503 should be taken in addition to ENGL 401; CHEM 651/CHEM 653 and CHEM 652/CHEM 654 should be taken in place of CHEM 545/CHEM 546. See Pre-Professional Health Program Advising. (<http://www.unh.edu/uacc/premed-advising>)

BMS-MLS Core Courses

Code	Title	Credits
BMS 401	Professional Perspectives in Biomedical Sciences	1
BMS 560 & BMS 561	Body Fluids and Body Fluids Laboratory	4
BMS 602 & BMS 603	Pathogenic Microbiology and Pathogenic Microbiology Laboratory	5
BMS 642 & BMS 643	Clinical Immunology and Serology and Clinical Serology Laboratory	4
BMS 650	Molecular Diagnostics	4
BMS 720	Mycology, Parasitology, and Virology ²	3

² If BMS 721 Mycology, Parasitology, and Virology Laboratory is taken concurrently with BMS 720 Mycology, Parasitology, and Virology, it may count as one of the two required laboratory elective components. However, BMS 721 does not count as a Major Elective course, so five Major Electives must still be completed, at least one of which includes a lab component, plus four additional Major Electives with or without lab.

BMS-MLS Major Electives

A total of five unique Major Electives is required. Two courses must have a Laboratory component.

Code	Title	Credits
Choose TWO Major Electives with a Laboratory component		
BMS 623	Histology: Microscopic Cellular Structure and Function	4
BMS 644 & BMS 645	Clinical Hematology and Clinical Hematology Laboratory ³	5
BMS 656 & BMS 657	Immunohematology and Blood Banking Laboratory ³	4
BMS 658 & BMS 659	Medical Biochemistry and Clinical Chemistry Laboratory ³	5
BMS 705 & BMS 715	Immunology and Immunology Laboratory	5
BMS 706 & BMS 708	Virology and Virology Laboratory	5
BMS 721	Mycology, Parasitology, and Virology Laboratory (coreq BMS 720) ^{2,3}	2
BMS 740	Human Microbiome	4

Code	Title	Credits
Choose THREE Major Electives from the list below (FOUR if BMS 721 is counted as a Laboratory course) ²		
BMS 610	Biomedical Lab Management ³	4
BMS 623	Histology: Microscopic Cellular Structure and Function	4
BMS 635	Preceptorial in Prehospital Care	2
BMS 640	Phlebotomy Theory ³	2
BMS 641	Phlebotomy Clinical Internship ³	1-2
BMS 644	Clinical Hematology	3
BMS 644 & BMS 645	Clinical Hematology and Clinical Hematology Laboratory ³	5
BMS 644 & BMS 646	Clinical Hematology and Clinical Hemostasis	4
BMS 656 & BMS 657	Immunohematology and Blood Banking Laboratory ³	4
BMS 658 & BMS 659	Medical Biochemistry and Clinical Chemistry Laboratory ³	5
BMS 702	Endocrinology	4
BMS 703	Infectious Disease and Health	4
BMS 704	Pathologic Basis of Disease	4
BMS 705 & BMS 715	Immunology and Immunology Laboratory	5
BMS 706 & BMS 708	Virology and Virology Laboratory	5
BMS 711	Toxicology	4

BMS 712	Grand Rounds	2
BMS 716	Public Health: Food- and Water-borne Diseases	4
BMS 718	Mammalian Physiology	4
BMS 719	Host-Microbe Interactions	4
BMS 721	Mycology, Parasitology, and Virology Laboratory	2
BMS 730	Ethical Issues in Biomedical Science	4
BMS 740	Human Microbiome	4
BMS 750	Case Studies ³	1-5
BMCB 753	Cell Culture	5
BMCB 760	Pharmacology	4
BMCB 763	Biochemistry of Cancer	4
GEN 706	Human Genetics	4
BMS 751	Advanced Clinical Microbiology Internship ³	5
BMS 752	Advanced Hematology Internship ³	5
BMS 753	Advanced Immunohematology Internship ³	5
BMS 754	Advanced Clinical Chemistry Internship ³	5
BMS 761	Clinical Microbiology Internship	20
BMS 762	Clinical Hematology Internship	20
BMS 763	Clinical Immunohematology Internship	20
BMS 764	Clinical Chemistry Internship	20
BMS 790	Undergraduate Teaching Experience	1-4
BMS 795	Investigations in Biomedical Science	1-8
BMS 795W	Investigations in Biomedical Science	1-8
BMS 796	Biomedical Research Internship	4-16
BMS 799	Senior Thesis (4-credit minimum)	1-4
BMS 799H	Senior Honors Thesis (4-credit minimum)	1-4

³ Required for students interested in MLS clinical generalist internship

Approved BMS:MLS Capstone Courses

The capstone explores areas of interest based on the integration of prior learning. The capstone requirement may be satisfied through a course, created work or product, or some form of experiential learning (e.g., honors thesis, mentored research project, or other special student activity). The capstone requirement can only be fulfilled once a student has senior standing in the major.

Code	Title	Credits
BMS 635	Preceptorial in Prehospital Care	2
BMS 716	Public Health: Food- and Water-borne Diseases	4
BMS 719	Host-Microbe Interactions	4
BMS 740	Human Microbiome	4
BMS 750	Case Studies	1-5
BMS 751	Advanced Clinical Microbiology Internship	5
BMS 752	Advanced Hematology Internship	5
BMS 753	Advanced Immunohematology Internship	5
BMS 754	Advanced Clinical Chemistry Internship	5
BMS 761	Clinical Microbiology Internship	20
BMS 762	Clinical Hematology Internship	20
BMS 763	Clinical Immunohematology Internship	20
BMS 764	Clinical Chemistry Internship	20
BMS 790	Undergraduate Teaching Experience (2 semesters, including lab presentation or instruction)	1-4

BMS 795	Investigations in Biomedical Science (4-credit minimum)	1-8
BMS 795W	Investigations in Biomedical Science (4-credit minimum)	1-8
BMS 796	Biomedical Research Internship	4-16
BMS 799	Senior Thesis (4-credit minimum)	1-4
BMS 799H	Senior Honors Thesis (4-credit minimum)	1-4
INCO 790	Advanced Research Experience (4-credit minimum)	1-4

For a Capstone experience not listed above, such as an internship, submit a Capstone Experience Approval form **prior** to beginning the experience.

Degree Plan

SAMPLE Course Sequence for Medical Laboratory Science

Course	Title	Credits
First Year		
Fall		
BMS 401	Professional Perspectives in Biomedical Sciences	1
ENGL 401	First-Year Writing	4
BMS 507 or BIOL 411	Human Anatomy and Physiology I or Introductory Biology: Molecular and Cellular	4
CHEM 403	General Chemistry I	4
Discovery Course		4
Credits		17
Spring		
BMS 508	Human Anatomy and Physiology II	4
CHEM 404	General Chemistry II	4
Statistics		4
Discovery Course		4
Credits		16
Second Year		
Fall		
BMS 503 & BMS 504	General Microbiology and General Microbiology Laboratory	5
GEN 604	Principles of Genetics	4
Discovery Course		4
Discovery Course		4
Credits		17
Spring		
BMS 602 & BMS 603	Pathogenic Microbiology and Pathogenic Microbiology Laboratory	5
BMS 560 & BMS 561	Body Fluids and Body Fluids Laboratory	4
CHEM 545 & CHEM 546	Organic Chemistry and Organic Chemistry Laboratory	5
Major Elective		4
Credits		18

Third Year**Fall**

Major Elective with lab		4-6
BMCB 658	General Biochemistry	5
& BMCB 659	and General Biochemistry Lab	
BMS 650	Molecular Diagnostics	4
	Credits	13-15

Spring

BMS 642	Clinical Immunology and Serology	4
& BMS 643	and Clinical Serology Laboratory	
BMS 720	Mycology, Parasitology, and Virology	3
Major Elective with lab		4-5
Elective (any course)		4
	Credits	15-16

Fourth Year**Fall**

Major Elective (WI)		4
Major Elective (Capstone)		4
Discovery Course		4
Elective (any course)		4
	Credits	16

Spring

Elective (any course)		4
Elective (any course)		4
Elective (any course)		4
Elective (any course)		4
	Credits	16
	Total Credits	128-131

Biomedical Science Major: Medical Microbiology Option (B.S.)

<https://colsa.unh.edu/mcbs/biomedical/medical-microbiology-mm-option>

Description

The **Biomedical Science: Medical Microbiology program (BMS:MM)** explores the world of microorganisms and how they interact with both humans and animals. This major provides you with excellent academic training and laboratory experiences in the areas of microbiology, infectious disease, and public health. BMS:MM graduates are prepared for successful careers in the biotechnology or public health, or entry into graduate school or health professional programs.

The BMS:MM program includes course work and laboratories in:

- infectious disease
- immunology
- epidemiology and community health
- molecular biology
- microbial ecology and evolution

Students in the BMS:MM program may participate in a variety of experiential learning activities including:

- independent research experiences in laboratories of UNH biomedical science faculty
- work at the NH Veterinary Diagnostic Laboratory located on the UNH campus
- internships at biotechnology companies in the Greater Boston area
- internships at the NH Department of Public Health Laboratories

BMS:MM graduates have been successful in attaining careers as:

- **research scientists/laboratory technicians**
 - biotechnology and pharmaceutical companies
 - academic biomedical research programs
 - brewing industry
- **primary and secondary school educators** (requires additional coursework in education)
- **state and federal government employees**
 - public health laboratories
 - regulatory agencies (e.g., U.S. Food and Drug Administration)

BMS:MM graduates are prepared for post-baccalaureate education in:

- **professional health programs**
 - medical school (<http://www.unh.edu/uac/premed-advising/explore-medicine>)
 - dental school
 - allied health programs (physician assistant (<http://www.unh.edu/uac/premed-advising/explore-physician-assistant>), pharmacist (<http://www.unh.edu/uac/premed-advising/explore-pharmacy>), nursing or pathologist's assistant (<http://www.pathassist.org>) programs)
- **graduate programs**
 - biomedical science
 - public health
 - forensic science

Requirements

Students in the Medical Microbiology (MM) option take seven Foundation courses, five Bioscience Core courses, four BMS:MM Core courses, and five BMS:MM Major Elective courses. One capstone experience, supervised and approved within the major, is required of all seniors. In addition, all other University academic requirements must be completed, including those for the Discovery Program (p. 24) and the University Writing Requirement (p. 28).

A grade of C- or better is required in all Bioscience Core, BMS:MM Core, and Major Elective courses.

Foundation Courses

Code	Title	Credits
CHEM 403	General Chemistry I ¹	4
CHEM 404	General Chemistry II	4
CHEM 545 & CHEM 546	Organic Chemistry and Organic Chemistry Laboratory ²	5

MATH 424B	Calculus for Life Sciences ³	4
BIOL 528	Applied Biostatistics I ⁴	4
PHYS 401	Introduction to Physics I ⁵	4
PHYS 402	Introduction to Physics II	4

Bioscience Core Courses

Code	Title	Credits
BMS 503 & BMS 504	General Microbiology and General Microbiology Laboratory	5
GEN 604	Principles of Genetics	4
BMCB 658 & BMCB 659	General Biochemistry and General Biochemistry Lab	5
BIOL 411	Introductory Biology: Molecular and Cellular ⁶	4
Select one of the following:		4
BIOL 412	Introductory Biology: Evolution, Biodiversity and Ecology ²	4
or BMS 508	Human Anatomy and Physiology II	

¹ CHEM 403 fulfills the Physical Science Discovery requirement

² Students applying to health profession schools need a full year of English, a full year of Organic Chemistry, and a full year of Introductory Biology. ENGL 502 or 503 should be taken in addition to ENGL 401; CHEM 651/653 and CHEM 652/654 should be taken in place of CHEM 545/546.

³ MATH 424B fulfills the Quantitative Reasoning Discovery requirement.

⁴ PSYC 402 and SOC 502 are acceptable alternatives.

⁵ PHYS 401 fulfills the Physical Science Discovery requirement.

⁶ BIOL 411 fulfills the Biological Science Discovery requirement, Discovery Laboratory requirement, and the Discovery Inquiry requirement.

BMS-MM Core Courses

Code	Title	Credits
BMS 401	Professional Perspectives in Biomedical Sciences ⁶	1
BMS 602 & BMS 603	Pathogenic Microbiology and Pathogenic Microbiology Laboratory	5
BMS 705 & BMS 715	Immunology and Immunology Laboratory	5
BMS 706 & BMS 708	Virology and Virology Laboratory	5

⁶ Required for first-year students only.

BMS-MM Major Elective Courses

A total of five **unique** major elective courses is required. At least one course must be taken in each of the following subject areas: Host-Microbe Interaction Elective, Molecular Biology Elective, and Community Elective. Two additional courses are taken from any of the major elective subject areas.

Host-Microbe Interaction Electives

Code	Title	Credits
BMS 655	Human and Animal Parasites ⁷	3
BMS 703	Infectious Disease and Health	4

BMS 704	Pathologic Basis of Disease	4
BMS 719	Host-Microbe Interactions ⁷	4
BMS 720	Mycology, Parasitology, and Virology	3
BMS 740	Human Microbiome ⁷	4

Molecular Biology Electives

Code	Title	Credits
BMS 623	Histology: Microscopic Cellular Structure and Function	4
BMS 650	Molecular Diagnostics	4
BMS 655	Human and Animal Parasites ⁷	3
BMS 711	Toxicology	4
BMS 719	Host-Microbe Interactions ⁷	4
BMS 740	Human Microbiome ⁷	4
BMCB 605	Eukaryotic Cell and Developmental Biology	4
BMCB 753	Cell Culture	5
BMCB 754	Molecular Biology Research Methods	5
BMCB 763	Biochemistry of Cancer	4
GEN 704	Genetics of Prokaryotic Microbes	5
GEN 713	Microbial Ecology and Evolution	4
GEN 717	Molecular Microbiology	5

⁷ Course may be used as a Host-Microbe Interaction elective or Molecular Biology elective, but not both.

Community Electives

Code	Title	Credits
BMS 716	Public Health: Food- and Water-borne Diseases	4
BMS 730	Ethical Issues in Biomedical Science	4
ANTH 685	Gender, Sexuality and HIV/AIDS in Sub-Saharan Africa	4
HMP 501	Epidemiology and Community Medicine	4

Other Major Electives

Code	Title	Credits
BMS 795	Investigations in Biomedical Science (4-credit minimum)	1-8
BMS 795W	Investigations in Biomedical Science (4-credit minimum)	1-8
BMS 799	Senior Thesis (4-credit minimum)	1-4
BMS 799H	Senior Honors Thesis (4-credit minimum)	1-4

BMS:MM Capstone

The capstone explores areas of interest based on the integration of prior learning. The capstone requirement may be satisfied through a course, created work or product, or some form of experiential learning (e.g., honors thesis, mentored research project, or other special student activity). The capstone requirement can only be fulfilled once a student has senior standing in the major.

Approved BMS:MM Capstone Courses

Code	Title	Credits
BMS 635	Preceptorial in Prehospital Care (4-credit minimum)	2

BMS 716	Public Health: Food- and Water-borne Diseases	4
BMS 719	Host-Microbe Interactions	4
BMS 730	Ethical Issues in Biomedical Science	4
BMS 740	Human Microbiome	4
BMS 795	Investigations in Biomedical Science (4-credit minimum)	1-8
BMS 795W	Investigations in Biomedical Science (4-credit minimum)	1-8
BMS 799	Senior Thesis (4-credit minimum)	1-4
BMS 799H	Senior Honors Thesis (4-credit minimum)	1-4

For a Capstone experience not listed above, such as an internship, submit a Capstone Experience Approval form **prior** to beginning the experience.

Degree Plan

SAMPLE Course Sequence for Medical Microbiology

Course	Title	Credits
First Year		
Fall		
BMS 401	Professional Perspectives in Biomedical Sciences	1
BIOL 411	Introductory Biology: Molecular and Cellular	4
ENGL 401	First-Year Writing	4
CHEM 403	General Chemistry I	4
Discovery Course		4
Credits		17
Spring		
BIOL 412	Introductory Biology: Evolution, Biodiversity and Ecology	4
MATH 424B	Calculus for Life Sciences	4
CHEM 404	General Chemistry II	4
Discovery Course		4
Credits		16
Second Year		
Fall		
BMS 503 & BMS 504	General Microbiology and General Microbiology Laboratory	5
GEN 604	Principles of Genetics	4
CHEM 545 & CHEM 546	Organic Chemistry and Organic Chemistry Laboratory	5
Discovery Course		4
Credits		18
Spring		
BMS 602 & BMS 603	Pathogenic Microbiology and Pathogenic Microbiology Laboratory	5
Major Elective or Discovery Course		4
Discovery Course		4
BIOL 528	Applied Biostatistics I	4
Credits		17
Third Year		
Fall		
BMS 705 & BMS 715	Immunology and Immunology Laboratory	5

PHYS 401	Introduction to Physics I	4
BMCB 658 & BMCB 659	General Biochemistry and General Biochemistry Lab	5
Major Elective or Discovery Course		4
Credits		18
Spring		
BMS 706 & BMS 708	Virology and Virology Laboratory	5
PHYS 402	Introduction to Physics II	4
Major Elective		4
Major Elective or Discovery Course		4
Credits		17

Fourth Year

Fall

Major Elective or Capstone Course	4	
Major Elective	4	
Elective	3-4	
Elective	3-4	
Credits		14-16

Spring

Capstone Course or Major Elective	4-5	
Major Elective	4	
Elective	3-5	
Credits		11-14
Total Credits		128-133

Biomedical Science Minor

<https://colsa.unh.edu/molecular-cellular-biomedical-sciences/program/minor/biomedical-science>

Description

Students who wish to develop focused competencies in the broad area of the biomedical sciences can complement their major academic program with a minor in biomedical science (BMS).

Requirements

The minor consists of a minimum of 20 credits, no more than 8 of which can also be used to fulfill major requirements. A grade of C-minus or better is required for all courses counted towards the minor. A C average (2.00) is required in courses that the minor department approves. It is the student's responsibility to file an Intent to Minor form with the BMS minor advisor by the end of the junior year and to complete a Certification of Completion of Minor form (<http://www.unh.edu/registrar/forms/minorform.pdf>) during their final semester at UNH.

Required Courses:

Code	Title	Credits
BIOL 411	Introductory Biology: Molecular and Cellular	4
BMS 508 or ANSC 512	Human Anatomy and Physiology II Anatomy and Physiology	4

Choose courses from this list to reach a minimum of 20 credits (choice may be limited if student does not have the prereqs for certain courses):

Code	Title	Credits
BMS 501	Microbes in Human Disease	4
BMS 503 & BMS 504	General Microbiology and General Microbiology Laboratory	5
BMS 560 & BMS 561	Body Fluids and Body Fluids Laboratory	4
BMS 602 & BMS 603	Pathogenic Microbiology and Pathogenic Microbiology Laboratory	5
BMS 610	Biomedical Lab Management	4
BMS 623	Histology: Microscopic Cellular Structure and Function	4
BMS 635	Preceptorial in Prehospital Care	2
BMS 640	Phlebotomy Theory	2
BMS 644	Clinical Hematology	3
BMS 650	Molecular Diagnostics	4
BMS 655	Human and Animal Parasites	3
BMS 656	Immunohematology	3
BMS 658	Medical Biochemistry	3
BMS 702	Endocrinology	4
BMS 703	Infectious Disease and Health	4
BMS 704	Pathologic Basis of Disease	4
BMS 705	Immunology	3
BMS 706	Virology	3
BMS 711	Toxicology	4
BMS 712	Grand Rounds	2
BMS 716	Public Health: Food- and Water-borne Diseases	4
BMS 718	Mammalian Physiology	4
BMS 719	Host-Microbe Interactions	4
BMS 720	Mycology, Parasitology, and Virology	3
BMS 730	Ethical Issues in Biomedical Science	4
BMS 740	Human Microbiome	4
BMCB 605	Eukaryotic Cell and Developmental Biology	4
BMCB 753	Cell Culture	5
GEN 704	Genetics of Prokaryotic Microbes	5
GEN 717	Molecular Microbiology	5
HMP 501	Epidemiology and Community Medicine	4
NUTR 750	Nutritional Biochemistry	4

Community and Environmental Planning (CEP)

Community and Environmental Planning students have an appreciation for communities designed for people to live, work and play. Our students study a diverse and interconnected number of topics including perspectives in community development, fundamentals of land use planning, community economics, and natural resource conservation issues. If you want to help communities deal with problems associated with the intersection of our built and natural environments, such as economic development, transportation, affordable housing, green space and local agriculture, than a degree in Community and Environmental Planning may be the right fit for you.

<https://colsa.unh.edu/natural-resources-environment>

Programs

- Community and Environmental Planning Major (B.S.) (p. 244)
- Community Planning Minor (p. 246)

Faculty

<https://colsa.unh.edu/natural-resources-environment/people>

Community and Environmental Planning Major (B.S.)

<https://colsa.unh.edu/natural-resources-environment/program/bs/community-environmental-planning-major>

Description

The Community and Environmental Planning (CEP) program is designed to provide students with the knowledge and skills to become effective community planners in the public or private sector. There are 16 courses required for the major. All of the courses are designed to give the student a diverse skill-set in planning for the sustainability of communities. CEP students are provided a solid planning background with planning courses covering local, state and regional planning topics and methods. CEP students also take foundational courses in natural resources, geographic information systems, economics, and statistics, as well as a political science course, and a social issues course. The internship requirement (CEP 794) allows the planning student to apply their knowledge in the real world for instrumental hands-on experience. Semester in the City is also an option for the internship experience. CEP students are encouraged to focus their remaining hours on skills that can enhance their CEP major such as a dual major, a minor, or study abroad.

Expected CEP Student Outcomes:

- The foundational education in planning, natural resources, economics and sustainability.
- The fundamental values of diversity, equity, justice, and protection of community and the environment.
- The ability to assess, discuss, and engage others in the problems and potential solutions associated with impacts of land use changes.
- The ability to work with community members and professionals in the design and implementation of community improvements in building and transportation while protecting natural and built resources.

Students may go on to work in the community development or community planning departments in local communities. They may also choose to work in regional planning agencies, or with a state or federal office. Other options include the private sector, such as architectural or development companies, or the non-profit sector, such as with community development corporations or conservation groups. The American Planning Association provides a certification process for the planning profession (American Institute of Certified Planners) after several years of planning experience. Students may also choose to go on to graduate studies in Community and Environmental Planning, Natural Resources Management, Public Administration, or a related field.

Requirements

Courses with the prefix CEP must be completed with a C- or above (6 courses total). In addition to the CEP degree requirements (below), students must complete the University Discovery Program and the University Writing Requirements.

Code	Title	Credits
Planning Courses:		
CEP 415	Community Development Perspectives (Discovery Course)	4
CEP 508	Applied Community Development	4
CEP 614	Fundamentals of Planning	4
CEP 673	Green Real Estate	4
or CEP 672	Fundamentals of Real Estate	
CEP 794	Community and Environmental Planning Internship	4-12
or INCO 505A	Semester in the City Becoming a Problem Solver	
CEP 777	Topics in Community Planning (Capstone for the major)	4
Natural Resources Courses:		
NR 435	Contemporary Conservation Issues and Environmental Awareness	4
or NR 502	Forest Ecosystems and Environmental Change	
or NR 507	Introduction to our Energy System and Sustainable Energy	
NR 602	Natural Resources and Environmental Policy	4
NR 658	Introduction to Geographic Information Systems	4
NR 785	Systems Thinking for Sustainable Solutions	4
TOUR 767	Social Impact Assessment	4
or NR 724	Resolving Environmental Conflicts	
Economics and Statistics Courses:		
EREC 411	Environmental and Resource Economics Perspectives	4
EREC 525	Statistical Methods and Applications	4
or BIOL 528	Applied Biostatistics I	
EREC 627	Community Economics	4
Political Science Course:		
POLT 502	State and Local Government	4
or POLT 500	American Public Policy	
Social Issues Course:		
SOC 540	Contemporary Social Problems	4
or INCO 505B	Social Innovator's Toolbox	
Total Credits		64-72

CEP students are encouraged to have a study away/abroad experience, a dual degree, a minor, or focused area of study which add value to the CEP degree. Consider the following to complete the minimum of 128 credits:

- Semester in the City (if you have not done this in the CEP major)
- EcoQuest New Zealand (16 credits in electives - must qualify with EcoQuest)
- Study Away
- Study Abroad
- Minor as approved by the minor program

- Courses to round out a focus area. *It is recommended that you choose upper level courses in NR and EREC.*

Degree Plan

Course	Title	Credits
First Year		
Fall		
CEP 415	Community Development Perspectives (Also counts as Discovery Social Science)	4
NR 435 or NR 502 or NR 507	Contemporary Conservation Issues and Environmental Awareness or Forest Ecosystems and Environmental Change or Introduction to our Energy System and Sustainable Energy	4
EREC 411	Environmental and Resource Economics Perspectives	4
ENGL 401	First-Year Writing (Counts as Discovery Writing)	4
Credits		16
Spring		
Choose any Discovery courses. Here are some suggestions:		
Discovery Biological Science with Lab (Consider BIOL 430 or NR 433)		4
Discovery Historical Perspectives (Consider ARTS 574)		4
Discovery Humanities (Consider PHIL 430)		4
Inquiry Course (Choose any)		4
Credits		16
Second Year		
Fall		
EREC 525	Statistical Methods and Applications (Also counts as Discovery Quantitative)	4
POLT 502	State and Local Government	4
Choose any Discovery courses. Here are some suggestions:		
Discovery Physical Science (Consider ESCI 409, ESCI 405, or NR 504)		4
Discovery Fine and Performing Arts (Choose any)		4
Credits		16
Spring		
CEP 508	Applied Community Development	4
SOC 540	Contemporary Social Problems	4
NR 602	Natural Resources and Environmental Policy	4
Elective		4
Credits		16
Third Year		
Fall		
CEP 614	Fundamentals of Planning	4
CEP 673	Green Real Estate	4
TOUR 767	Social Impact Assessment (Or NR 724 in Spring)	4
Discovery World Cultures (Choose any)		4

May consider CEP 794 Internship or Semester in the City		
	Credits	16
Spring		
NR 658	Introduction to Geographic Information Systems	4
EREC 627	Community Economics	4
Elective		4
Elective		4
May consider CEP 794 Internship or Semester in the City		
	Credits	16
Fourth Year		
Fall		
Elective		4
Elective		4
Elective		4
Elective		4
May consider CEP 794 Internship or Semester in the City		
	Credits	16
Spring		
CEP 777	Topics in Community Planning	4
NR 785	Systems Thinking for Sustainable Solutions	4
NR 724	Resolving Environmental Conflicts (Counts as Elective if taken TOUR 767)	4
Elective		4
May consider CEP 794 Internship or Semester in the City		
	Credits	16
	Total Credits	128

Community Planning Minor

<https://colsa.unh.edu/nren/cep/community-planning-minor>

Description

Land use and its impact on the quality of life has emerged as a major policy issue locally, nationally, and globally. Planning is a multidisciplinary profession that requires professionals who understand both social and natural systems and have command of professional tools required to guide the selection and implementation of alternative approaches compatible with long-term environmental and socio-economic objectives. Students may supplement their major and Discovery Program requirements with specific courses that will enhance their ability to find employment that requires knowledge of planning concepts and tools used in the formulation and implementation of effective land and resource planning by government agencies, nonprofit organizations, and private business firms.

Requirements

Required: 20 hours of credit

Code	Title	Credits
Group I: Theory and Practice of Planning		
CEP 415	Community Development Perspectives	4

CEP 508	Applied Community Development	4
CEP 614	Fundamentals of Planning	4
Group II: Tools and Applications in Planning		
Select one of the following: 4		
CEP 673	Green Real Estate	
NR 724	Resolving Environmental Conflicts	
NR 501	Studio Soils	
NR 658	Introduction to Geographic Information Systems	
SOC #660	Urban Sociology	
NR 504	Freshwater Resources	
Group III: Resource Management Theory		
Select one of the following: 4		
EREC 606	Land Economics Perspectives: Uses, Policies, and Taxes	
EREC 627	Community Economics	
EREC 756	Rural and Regional Economic Development	
TOUR 767	Social Impact Assessment	
NR 711	Wetland Ecology and Management	
Total Credits		20

Ecogastronomy

The Peter T. Paul College of Business and Economics and the College of Life Sciences and Agriculture offer undergraduate students the opportunity to pursue a dual major in EcoGastronomy. The dual major requires completion of the EcoGastronomy program and any other major.

The EcoGastronomy program prepares students for professions within our rapidly evolving food community—from farm to fork to nutrition and health outcomes—where ever-greater integration of agriculture, food, and nutrition requires a broad perspective and a specific blend of skills and knowledge. The dual major in EcoGastronomy is international by providing a context for studying "gastronomy" in Ascoli-Piceno, Italy.

International Experience

All students who declare the dual major in EcoGastronomy spend a full semester abroad, most likely during their junior year. Students will study in Ascoli Piceno, Italy, (fall semester) or at the Burgundy School of Business in Dijon, France (spring semester).

Dual majors will complete a series of upper-level core courses such as history of cuisine and gastronomy, history of food, aesthetics, food law, food technology processes, cross-cultural comparisons, and language.

Portfolio

Students will be required to submit a portfolio annually to the director, and a cumulative portfolio to the instructor of their capstone course for final assessment.

The courses in the dual major program are multidisciplinary, taught by faculty from different departments in the University. They are designed to integrate UNH strengths in sustainable agriculture, hospitality management, and nutrition to offer a unique academic program emphasizing the interdisciplinary, international, and experiential knowledge that connects all three fields. The program is experiential by requiring students to work in the field growing food, in the kitchen preparing food, and developing the skills associated with both. They will

also experience the local food cultures and get firsthand experience on the issues of food security locally, regionally, and globally.

Students who wish to declare a dual major in EcoGastronomy must have a cumulative grade-point average of 2.5; have declared, or be prepared to declare, a disciplinary major; and complete the Introduction to EcoGastronomy course (ECOG 401 Introduction to Ecogastronomy) with a grade of C or better.

ECOG 401 Introduction to Ecogastronomy is prerequisite for study abroad, ECOG 685 EcoGastronomy Study Abroad. All required classes and the elective are a pre/corequisite for the senior EcoGastronomy capstone course, ECOG 701 EcoGastronomy Capstone. Exceptions are possible with a late declaration of the dual major. All foreign experiences must be pre-approved by the EcoGastronomy director.

The completion of the dual major requires no additional credits for graduation beyond the 128 required of all UNH students. All coursework required for EcoGastronomy must be completed with a grade C or better. For information, contact the dual major in EcoGastronomy, PCBE 370Z, (603) 862-3327, ecog.info@unh.edu.

<https://www.unh.edu/ecogastronomy/>

Programs

- Ecogastronomy Dual Major (p. 247)

Faculty

<https://www.unh.edu/ecogastronomy/faculty>

Ecogastronomy Dual Major

<https://www.unh.edu/ecogastronomy/curriculum>

Description

The Dual Major in EcoGastronomy integrates UNH strengths in sustainable agriculture, hospitality management, and nutrition. EcoGastronomy offers a unique academic program emphasizing the interdisciplinary, international, and experiential knowledge that connects all three fields.

The EcoGastronomy Dual Major is a collaboration with the University of New Hampshire's College of Life Sciences and Agriculture, Peter T. Paul College of Business and Economics, and the Sustainability Institute.

Requirements

Code	Title	Credits
Required Courses:		
ECOG 401	Introduction to Ecogastronomy	4
SAFS 405	Sustainable Agriculture and Food Production	4
HMG 403	Introduction to Food Management	4
NUTR 400	Nutrition in Health and Well Being	4
ECOG 685	EcoGastronomy Study Abroad	20
ECOG 701	EcoGastronomy Capstone ¹	2-4
Select one elective from the following courses:		4

ANSC 602	Animal Rights and Societal Issues
ANSC 694	Summer Cooperative for Real Education in Agricultural Management
ANSC 698	Cooperative for Real Education in Agricultural Management (CREAM)
EREC 680	Agricultural and Food Policy
HIST 618	American Environmental History
HMG 771	International Wine and Beverage
HMG 570	International Food and Culture
MGT 732	Exploration in Entrepreneurial Management
NR 602	Natural Resources and Environmental Policy
NR 620	Farm to Table: A Case Study in the Northern Beauce Region of France
NR 701	Ecological Sustainability and Values
NR 720	International Environmental Politics and Policies for the 21st Century
NR 784	Sustainable Living - Global Perspectives
NR 785	Systems Thinking for Sustainable Solutions
NR 797	Special Topics
NUTR 720	Community Nutrition
NUTR 730	From Seed to Sea: Examining Sustainable Food Systems
SAFS 679	Food Production Field Experience I
SOC 665	Environmental Sociology
TOUR #705	Ecotourism: Managing for the Environment
ZOOL 610	Principles of Aquaculture
& ZOOL #611	and Principles of Aquaculture Lab
ZOOL 772	Fisheries Biology

Total Credits 42-44

¹ Satisfies the capstone requirement of the Discovery Program for the EcoGastronomy major.

Environmental and Resource Economics (EREC)

The Environmental and Resource Economics program offers training in areas that include public resource policy, resource management, natural resource and environmental economics, and community economics and finance. The curriculum emphasizes applied economics in the context of public policy. Training is also available in agricultural economics, including agribusiness, small business management, food marketing, agricultural policy, and world food supplies.

<https://colsa.unh.edu/natural-resources-environment>

Programs

- Environmental and Resource Economics Major (B.S.) (p. 248)
- Environmental and Resource Economics Minor (p. 248)

Faculty

<https://colsa.unh.edu/natural-resources-environment/people>

Environmental and Resource Economics Major (B.S.)

<https://colsa.unh.edu/natural-resources-environment/program/bs/environmental-resource-economics-major>

Description

Students majoring in environmental and resource economics will normally concentrate in one of the following three areas: environmental and natural resource economics, agricultural economics, or community economics. One capstone experience, supervised and approved within the major, is required of all seniors. The capstone explores areas of interest based on the integration of prior learning. The capstone requirement may be satisfied through a course, created work or product, or some form of experiential learning (e.g., honors thesis, mentored research project, and other special student activity). In addition, students must satisfy University requirements, including those for the Discovery Program.

Upon graduation, students are qualified for a wide variety of opportunities. Private business, public institutions, and government agencies currently have a strong demand for specialists trained in natural resource development; land and water use policy; natural resource and small business management; agricultural, fisheries, and forestry marketing; and community development. In many cases, students may wish to improve their qualifications by pursuing more specialized graduate studies.

Requirements

Code	Title	Credits
Required Courses		
ECON 401	Principles of Economics (Macro)	4
ECON 605	Intermediate Microeconomic Analysis	4
ECON 611 or ECON 635	Intermediate Macroeconomic Analysis Money and Banking	4
EREC 411	Environmental and Resource Economics Perspectives (or equivalent) ¹	4
EREC 525	Statistical Methods and Applications	4
EREC 601	Agribusiness Economics and Management	4
MATH 420 or MATH 424B	Finite Mathematics Calculus for Life Sciences	4
Select at least five of the following, two must be 700 level:		
EREC 535	Being a Locavore	4
EREC 572	Introduction to Natural Resource Economics	4
EREC 606	Land Economics Perspectives: Uses, Policies, and Taxes	4
EREC 627	Community Economics	4
EREC 680	Agricultural and Food Policy	4
EREC 708	Environmental Economics	4
EREC 756	Rural and Regional Economic Development	4
EREC 760	Ecological-Economic Modeling for Decision Making	4
NR 602	Natural Resources and Environmental Policy	4
NR 643	Economics of Forestry	4

CEP 614	Fundamentals of Planning	4
CEP 777	Topics in Community Planning	4
TOUR 767	Social Impact Assessment	4

Capstone

The capstone can be fulfilled through a course (EREC 708, EREC 756, EREC 760, CEP 777 or TOUR 767), or a created work or product, or some form of experiential learning (e.g., honors theses, mentored research projects in EREC 795, EREC 799, and other special student activities)

¹ EREC 411 cannot be used to satisfy the Social Science Discovery program requirement; or taken for credit if credit has been earned for ECON 402.

Students are encouraged to consider adding additional courses from the economics (ECON) department to their program. In special cases, students may petition to have these courses, particularly ECON 706 and ECON 726, substitute for major EREC electives.

Environmental and Resource Economics Minor

<https://colsa.unh.edu/natural-resources-environment/program/minor/environmental-resource-economics>

Description

The Environmental and Resource Economics minor aims to provide students majoring in other disciplines with an understanding of environmental and resource economics, and their uses in personal, social, business and government decision-making. Students learn how to apply economic analyses in evaluating environmental and resource problems, identifying their causes and examining alternative solutions. The minor also offers courses that teach techniques useful for decision making by local and regional communities. Students also obtain skills in the management of agricultural and natural-resource business firms.

Requirements

Minor Requirements

- Complete 5 Courses with a minimum of 20 credits from the courses listed below, with a grade of C- or better.
- No more than 8 credits used to satisfy major requirements may be used for the minor.
- Pass/Fail courses may not be used for the minor

Code	Title	Credits
Select at least 5 of the following:		
EREC 411	Environmental and Resource Economics Perspectives ¹	20
EREC 444	The New Pirates of the Caribbean	
EREC 525	Statistical Methods and Applications	
EREC 535	Being a Locavore	
EREC 572	Introduction to Natural Resource Economics	
EREC 595	Problems in Natural and Agricultural Resources or EREC 595W Problems in Natural and Agricultural Resources	

EREC 596	Problems in Natural and Agricultural Resources or EREC 596 Problems in Natural and Agricultural Resources
EREC 600	Field Experience
EREC 601	Agribusiness Economics and Management
EREC 606	Land Economics Perspectives: Uses, Policies, and Taxes
EREC 627	Community Economics
EREC 680	Agricultural and Food Policy
EREC 708	Environmental Economics
EREC 710	Seminar
EREC 756	Rural and Regional Economic Development
EREC 760	Ecological-Economic Modeling for Decision Making
EREC 775	Research Methods
EREC 795	Investigations
EREC 795W	Investigations

Total Credits 20

¹ EREC 411 cannot be taken for credit if credit has been earned for ECON 402.

Environmental Conservation and Sustainability

Mission of the ECS Major

Graduates of the environmental conservation and sustainability major understand the complexity of social-ecological systems and meet environmental challenges in innovative ways. ECS students understand ecological principles and comprehend the connections between natural resource and social systems (history, economics, law, policy, international perspectives). They integrate scientific information and human values and articulate problems in ways that point to solutions leading to a sustainable future.

ECS graduates have the theoretical, methodological, technical, and practical skills necessary to solve complex problems. They work collaboratively and across disciplinary boundaries and at all scales from the local to the international. Their critical thinking and communication skills allow them to serve as liaisons among diverse interest groups and to design, implement, and facilitate policy and action toward a sustainable future.

ECS graduates are environmental citizens, sustainability advocates, and leaders for constructive change. They typically serve as policy analysts, sustainability officers, resource managers, journalists, scientists, and teachers in business, non-profit organizations, and government agencies, including the Peace Corps and Ameri-Corps. Many ECS graduates attend graduate or professional programs following graduation.

<https://colsa.unh.edu/natural-resources-environment>

Programs

- Environmental Conservation and Sustainability Major (B.S.) (p. 249)
- Environmental Conservation and Sustainability Minor (p. 251)

Faculty

<https://colsa.unh.edu/natural-resources-environment/people>

Environmental Conservation and Sustainability Major (B.S.)

<https://colsa.unh.edu/nren/ecs/environmental-conservation-and-sustainability-bs>

Description

ECS Major Curriculum

The ECS major is comprised of 14 core requirements providing integrative courses in both environmental conservation and sustainability, along with a foundation in biology, ecology, physical and social science, and the basic tools and skills applied to problem solving. These core requirements are typically fulfilled in the first two years. Beginning in their junior year, ECS students, in consultation with their advisers, create a seven course focus area based on an ecological system or natural resource of their choosing. The focus area provides advanced study in ecology and natural resources; social sciences; tools, skills, and/or natural history and should reflect the student's interests and future goals. Additionally, each ECS student completes a practicum experience and a capstone option.

The ECS major provides the opportunity for students to gain a common foundation of knowledge and skills emphasizing integration and critical thinking, while allowing for sufficient flexibility to pursue their interests and passions within a large and complex field of study. The design of the curriculum will allow each student at least four, and as many as six, free electives, which they may fulfill as they choose. Many students pursue international experiences, such as the UNH EcoQuest program in New Zealand, add a minor or dual degree (such as the dual degree in international studies), and/or pursue research opportunities with our faculty or through another of UNH's undergraduate research opportunity programs.

Requirements

ECS Major Requirements

Code	Title	Credits
Degree Core Requirements		
Foundational Courses:		
NR 435	Contemporary Conservation Issues and Environmental Awareness	4
NR 437	Principles of Sustainability	4
Natural Science:		
Biology:		
BIOL 412	Introductory Biology: Evolution, Biodiversity and Ecology	4
NR 439	Environmental Biology	4
Ecological Principles: Select one of the following		4
BIOL 541	General Ecology	
NR 527	Forest Ecology	

SAFS 502	Agroecology	
Physical Science: Select one of the following		4
NR 403	Introduction to Environmental Science	
NR 458	The Science of Where	
CHEM 403	General Chemistry I	
CHE 410	Energy and Environment	
ESCI 409	Geology and the Environment	
CEE 520	Environmental Pollution and Protection: A Global Context	
PHYS 401	Introduction to Physics I	

Social Science:

Resource Economics:		
EREC 411	Environmental and Resource Economics Perspectives	4
Environmental Ethics and Values: Select one of the following		4
NR 701	Ecological Sustainability and Values	
NR 784	Sustainable Living - Global Perspectives	
SOC 565	Environment and Society	
Natural Resources Policy: Select one of the following		4
NR 602	Natural Resources and Environmental Policy	
NR 662	Environmental Policy, Planning and Sustainability in New Zealand	

Essential Tools and Skills:

Field Methods:		
NR 415	Natural Resources Field Methods	2
Statistics: Select one of the following		4
BIOL 528	Applied Biostatistics I	
EREC 525	Statistical Methods and Applications	
Geospatial Analysis:		
NR 658	Introduction to Geographic Information Systems	4
Writing Skills: Select one of the following		4
ENGL 502	Professional and Technical Writing	
ENGL 503	Persuasive Writing	
ENGL 521	Nature Writers	
Presentation Skills: Select one of the following		4
CMN 500	Public Speaking	
THDA 520	Creative Drama	
THDA 583	Introduction to Puppetry	
THDA 522	Storytelling, Story Theatre, and Involvement Dramatics	
THDA 624	Theatre for Young Audiences	

Focus Area

Select seven total courses to create a focus area addressing an environmental issue, ecological system, or natural resource (see below)¹ 28

Ecology and Natural Resources:

Select one to four courses: no more than one course may be at the 400 or 500 level. Additional courses must be at the 600 or 700 levels.

ESCI 405	Global Environmental Change	
NR 433	Wildlife Ecology	
NR 501	Studio Soils	
NR 502	Forest Ecosystems and Environmental Change	
NR 504	Freshwater Resources	

NR 603	Landscape Ecology	
NR 625	Physiological Ecology	
NR 640	Wildlife Population Ecology	
NR 642	Introduction to Biogeography	
NR 650	Principles of Conservation Biology	
NR 660	Ecology and Biogeography of New Zealand	
NR 661	Restoration Ecology and Ecosystem Management in New Zealand	
NR 663	Applied Directed Research in New Zealand	
NR 664	Conservation Genetics	
NR 706	Soil Ecology	
NR 711	Wetland Ecology and Management	
NR 729	Silviculture	
NR 730	Terrestrial Ecosystems	
NR 734	Tropical Ecology	
NR 744	Biogeochemistry	
NR 751	Aquatic Ecosystems	
NR 761	Environmental Soil Chemistry	
NR 765	Community Ecology	
NR 782	Forest Health in a Changing World	
NR #783	Forest Communities of New Hampshire	
MEFB 717	Lake Ecology	
MEFB 725	Marine Ecology	
MEFB 747	Aquatic Plants in Restoration/Management	
SAFS 760	Insect Pest Management	
ZOOL 628	Marine Invertebrate Evolution and Ecology	
ESCI 750	Biological Oceanography	
ZOOL 772	Fisheries Biology	
MEFB 674	Ecology and Marine Environment	
MEFB 702	Sustainable Marine Fisheries	

Social Sciences

Select two to five courses: no more than one course may be at the 400 or 500 level. Additional courses must be at the 600 or 700 levels.

CEP 415	Community Development Perspectives	
NR 507	Introduction to our Energy System and Sustainable Energy	
NR 606	International Energy Topics	
NR 643	Economics of Forestry	
NR 662	Environmental Policy, Planning and Sustainability in New Zealand	
NR 701	Ecological Sustainability and Values	
NR 720	International Environmental Politics and Policies for the 21st Century	
NR 724	Resolving Environmental Conflicts	
NR 784	Sustainable Living - Global Perspectives	
NR 787	Advanced Topics in Sustainable Energy	
ANTH 680		
ANTH 695	Globalization and Global Population Health	
CEP 508	Applied Community Development	
CEP 614	Fundamentals of Planning	
CEP 673	Green Real Estate	
TOUR 767	Social Impact Assessment	
ECON 605	Intermediate Microeconomic Analysis	

ECON 645	International Economics
ECON 668	Economic Development
ECON #669	Women and Economic Development
ECON 706	Economics of Climate Change
EREC 627	Community Economics
EREC 680	Agricultural and Food Policy
EREC 708	Environmental Economics
EREC 756	Rural and Regional Economic Development
GEOG 673	Political Ecology
HIST 618	American Environmental History
POLT 751	Comparative Environmental Politics and Policy
POLT 780	International Environmental Politics, Policy, and Law
SOC 665	Environmental Sociology
SOC 730	Communities and the Environment

Advanced Tools & Skills and Natural History

Select at least one course

NR 425	Field Dendrology
NR 655	Vertebrate Biology
NR 703	Watershed Water Quality Management
NR 707	Environmental Modeling
NR 712	Mammalogy
NR 713	Quantitative Ecology
NR 745	Forest Management
NR 749	Forest Inventory and Modeling
NR 757	Remote Sensing of the Environment
NR 759	Digital Image Processing for Natural Resources
NR 760	Geographic Information Systems in Natural Resources
NR 785	Systems Thinking for Sustainable Solutions
SOC 601	Methods of Social Research
MEFB 719	Field Studies in Lake Ecology
MEFB 732	Lake Management
ZOOL 542	Ornithology
BIOL 752	Mycology
ZOOL 745	Biology and Diversity of Insects

Senior Capstone Options

The ECS major capstone experience may be filled by any one (1) of the following options: 4

Option 1:	
NR 786	Leadership for Sustainability
Option 2: Both seminars must be scheduled. At least one must be taken in the senior year.	
NR 753 & NR 754	Critical Issues in Sustainability: Sustainability as an Abundance Paradigm and Critical Issues in Sustainability: Sense of Place
Option 3:	
NR 663	Applied Directed Research in New Zealand (NZ Directed projects, if taken in the senior year) 2
Option 4:	
Directed projects fulfilling one of the following: McNair Research Theses, Hamel Center Programs (IROP, SURF USA, SURF Abroad, etc.) may be applied in consultation with the adviser and ECS program coordinator.	

Work Experience	
NR 600	Work Experience 3
Total Credits	86

- 1 The focus area is based upon at least one course in the ecology and natural resources category, along with a combination of courses in the social sciences; tools, skills, and natural history categories; and any additional courses from the ecology and natural resources category reflecting the student's interests and future direction. Focus areas should be designed in close consultation with the adviser. Courses used to fulfill core requirements may not be used in the focus area.
- 2 If NR 663 Applied Directed Research in New Zealand is taken in the junior year or earlier, then one Critical Issues seminar (2cr) or Leadership for Sustainability must be taken in the senior year to fulfill the capstone requirement.
- 3 Each ECS major will engage in a practical experience reflecting their interests and goals. The choice of the experience will be made in conjunction with the adviser and may occur any time beginning with the sophomore year.

Environmental Conservation and Sustainability Minor

<https://colsa.unh.edu/nren/ecs/environmental-conservation-and-sustainability-minor>

Description

The minor in Environmental Conservation and Sustainability allows students from diverse majors across all UNH colleges to incorporate the theory and practice of sustainable resource use into their 4-year baccalaureate studies. Students take required introductory courses in both conservation and sustainability and then can fill out their minor with choices from ecology, social science and management, and a range of advanced topics. As well, students who participate in the EcoQuest Study Abroad Program can apply their courses to the minor.

Requirements

20 credits total required

- Two required courses: NR 435 Contemporary Conservation Issues and Environmental Awareness and NR 437 Principles of Sustainability
- Three other courses: one course from each of the designated categories (2-4) below.
- A grade of C or better in each of the 5 courses.
- No more than 8 credits used to satisfy major requirements may be used for the minor
- Credit/fail courses may not be used for the minor.

Code	Title	Credits
Required Courses		
NR 435	Contemporary Conservation Issues and Environmental Awareness	
NR 437	Principles of Sustainability	

Select one course from each of the following categories:

Ecology:

BIOL 541	General Ecology
NR 433	Wildlife Ecology
NR 502	Forest Ecosystems and Environmental Change
NR 527	Forest Ecology
NR 660	Ecology and Biogeography of New Zealand

Social Science and Management:

NR 507	Introduction to our Energy System and Sustainable Energy
NR 662	Environmental Policy, Planning and Sustainability in New Zealand
NR 718	Law of Natural Resources and Environment
NR 720	International Environmental Politics and Policies for the 21st Century
NR 724	Resolving Environmental Conflicts
NR 786	Leadership for Sustainability
EREC 606	Land Economics Perspectives: Uses, Policies, and Taxes
EREC 627	Community Economics

Advanced Topics in Conservation and Sustainability:

NR 603	Landscape Ecology
NR 606	International Energy Topics
NR 650	Principles of Conservation Biology
NR 661	Restoration Ecology and Ecosystem Management in New Zealand
NR 711	Wetland Ecology and Management
NR 784	Sustainable Living - Global Perspectives
NR 785	Systems Thinking for Sustainable Solutions
NR 787	Advanced Topics in Sustainable Energy
MEFB 702	Sustainable Marine Fisheries

Environmental Sciences

The College of Engineering and Physical Sciences (CEPS) and the College of Life Sciences and Agriculture (COLSA) jointly offer a bachelor of science degree in environmental sciences. Environmental sciences, an interdisciplinary field, focuses on the interaction of biological, chemical, and physical processes that shape our natural environment. Students graduating with a degree in environmental sciences will have an understanding of these interacting processes, the ability to communicate effectively with both scientific and lay audiences, competency in field methods appropriate for entry-level environmental science positions, competency in the use and application of Geographic Information Systems (GIS), a basic understanding of environmental policy, and the ability to contribute to multidisciplinary teams. The University of New Hampshire is a recognized leader in environmental sciences research, and the environmental sciences program capitalizes on faculty expertise in this area. The full-time faculty members comprising this program have major teaching and research emphases in the areas of biogeochemical cycling, environmental chemistry, ecosystem science, geospatial science, global change, hydrology, plant ecology, soil science, and water resource management.

Employment opportunities include environmental consulting firms, educational facilities (e.g., science centers), environmental monitoring laboratories (e.g., water treatment plants; the Environmental Protection Agency), government agencies (e.g., the U.S. Geological Survey,

Bureau of Land Management, Natural Resource Conservation Service), university and government research laboratories, and nongovernment environmental organizations. The environmental sciences program also constitutes an excellent preparation for graduate programs in several areas relating to the environment. Students should consult with their adviser early if their goals include further study.

The Program has four options, and specific course requirements for the major vary by option. The geosystems and hydrology options are both managed by the Department of Earth Sciences in CEPS, and the ecosystems and soil and watershed management options are both managed by the Department of Natural Resources and the Environment in COLSA.

<https://colsa.unh.edu/natural-resources-environment>

Programs

- Environmental Sciences Major: Ecosystems Option (B.S.) (p. 252)
- Environmental Sciences Major: Geosystems Option (B.S.) (p. 160)
- Environmental Sciences Major: Hydrology Option (B.S.) (p. 161)
- Environmental Sciences Major: Soil and Watersheds Option (B.S.) (p. 254)

Faculty

COLSA faculty: <https://colsa.unh.edu/directory/all>

CEPS faculty: <https://ceps.unh.edu/directory/all>

Environmental Sciences Major: Ecosystems Option (B.S.)

<https://colsa.unh.edu/natural-resources-environment/program/bs/environmental-sciences-major-ecosystems-option>

Description

The College of Life Sciences and Agriculture (COLSA) and the College of Engineering and Physical Sciences (CEPS) jointly offer a bachelor of science degree in environmental sciences. Environmental science is an interdisciplinary field concerned with the interaction of biological, chemical, and physical processes that shape the environment, and control the response of natural systems to human activities. Students graduating with a degree in environmental sciences will have an understanding of these interacting processes, experience working in interdisciplinary teams to apply this understanding, and the ability to communicate effectively with both scientific and lay audiences. While in this program, students will acquire significant experience with field, laboratory and analytical methods appropriate for employment in professional environmental science positions as well as a basic understanding of environmental policy. The University of New Hampshire is a recognized leader in environmental sciences research, and the environmental sciences program capitalizes on faculty expertise in this area. Program faculty emphasize teaching and research in the areas of biogeochemical cycling, environmental chemistry, ecosystem science, global change, hydrology, plant ecology, soil science, and water resource management among many other fields.

Employment opportunities include environmental consulting firms; educational facilities (e.g., science centers), environmental monitoring laboratories (e.g., water treatment plants, the Environmental Protection Agency), government agencies (e.g., the U.S. Geological Survey, Bureau of Land Management, Natural Resource Conservation Service), university and government research laboratories, and nongovernment environmental organizations. The environmental sciences program also constitutes an excellent preparation for graduate programs in several areas relating to the environment.

The Program has four options, and specific course requirements for the major vary by option. The ecosystems and soils and watersheds options are both managed by the Department of Natural Resources and the Environment in COLSA, and the geosystems and hydrology options are both managed by Earth Sciences in CEPS.

Requirements

Code	Title	Credits
Scope of the Major (Introduction - 3 Courses)		9
NR 400	Professional Perspectives in Natural Resources	
NR 403	Introduction to Environmental Science	
NR 435	Contemporary Conservation Issues and Environmental Awareness	
or NR 437	Principles of Sustainability	
The Scientific Basis (Foundation - 7 Courses)		28
Biology I:		
BIOL 412	Introductory Biology: Evolution, Biodiversity and Ecology	
Biology II:		
NR 439	Environmental Biology	
or BIOL 411	Introductory Biology: Molecular and Cellular	
Chemistry I:		
CHEM 403	General Chemistry I	
or CHEM 405	Chemical Principles for Engineers	
or CHEM 411	Introductory Chemistry for Life Sciences	
Chemistry II:		
NR 561	Chemistry of the Environment	
or CHEM 404	General Chemistry II	
Physics:		
PHYS 401	Introduction to Physics I	
or PHYS 407	General Physics I	
Calculus:		
MATH 424B	Calculus for Life Sciences	
or MATH 425	Calculus I	
Statistics:		
BIOL 528	Applied Biostatistics I	
or EREC 525	Statistical Methods and Applications	
Earth and its Systems (Core - 6 Courses)		24
Earth Science:		
ESCI 401	Dynamic Earth	
or ESCI 402	Earth History	
or ESCI 409	Geology and the Environment	
Aquatic Science:		
NR 504	Freshwater Resources	

Soils:

NR 501 Studio Soils

Climate/Weather:

ESCI 514 Introduction to Climate
or GEOG 473 Elements of Weather
or GEOG 670 Climate and Society

Ecology:

NR 527 Forest Ecology
or BIOL 541 General Ecology

Human Dimensions:

NR 602 Natural Resources and Environmental Policy
or NR 662 Environmental Policy, Planning and Sustainability in New Zealand
or NR 507 Introduction to our Energy System and Sustainable Energy
or NR 784 Sustainable Living - Global Perspectives

Environmental Toolkit (Methods - 2 Courses)

7-8

Select two courses from the following:

ESCI 534 Techniques in Environmental Sciences
NR 658 Introduction to Geographic Information Systems
or ESCI 777 GIS for Earth & Environmental Sciences
NR 757 Remote Sensing of the Environment
ESCI 778 Remote Sensing Earth & Environmental Sciences
NR 713 Quantitative Ecology

Ecosystem Integration (Advanced Topics - 4 Courses)

16

Population and Community Ecology:

NR 765 Community Ecology
or NR 734 Tropical Ecology
or NR 706 Soil Ecology
or NR 660 Ecology and Biogeography of New Zealand
or NR 640 Wildlife Population Ecology
or NR 642 Introduction to Biogeography
or NR 603 Landscape Ecology
or BIOL 720 Plant-Animal Interactions

Ecosystems:

NR 730 Terrestrial Ecosystems
or NR 751 Aquatic Ecosystems
or NR 661 Restoration Ecology and Ecosystem Management in New Zealand

Biogeochemistry:

NR 744 Biogeochemistry
or NR 761 Environmental Soil Chemistry
or NR 703 Watershed Water Quality Management
or ESCI 642 Biogeosciences in the Earth System

Environmental Problem Solving:

ESCI 654 Fate and Transport in the Environment
or NR 707 Environmental Modeling
or EREC 760 Ecological-Economic Modeling for Decision Making
or NR 749 Forest Inventory and Modeling

Integration and Research (The Capstone Experience)

Capstone:

NR 663 Applied Directed Research in New Zealand
or NR 786 Leadership for Sustainability

- or NR 795 Investigations
or NR 799 Honors Senior Thesis

Every student must complete a capstone experience senior year, or during the summer before senior year if at least 90 credit hours have been completed. A Contract form provided by the Program must be completed and signed by the student, the adviser, and the capstone mentor (faculty or off-campus) by the end of Junior Year.

Total Credits 84-85

NR 791 - Preparation for Capstone (1 Credit, credit/fail) - is offered every spring. While not required for graduation, it is recommended for second semester juniors who need guidance in terms of developing a capstone project and completing the Capstone Contract.

Environmental Sciences Major: Soil and Watersheds Option (B.S.)

<https://colsa.unh.edu/natural-resources-environment/program/bs/environmental-sciences-major-soil-watersheds-option>

Description

The College of Life Sciences and Agriculture (COLSA) and the College of Engineering and Physical Sciences (CEPS) jointly offer a bachelor of science degree in environmental sciences. Environmental science is an interdisciplinary field concerned with the interaction of biological, chemical, and physical processes that shape the environment, and control the response of natural systems to human activities. Students graduating with a degree in environmental sciences will have an understanding of these interacting processes, experience working in interdisciplinary teams to apply this understanding, and the ability to communicate effectively with both scientific and lay audiences. While in this program, students will acquire significant experience with field, laboratory and analytical methods appropriate for employment in professional environmental science positions as well as a basic understanding of environmental policy. The University of New Hampshire is a recognized leader in environmental sciences research, and the environmental sciences program capitalizes on faculty expertise in this area. Program faculty emphasize teaching and research in the areas of biogeochemical cycling, environmental chemistry, ecosystem science, global change, hydrology, plant ecology, soil science, and water resource management among many other fields.

Employment opportunities include environmental consulting firms; educational facilities (e.g., science centers), environmental monitoring laboratories (e.g., water treatment plants, the Environmental Protection Agency), government agencies (e.g., the U.S. Geological Survey, Bureau of Land Management, Natural Resource Conservation Service), university and government research laboratories, and nongovernment environmental organizations. The environmental sciences program also constitutes an excellent preparation for graduate programs in several areas relating to the environment.

The Program has four options, and specific course requirements for the major vary by option. The ecosystems and soils and watersheds options are both managed by the Department of Natural Resources and the Environment in COLSA, and the geosystems and hydrology options are both managed by Earth Sciences in CEPS.

Requirements

Code	Title	Credits
Introductory Environmental Sciences		9
NR 400	Professional Perspectives in Natural Resources	
NR 403	Introduction to Environmental Science	
NR 435	Contemporary Conservation Issues and Environmental Awareness	
or NR 437	Principles of Sustainability	
Foundation Courses		24
Biology		
BIOL 412	Introductory Biology: Evolution, Biodiversity and Ecology	
Chemistry: Choose one		
CHEM 403	General Chemistry I	
or CHEM 405	Chemical Principles for Engineers	
or CHEM 411	Introductory Chemistry for Life Sciences	
Physics: Choose one		
PHYS 401	Introduction to Physics I	
or PHYS 407	General Physics I	
Calculus: Choose one		
MATH 424B	Calculus for Life Sciences	
or MATH 425	Calculus I	
Statistics: Choose one		
BIOL 528	Applied Biostatistics I	
or MATH 644	Statistics for Engineers and Scientists	
or EREC 525	Statistical Methods and Applications	
Geology: Choose one		
ESCI 401	Dynamic Earth	
or ESCI 402	Earth History	
or ESCI 409	Geology and the Environment	
Core Courses		15
ESCI 534	Techniques in Environmental Sciences	
NR 658	Introduction to Geographic Information Systems	
ESCI 654	Fate and Transport in the Environment	
NR 602	Natural Resources and Environmental Policy ¹	
or GEOG 673	Political Ecology	
Additional Requirements		40
Biology or Physics: Choose one		
NR 439	Environmental Biology	
or BIOL 411	Introductory Biology: Molecular and Cellular	
or PHYS 402	Introduction to Physics II	
or PHYS 408	General Physics II	
Ecology: Choose one		
NR 527	Forest Ecology	
or BIOL 541	General Ecology	
Soils		
NR 501	Studio Soils	
Watersheds		
NR 703	Watershed Water Quality Management	
Ecosystems: Choose one		
NR 751	Aquatic Ecosystems	

- or NR 730 Terrestrial Ecosystems
- or NR 711 Wetland Ecology and Management

Soils II: Choose one

- NR 761 Environmental Soil Chemistry
- or NR 744 Biogeochemistry
- or NR 706 Soil Ecology

4 Approved Electives

Elective (CHEM 404 can be used if CHEM 403 was taken)

Elective

Elective

Elective

Capstone

1

- NR 791 Preparation for Capstone (and approved Capstone Experience)²

¹ Many students enroll in the EcoQuest program (a study abroad opportunity in New Zealand), which satisfies the policy requirement, and capstone requirement if taken senior year.

² NR 791 must be taken Spring semester Junior year. Capstone experience (e.g. EcoQuest, Internship) must be completed during the senior year/final 2 semesters.

Equine Studies

The equine studies degree program at UNH offers a unique and well-rounded program of study to students pursuing a career in the horse industry. All students receive a background in science and business, as well as equine-specific courses that incorporate outstanding opportunities for experiential learning. Students then choose a specialization in one of three options.

Equine Industry and Management

This option combines business classes and hands-on equine classes, such as teaching training, stable management, and competition management for students interested in a traditional equine career or a career in equine business.

Therapeutic Riding

This option includes classes in equine studies, therapeutic riding, non-profit organizations, and human development and special needs for students interested in a career in therapeutic riding. Students also test for PATH International instructor certification.

Equine Science

This option combines equine classes with a more intensive science curriculum, which includes genetics, reproduction, and nutrition. This program is suited for pre-veterinary students or those interested in graduate education or research.

GPA Requirements for All Students in Equine Studies

All students enrolled in the equine studies major will be required to receive a minimum grade of C- in all classes required for the major. Students failing to do this will need to retake the course in order to receive credit.

<https://colsa.unh.edu/agriculture-nutrition-food-systems>

Programs

- Equine Studies Major: Equine Industry and Management Option (B.S.) (p. 255)
- Equine Studies Major: Equine Science Option (B.S.) (p. 256)
- Equine Studies Major: Therapeutic Riding Option (B.S.) (p. 257)
- Equine Studies Minor (p. 258)

Faculty

<https://colsa.unh.edu/agriculture-nutrition-food-systems/faculty-staff-directory>

Equine Studies Major: Equine Industry and Management Option (B.S.)

<https://colsa.unh.edu/agriculture-nutrition-food-systems/program/bs/equine-studies-major-equine-industry-management-option>

Description

The Industry and Management option combines business classes and hands-on equine classes, such as teaching training, stable management, and competition management for students interested in a traditional equine career or a career in equine business.

Requirements

Code	Title	Credits
Core Equine Studies Requirements		
AAS 437	Equine Handling and Care Techniques	4
ANSC 402	Horsemanship (Intermediate 2 level or above)	3
	or ANSC 405 Theory of Horsemanship	
ANSC 411	Freshman Seminar in Equine Science	1
ANSC 504	Equine Science	4
ANSC 665	Principles of Horse Trials Management ¹	2
ANSC 600	Field Experience ¹	1-4
ANSC 612	Genetics of Domestic Animals	4
	or GEN 604 Principles of Genetics	
ANSC 620	Equine Diseases	4
ANSC 796	Equine Senior Seminar	2
ANSC 725	Equine Sports Medicine	4
ANSC 797	Equine Capstone Experience	4
BIOL 411	Introductory Biology: Molecular and Cellular	4
BIOL 412	Introductory Biology: Evolution, Biodiversity and Ecology	4
ENGL 501	Introduction to Creative Nonfiction	4
	or ENGL 419 Introduction to Literary Analysis	
	or ENGL 502 Professional and Technical Writing	
	or ENGL 503 Persuasive Writing	

or ANSC 543	Technical Writing in Animal Sciences	
EREC 411	Environmental and Resource Economics Perspectives	4
or ECON 402	Principles of Economics (Micro)	

Industry and Management Requirements

AAS 432	Introduction to Forage and Grassland Management	3
AAS 546	Animal Business Applications	4
ANSC 511 & ANSC 512	Anatomy and Physiology and Anatomy and Physiology ¹	8
ANSC 609	Principles of Animal Nutrition ¹	4
ANSC 724	Reproductive Management and Artificial Insemination	4
AAS 548	Applied Animal Business: Concepts and Practices	4

Industry and Management Electives: Choose 20 credits from the following:

AAS 426	Equine Conformation and Lameness	4
AAS 436	Equine Show Preparation and Competition	1
AAS 434	Equipment and Facilities Management	3
AAS 538	Equine Handling/Longeing	1
AAS 547	Applied Equine Management	3
ADMN 502	Financial Accounting	4
ANSC 500	Equine Assisted Activities and Therapies	4
ANSC 507	Survey of Equine Training Techniques	3
ANSC 602	Animal Rights and Societal Issues	4
ANSC 640	Principles of Riding Instruction	4
ANSC 641	Principles of Dressage Instruction	2
ANSC 642	Principles of Jumping Instruction	2
ANSC 643	Principles of Therapeutic Riding Instruction	4
ANSC 695	Supervised Teaching Experience	1-2
ANSC 701	Physiology of Reproduction	4
EDUC 500	Exploring Teaching	4
KIN 560	Sport Psychology	4
KIN 565	Principles of Coaching	4
MGT 580	Introduction to Organizational Behavior	4
MKTG 550	Survey of Marketing	4
PSYC 720	Animal Cognition	4
ZOOL 613	Animal Behavior	5

¹ Waived for TSAS equine management graduates

Equine Studies Major: Equine Science Option (B.S.)

<https://colsa.unh.edu/agriculture-nutrition-food-systems/program/bs/equine-studies-major-equine-science-option>

Description

The Equine Science option combines equine classes with a more intensive science curriculum, which includes genetics, reproduction, and nutrition. This program is suited for pre-veterinary students or those interested in graduate education or research.

Requirements

Code	Title	Credits
Core Equine Studies Requirements		
AAS 437	Equine Handling and Care Techniques	4
ANSC 402	Horsemanship (Intermediate 2 level or above)	3
or ANSC 405	Theory of Horsemanship	
ANSC 411	Freshman Seminar in Equine Science	1
ANSC 504	Equine Science	4
ANSC 665	Principles of Horse Trials Management ¹	2
ANSC 600	Field Experience ¹	1-4
ANSC 612	Genetics of Domestic Animals	4
or GEN 604	Principles of Genetics	
ANSC 620	Equine Diseases	4
ANSC 796	Equine Senior Seminar	2
ANSC 725	Equine Sports Medicine	4
ANSC 797	Equine Capstone Experience	4
BIOL 411	Introductory Biology: Molecular and Cellular	4
BIOL 412	Introductory Biology: Evolution, Biodiversity and Ecology	4
ENGL 501	Introduction to Creative Nonfiction	
or ENGL 419	Introduction to Literary Analysis	
or ENGL 502	Professional and Technical Writing	
or ENGL 503	Persuasive Writing	
or ANSC 543	Technical Writing in Animal Sciences	
EREC 411	Environmental and Resource Economics Perspectives	4
or ECON 402	Principles of Economics (Micro)	
Equine Science Requirements		
ANSC 511 & ANSC 512	Anatomy and Physiology and Anatomy and Physiology ¹	8
ANSC 609	Principles of Animal Nutrition ¹	4
or NUTR 750	Nutritional Biochemistry	
ANSC 724	Reproductive Management and Artificial Insemination	4
or ANSC 701	Physiology of Reproduction	
BIOL #555	Experimental Design and Analysis Laboratory (EDAL)	4
or BIOL 528	Applied Biostatistics I	
CHEM 403 & CHEM 404	General Chemistry I and General Chemistry II	8
Equine Science Electives: Choose 20 credits from the following:		
AAS 426	Equine Conformation and Lameness	4
AAS 432	Introduction to Forage and Grassland Management	3
AAS 538	Equine Handling/Longeing	1
ANSC 500	Equine Assisted Activities and Therapies	4
ANSC 507	Survey of Equine Training Techniques	3
ANSC 602	Animal Rights and Societal Issues	4
BMS 623	Histology: Microscopic Cellular Structure and Function	4
ANSC 695	Supervised Teaching Experience	1-2
ANSC 701	Physiology of Reproduction	4

BMS 704	Pathologic Basis of Disease	4	ANSC 725	Equine Sports Medicine	4
BMS 703	Infectious Disease and Health	4	ANSC 797	Equine Capstone Experience	4
BMS 712	Grand Rounds	2	BIOL 411	Introductory Biology: Molecular and Cellular	4
ANSC 724	Reproductive Management and Artificial Insemination	4	BIOL 412	Introductory Biology: Evolution, Biodiversity and Ecology	4
NUTR 750	Nutritional Biochemistry	4	ENGL 501	Introduction to Creative Nonfiction	
BMCB 658 & BMCB 659	General Biochemistry and General Biochemistry Lab	5	or ENGL 419	Introduction to Literary Analysis	
BMS 503 & BMS 504	General Microbiology and General Microbiology Laboratory	5	or ENGL 502	Professional and Technical Writing	
BMS 718	Mammalian Physiology	4	or ENGL 503	Persuasive Writing	
CHEM 651 & CHEM 653	Organic Chemistry I and Organic Chemistry Laboratory	5	or ANSC 543	Technical Writing in Animal Sciences	
CHEM 652 & CHEM 654	Organic Chemistry II and Organic Chemistry Laboratory	5	EREC 411	Environmental and Resource Economics Perspectives	4
EDUC 500	Exploring Teaching	4	or ECON 402	Principles of Economics (Micro)	
MATH 424B	Calculus for Life Sciences	4	Therapeutic Riding Requirements		
NSB 727	Animal Communication	4	AAS 426	Equine Conformation and Lameness	4
PHYS 401	Introduction to Physics I	4	AAS 546	Animal Business Applications	4
PHYS 402	Introduction to Physics II	4	AAS 547	Applied Equine Management	3
PSYC 720	Animal Cognition	4	ANSC 500	Equine Assisted Activities and Therapies	4
ZOOL 613	Animal Behavior	5	ANSC 643	Principles of Therapeutic Riding Instruction	4
ZOOL 736	Genes and Behavior	4	BMS 507	Human Anatomy and Physiology I	4
			BMS 508	Human Anatomy and Physiology II	4

¹ Waived for TSAS equine management graduates

Equine Studies Major: Therapeutic Riding Option (B.S.)

<https://colsa.unh.edu/agriculture-nutrition-food-systems/program/bs/equine-studies-major-therapeutic-riding-option>

Description

The Therapeutic Riding option includes classes in equine studies, therapeutic riding, non-profit organizations, and human development and special needs for students interested in a career in therapeutic riding. Students also test for PATH International instructor certification.

Requirements

Code	Title	Credits
Core Equine Studies Requirements		
AAS 437	Equine Handling and Care Techniques	4
ANSC 402	Horsemanship (Intermediate 2 level or above)	3
or ANSC 405	Theory of Horsemanship	
ANSC 411	Freshman Seminar in Equine Science	1
ANSC 504	Equine Science	4
ANSC 665	Principles of Horse Trials Management ¹	2
ANSC 600	Field Experience ¹	1-4
ANSC 612	Genetics of Domestic Animals	4
or GEN 604	Principles of Genetics	
ANSC 620	Equine Diseases	4
ANSC 796	Equine Senior Seminar	2
EDUC 500	Exploring Teaching	4
EDUC 701	Human Development and Learning: Educational Psychology	4
EDUC 750	Introduction to Exceptionality	4
EDUC 751A	Educating Exceptional Learners: Elementary	4
EDUC 751B	Educating Exceptional Learners: Secondary	4
MGT 580	Introduction to Organizational Behavior	4
OT 510	Exploring Occupational Therapy and Occupation	4
OT 500	Behavior and Development of Children	4
or HDFS 525	Human Development	
PSYC 561	Abnormal Behavior	4
PSYC 581	Child Development	4

RMP 501	Recreation Services for Individuals with Disabilities	4
SW 424	Introduction to Social Work	4
SW 797	Special Topics in Social Welfare	4
ZOOL 613	Animal Behavior	5

¹ Waived for TSAS equine management graduates

Equine Studies Minor

<https://colsa.unh.edu/agriculture-nutrition-food-systems/program/minor/equine-studies>

Description

A minor in equine studies consists of a minimum of 20 credits of equine-related animal science courses. ANSC 402 may be counted only once for minor credit. Students MUST take either ANSC 504 Equine Science or ANSC 437 Equine Care and Handling Techniques. Students must receive a minimum grade of C- in any course used for the minor. Students failing to do this will need to retake the course in order to receive credit. No courses taken on a pass(credit)/fail basis may count toward the minor. Students who transfer from other institutions may petition the equine program faculty for course approval, but no more than 8 transfer credits can be used towards the minor. Students who choose both ANSC 500 and ANSC 643 as two of their courses toward the minor in equine studies will be eligible for PATH International therapeutic riding instructor certification.

Requirements

Code	Title	Credits
ANSC 504 or AAS 437	Equine Science Equine Handling and Care Techniques	4
Select a minimum of 16 credits from the following electives:		16
AAS 434	Equipment and Facilities Management	
AAS 426	Equine Conformation and Lameness	
AAS 436	Equine Show Preparation and Competition	
AAS 437	Equine Handling and Care Techniques	
AAS 538	Equine Handling/Longeing	
AAS 546	Animal Business Applications	
AAS 547	Applied Equine Management	
AAS 548	Applied Animal Business: Concepts and Practices	
AAS 553	Equine Competition Management	
ANSC 402	Horsemanship	
ANSC 405	Theory of Horsemanship	
ANSC 419	Horse Power	
ANSC #444B	Horse Power: Transforming and Reflecting Civilization	
ANSC 500	Equine Assisted Activities and Therapies	
ANSC 507	Survey of Equine Training Techniques	
ANSC 620	Equine Diseases	
ANSC 640	Principles of Riding Instruction	
ANSC 641	Principles of Dressage Instruction	
ANSC 642	Principles of Jumping Instruction	

ANSC 643	Principles of Therapeutic Riding Instruction
ANSC 665	Principles of Horse Trials Management
ANSC 695	Supervised Teaching Experience ¹
ANSC 724	Reproductive Management and Artificial Insemination
ANSC 725	Equine Sports Medicine
ANSC 795	Investigations ¹
ANSC 795W	Investigations ¹
ANSC 799	Honors Senior Thesis ¹

Total Credits 20

¹ Subject to approval. Must be equine-related.

Forestry

Forests are central to meeting today's challenges of climate change, biodiversity, and the sustainability of rural communities and economies. The forestry program at the University of New Hampshire prepares its graduates with the scientific and managerial knowledge and skills to address these environmental and resource management problems at local, regional, and global scales.

Forestry is the art and science of managing and understanding forests, their use, and their conservation. It embraces both natural and human dimensions of sustainability. Forestry education at UNH focuses on sustainable management of forests for biodiversity, productivity, and health, based on a multidisciplinary approach. The program's goal is to provide a sound professional preparation, a broad general education, and the flexibility to cultivate special abilities and interests. Students are encouraged to develop an area of concentration or to complete a minor in consultation with their academic adviser. The Bachelor of Science in Forestry degree (B.S.F.) at UNH is accredited by the Society of American Foresters (SAF). The SAF is recognized by the Council on Postsecondary Accreditation and the U.S. Department of Education as the accrediting body for forestry in the United States.

A UNH forestry degree can be the gateway to a rewarding profession. UNH forestry graduates manage forests to provide wildlife habitat and recreation opportunities, care for soil and water resources, protect and restore forest ecosystems, and assure a sustainable supply of forest products. They are employed by private industry, public agencies, public interest groups, education institutions, research organizations, and consulting firms. Many students enter graduate school for advanced study in forest biology or management while others have found exciting international opportunities

<https://colsa.unh.edu/natural-resources-environment>

Programs

- Forestry Major (B.S.F.) (p. 259)
- Forestry Minor (p. 260)

Faculty

<https://colsa.unh.edu/natural-resources-environment/people>

Forestry Major (B.S.F.)

<https://colsa.unh.edu/nren/forestry/forestry-bs>

Description

Forestry is an interdisciplinary profession, embracing the sustainable management of forest ecosystems for productivity, biodiversity, and health. The Forestry program's goals are to provide a solid professional preparation with a strong field component, founded in a broad general education, and with the flexibility to allow students to pursue special abilities and interests. The Bachelor of Science in Forestry (B.S.F.) degree is accredited by the **Society of American Foresters**.

Forestry graduates help manage and conserve public and private forests, addressing major environmental challenges including climate change, biodiversity protection, and sustainable resource management. They use science, planning, and geospatial technology to protect and restore forest ecosystems, ensure a sustainable forest product industry, provide wildlife habitat and recreational opportunities, and conserve soils and watersheds.

Requirements

Code	Title	Credits
Requirements		
BIOL 528	Applied Biostatistics I	4
Select one of the following:		
MATH 424B	Calculus for Life Sciences	
MATH 420	Finite Mathematics	
MATH 425	Calculus I	
NR 415	Natural Resources Field Methods	2
NR 425	Field Dendrology	4
NR 433	Wildlife Ecology	4
BIOL 409	Introductory Botany	4
CHEM 403	General Chemistry I	4
or CHEM 411	Introductory Chemistry for Life Sciences	
EREC 411	Environmental and Resource Economics Perspectives	4
or ECON 402	Principles of Economics (Micro)	
NR 501	Studio Soils	4
NR 504	Freshwater Resources	4
NR 506	Forest Entomology	4
NR 527	Forest Ecology	4
NR 600	Work Experience	0
CMN 500	Public Speaking	4
or THDA 522	Storytelling, Story Theatre, and Involvement Dramatics	
NR 602	Natural Resources and Environmental Policy	4
NR 643	Economics of Forestry	4
NR 658	Introduction to Geographic Information Systems	4
FORT 579	Forest Fire Control and Use	2
NR 502	Forest Ecosystems and Environmental Change	4
NR 729	Silviculture	4
NR 757	Remote Sensing of the Environment	4
NR 782	Forest Health in a Changing World	4

or SAFS 651	Plant Pathology	
NR 745	Forest Management ¹	4
NR 749	Forest Inventory and Modeling	4
RMP 711	Recreation Resource Management	4
Oral Communications Skills Course		4
Total Credits		96

¹ NR 745 Forest Management may be used to satisfy the University's Capstone requirement. The Capstone may also be satisfied through created work or product, or some form of experiential learning (e.g., honors thesis, mentored research project, and other special student activity). Departments are responsible for certifying that graduating seniors have met the capstone requirement for their majors.

Degree Plan

Code	Title	Credits
Freshman Year		
BIOL 528	Applied Biostatistics I	4
ENGL 401	First-Year Writing	4
Select one of the following:		
MATH 424B	Calculus for Life Sciences	
MATH 420	Finite Mathematics	
MATH 425	Calculus I	
NR 415	Natural Resources Field Methods	2
NR 425	Field Dendrology	4
NR 433	Wildlife Ecology	4
BIOL 409	Introductory Botany	4
Discovery elective (FPA, HP, HUM, or WC)		
Sophomore Year		
CHEM 403	General Chemistry I	4
EREC 411	Environmental and Resource Economics Perspectives (Micro)	4
or ECON 402	Principles of Economics (Micro)	
NR 501	Studio Soils	4
NR 504	Freshwater Resources	4
NR 506	Forest Entomology	4
NR 527	Forest Ecology	4
NR 600	Work Experience	0
Oral Communications Skills Course		
Discovery elective (FPA, HP, HUM, or WC)		
Junior Year		
NR 602	Natural Resources and Environmental Policy	4
NR 643	Economics of Forestry	4
NR 658	Introduction to Geographic Information Systems	4
FORT 579	Forest Fire Control and Use	2
NR 502	Forest Ecosystems and Environmental Change	4
NR 729	Silviculture	4
NR 757	Remote Sensing of the Environment	4
NR 782	Forest Health in a Changing World	4
or SAFS 651	Plant Pathology	
Discovery elective (FPA, HP, HUM, or WC)		
Senior Year		

NR 745	Forest Management	4
NR 749	Forest Inventory and Modeling	4
RMP 711	Recreation Resource Management	4
Discovery elective (FPA, HP, HUM, or WC)		

All forestry majors must satisfy the B.S.F. requirements and all Discovery Program requirements. Students must satisfy the Inquiry requirement of the Discovery Program by completing an Inquiry or Inquiry-attribute course. Seniors must also satisfy the capstone experience requirement of the Discovery Program. The capstone explores areas of interest based on the integration of prior learning. The capstone requirement may be satisfied through a course (NR 745 Forest Management), created work or product, or some form of experiential learning (e.g., honors thesis, mentored research project, and other special student activity). Departments are responsible for certifying that graduating seniors have met the capstone requirement for their majors.

Students interested in the forestry program may consult with the program coordinator, Mark Ducey, (603) 862-4429.

Forestry Minor

<https://colsa.unh.edu/nren/forestry/forestry-minor>

Description

The minor in Forestry serves as a concentrated study, beyond a student's primary major, that allows students to explore their interest in forest ecology and management, and to build skills that can help launch a career in forest conservation.

Students interested in a minor in Forestry must complete a minimum of 5 courses and 20 credits with a grade of C- or better. Pass/Fail courses may not be used for the minor. Up to 8 credits can be used to satisfy both major and minor requirements.

Requirements

Code	Title	Credits
Required Courses		
NR 425	Field Dendrology	4
NR 527	Forest Ecology	4
Choose one of the following:		4
NR 749	Forest Inventory and Modeling	
NR 757	Remote Sensing of the Environment	
Choose one of the following:		4
NR 729	Silviculture	
NR 745	Forest Management	
Electives - Choose one of the following or one of the alternative courses from above:		4
NR 506	Forest Entomology	
NR 603	Landscape Ecology	
NR 643	Economics of Forestry	
NR 658	Introduction to Geographic Information Systems	
NR 703	Watershed Water Quality Management	
NR 734	Tropical Ecology	
NR 765	Community Ecology	

NR 782	Forest Health in a Changing World	
Total Credits		20

Genetics (GEN)

Genetics and genomics are central to all aspects of the life sciences. Genetics is the branch of biology that deals with heredity, variation of genes among individuals in a population, and the expression and regulation of genes. Genomics focuses on determining the structure and function of genomes and includes the mapping of genes, high-throughput DNA sequencing, and investigating the molecular mechanisms by which genetic and environmental factors contribute to phenotypes. Every day, scientists are using the tools of genetics and genomics to make exciting discoveries in fields such as molecular medicine, cancer research, biodiversity, and sustainability.

The Genetics (GEN) major has two options: Genetics and Genetics:Genomics. The option in Genetics provides a solid foundation in biology, biochemistry, microbiology, chemistry, physics, math, and cell biology. Students also take advanced courses in molecular genetics, bioinformatics, molecular evolution, genomics, and laboratory techniques. There are many opportunities for interested students to gain research experience through formal or informal research projects in faculty members' laboratories. The Genetics:Genomics option provides additional training in genomics, evolutionary genetics, and computer programming for bioinformatics.

Students with degrees in genetics or genomics are well prepared to apply to graduate schools (e.g., for training as genetic counselors or researchers) and professional schools, or to pursue careers in biotechnology companies, forensics labs, hospitals, university research laboratories, and government agencies. Two additional courses are needed for application to professional programs (e.g., medical or dental school). Graduates may also be employed in fields such as management, sales, marketing, regulatory affairs, technical writing, or science journalism. With supplementary courses in education, graduates with a bachelor's degree in genetics or genomics can teach at the elementary, middle, or high school level.

The genetics faculty conduct research on diverse topics such as evolution, gene structure and function, host-microbe interactions, genome sequencing and analysis, heredity, and diversity in populations. Faculty research areas encompass microbial, plant, and animal genetics. Genetics faculty are committed to mentoring undergraduate students in independent research experiences in their laboratories, which provide students with exposure to and training in cutting-edge research technologies.

Pre-Professional Health Programs

Students interested in postgraduate careers in the health care professions should visit the Pre-Professional Health Programs Advising (<http://www.unh.edu/premed-advising>) website or visit the office in person. Requirements for specific types of professional schools (e.g., medical, dental, physician assistant, pharmacy, etc.) are available here (<http://www.unh.edu/uacc/premed-advising/explore-health-professions>). Students interested in veterinary medicine should consult the Pre-Veterinary Medicine Program (<http://colsa.unh.edu/mcbs/prevet>). Many of the prerequisite courses required by professional schools are also requirements of the genetics major, but students should consult with their faculty adviser to create a plan of study that best prepares them for pursuing a career in one of these health professions.

<https://colsa.unh.edu/molecular-cellular-biomedical-sciences>

Programs

- Genetics Major (B.S.) (p. 261)
- Genetics Major: Genomics Option (B.S.) (p. 263)
- Genetics Minor (p. 266)

Faculty

<https://colsa.unh.edu/molecular-cellular-biomedical-sciences/people>

Genetics Major (B.S.)

<https://colsa.unh.edu/molecular-cellular-biomedical-sciences/program/bs/genetics-major>

Description

The **Genetics and Genetics:Genomics programs (GEN)** explore the world of genetics and genomics in plants, animals, and microbes. Genetics majors are interested in understanding how DNA, along with the environment, encodes traits as simple as hair color, to more complex traits like high blood pressure, diabetes, and mental illness. The Genetics faculty strongly value hands-on learning and many GEN students conduct undergraduate research under the supervision of our faculty. GEN graduates are prepared for successful careers in the biotechnology fields or for entry into graduate school or health professional programs.

The Genetics program includes course work and laboratories in:

- molecular genetics
- bioinformatics
- human genetics
- comparative genomics
- plant genetics
- microbial genetics and evolution

Students in the Genetics program may participate in a variety of experiential learning activities including:

- independent research experiences in laboratories of UNH genetics faculty
- work at the Hubbard Center for Genome Studies (<https://hcgs.unh.edu>) or Research Computing Center (<https://www.unh.edu/research/support-units/research-computing-center>)
- internships at biotechnology companies in the Greater Boston area
- internships with genetics counselors at area medical centers

GEN graduates have been successful in attaining careers as:

- research scientists and laboratory technicians in
 - biotechnology and pharmaceutical companies
 - academic research programs

- forensics
- biomedical research centers & medical schools
- educators

GEN graduates are prepared for further education in:

- professional health programs
 - genetic counseling
 - medical school (<http://www.unh.edu/uac/premed-advising/explore-medicine>)
 - dental school
 - allied health programs (physician assistant (<http://www.unh.edu/uac/premed-advising/explore-physician-assistant>), pharmacist (<http://www.unh.edu/uac/premed-advising/explore-pharmacy>), nursing (<https://chhs.unh.edu/nursing/direct-entry-masters-nursing>) or pathologist's assistant (<http://www.pathassist.org>) programs)
- graduate programs
 - Genetics and Genomics
 - Integrative Biology
 - Neurogenomics
 - Molecular Biology
 - Microbiology
 - Environmental Sciences
 - Public Health
 - Computer Science

Requirements

Students majoring in genetics take seven Foundation courses, six Bioscience Core courses, four Genetics Core courses and four Major Elective courses. One capstone experience, supervised and approved within the major, is required of all seniors. In addition, all other University requirements must be completed, including those for the Discovery Program (p. 24) and the University Writing Requirement (p. 28).

A grade of C-minus or better required in Statistics and all Biological Science Foundation, GEN Core, and Major Elective courses.

Foundation Courses

Code	Title	Credits
CHEM 403	General Chemistry I	4
CHEM 404	General Chemistry II	4
CHEM 545 & CHEM 546	Organic Chemistry and Organic Chemistry Laboratory ¹	5
MATH 424B	Calculus for Life Sciences	4
BIOL 528	Applied Biostatistics I	4
PHYS 401	Introduction to Physics I	4
PHYS 402	Introduction to Physics II	4

Bioscience Core Courses

Code	Title	Credits
BIOL 411	Introductory Biology: Molecular and Cellular	4
BIOL 412	Introductory Biology: Evolution, Biodiversity and Ecology	4

GEN 604	Principles of Genetics	4
BMS 503 & BMS 504	General Microbiology and General Microbiology Laboratory	5
BMCB 605	Eukaryotic Cell and Developmental Biology	4
BMCB 658 & BMCB 659	General Biochemistry and General Biochemistry Lab	5

Genetics Core Courses

Code	Title	Credits
GEN 401	Professional Perspectives in Genetics	1
GEN 606	Genetics Lab	4
GEN 711	Genomics and Bioinformatics	4
Select one of the following:		
GEN 704	Genetics of Prokaryotic Microbes ²	5
GEN 771	Molecular Genetics ³	4

Major Electives

A total of four **unique** major electives is required: one course from the laboratory-based major elective group, one course from the population genetics or evolutionary genetics major elective group, two courses from the bioscience major elective group.

Laboratory-Based Major Electives (Select One)

Code	Title	Credits
GEN 704	Genetics of Prokaryotic Microbes ²	5
GEN 717	Molecular Microbiology	5
GEN 774	Techniques in Plant Genetic Engineering and Biotechnology	4
GEN 795	Investigations in Genetics (4-credit minimum) ⁴	1-4
GEN 795W	Investigations in Genetics (4-credit minimum) ⁴	1-4
GEN 799	Senior Thesis (4-credit minimum) ⁴	1-4
GEN 799H	Honors Senior Thesis (4-credit minimum) ⁵	1-4
BMCB 753	Cell Culture	5
BMCB 754	Molecular Biology Research Methods	5
INCO 790	Advanced Research Experience (4-credit minimum) ⁴	1-4

Population or Evolutionary Genetics Major Electives (Select One)

Code	Title	Credits
GEN 705	Population and Quantitative Genetics	4
GEN 715	Molecular Evolution	4
GEN 772	Evolutionary Genetics of Plants	4

Bioscience Major Electives (Select Two)

Code	Title	Credits
GEN 704	Genetics of Prokaryotic Microbes	5
GEN 705	Population and Quantitative Genetics	4
GEN 706	Human Genetics	4
GEN 712	Programming for Bioinformatics	5
GEN 713	Microbial Ecology and Evolution	4
GEN 715	Molecular Evolution	4
GEN 717	Molecular Microbiology	5
GEN 721	Comparative Genomics	4
GEN 771	Molecular Genetics	4

GEN 772	Evolutionary Genetics of Plants	4
GEN 774	Techniques in Plant Genetic Engineering and Biotechnology	4
GEN 795	Investigations in Genetics (4-credit minimum)	1-4
GEN 795W	Investigations in Genetics (4-credit minimum)	1-4
GEN 799	Senior Thesis (4-credit minimum)	1-4
GEN 799H	Honors Senior Thesis (4-credit minimum)	1-4
ANSC 602	Animal Rights and Societal Issues	4
ANSC 701	Physiology of Reproduction	4
BIOL 702	Techniques in Plant Physiology and Biochemistry	4
BIOL 704	Plant-Microbe Interactions	3
BIOL 711	Applied Biostatistics II	4
BIOL 752	Mycology	4
BMCB 750	Physical Biochemistry	3
BMCB 753	Cell Culture	5
BMCB 754	Molecular Biology Research Methods	5
BMCB 760	Pharmacology	4
BMCB 763	Biochemistry of Cancer	4
BMCB #783	Proteomics for Biological Discoveries	4
BMCB 794	Protein Structure and Function	4
BMS 650	Molecular Diagnostics	4
BMS 702	Endocrinology	4
BMS 705	Immunology	3
BMS 706	Virology	3
BMS 718	Mammalian Physiology	4
BMS 719	Host-Microbe Interactions	4
BMS 740	Human Microbiome	4
INCO 790	Advanced Research Experience (4-credit minimum)	1-4
NR 706	Soil Ecology	4
ZOOL 625 & ZOOL 626	Principles of Animal Physiology and Animal Physiology Laboratory	5
ZOOL 690	Evolution	4
ZOOL 777	Neuroethology	3

Approved GEN Capstone Courses

The capstone explores areas of interest based on the integration of prior learning. The capstone requirement may be satisfied through a course, a created work or product, or some form of experiential learning (e.g., honors thesis, mentored research project, or other approved student activity). The capstone requirement can only be fulfilled once a student has senior standing in the major. Submit a Capstone Approval form prior to beginning the experience.

Code	Title	Credits
GEN 704	Genetics of Prokaryotic Microbes	5
GEN 705	Population and Quantitative Genetics	4
GEN 715	Molecular Evolution	4
GEN 717	Molecular Microbiology	5
GEN 790	Undergraduate Teaching Experience (4 credit minimum; classroom presentation required)	1-4
GEN 795	Investigations in Genetics (4-credit minimum) ⁵	1-4
GEN 795W	Investigations in Genetics (4-credit minimum) ⁵	1-4
GEN 799	Senior Thesis (4-credit minimum) ⁵	1-4

GEN 799H	Honors Senior Thesis (4-credit minimum) ⁵	1-4
INCO 790	Advanced Research Experience (4-credit minimum) ⁵	1-4

- ¹ Students applying to health profession schools need a full year of English, a full year of Introductory Biology, and a full year of Organic Chemistry. ENGL 502 or ENGL 503 should be taken in addition to ENGL 401; CHEM 651/CHEM 653 and CHEM 652/CHEM 654 should be taken in place of CHEM 545/CHEM 546. See Pre-Professional Health Program Advising (<http://www.unh.edu/uacc/premed-advising/advising>).
- ² Students who take GEN 704 to fulfill the Genetics Core requirement may also count it toward their Laboratory Techniques requirement IF they take one additional Bioscience Major Elective course. GEN 704 can count as a Genetic Core course or a Bioscience Major Elective course but not both.
- ³ GEN 771 can be used as a Genetic Core course or Bioscience Major Elective but not both.
- ⁴ Must be a laboratory-based project with a genetics focus; submit approval form prior to beginning the course.
- ⁵ Capstone research project must have a genetics focus.

Degree Plan

SAMPLE Course Sequence for Genetics

Course	Title	Credits
First Year		
Fall		
GEN 401	Professional Perspectives in Genetics	1
BIOL 411	Introductory Biology: Molecular and Cellular	4
ENGL 401	First-Year Writing	4
CHEM 403	General Chemistry I	4
Discovery course		4
Credits		17
Spring		
BIOL 412	Introductory Biology: Evolution, Biodiversity and Ecology	4
MATH 424B	Calculus for Life Sciences	4
CHEM 404	General Chemistry II	4
Discovery course		4
Credits		16
Second Year		
Fall		
GEN 604	Principles of Genetics	4
CHEM 545 & CHEM 546	Organic Chemistry and Organic Chemistry Laboratory	5
BIOL 528	Applied Biostatistics I	4
Discovery course		4
Credits		17
Spring		
GEN 606	Genetics Lab	4
BMS 503 & BMS 504	General Microbiology and General Microbiology Laboratory	5
Major Elective (Bioscience)		4

Discovery course	4
Credits	17

Third Year

Fall

BMCB 658 & BMCB 659	General Biochemistry and General Biochemistry Lab	5
PHYS 401	Introduction to Physics I	4
Discovery course		4
Elective (any course)		4
Credits	17	

Spring

Major Elective (Population or Evolutionary Genetics)		4
PHYS 402	Introduction to Physics II	4
Genetics Core course		4
Discovery course		4
Credits		16

Fourth Year

Fall

Major Elective (Lab Techniques)		4-5
GEN 711	Genomics and Bioinformatics	4
Major Elective (Bioscience)		4-5
Elective (any course)		4
Credits		16-18

Spring

BMCB 605	Eukaryotic Cell and Developmental Biology	4
Elective (any course)		4
Elective (any course)		4
Credits		12
Total Credits		128-130

Genetics Major: Genomics Option (B.S.)

<https://colsa.unh.edu/molecular-cellular-biomedical-sciences/program/bs/genetics-major-genomics-option>

Description

The **Genetics and Genomics:Genomics programs (GEN)** explore the world of genetics and genomics in plants, animals, and microbes. Genetics majors are interested in understanding how DNA, along with the environment, encodes traits as simple as hair color, to more complex traits like high blood pressure, diabetes, and mental illness. The Genetics faculty strongly value hands-on learning and many GEN students conduct undergraduate research under the supervision of our faculty. GEN graduates are prepared for successful careers in the biotechnology fields or for entry into graduate school or health professional programs.

The Genetics program includes course work and laboratories in:

- molecular genetics
- bioinformatics
- human genetics
- comparative genomics

- plant genetics
- microbial genetics and evolution

Students in the Genetics program may participate in a variety of experiential learning activities including:

- independent research experiences in laboratories of UNH genetics faculty
- work at the Hubbard Center for Genome Studies (<https://hcms.unh.edu>) or Research Computing Center (<https://www.unh.edu/research/support-units/research-computing-center>)
- internships at biotechnology companies in the Greater Boston area
- internships with genetics counselors at area medical centers

GEN graduates have been successful in attaining careers as:

- research scientists and laboratory technicians in
 - biotechnology and pharmaceutical companies
 - academic research programs
 - forensics
 - biomedical research centers & medical schools
- educators

GEN graduates are prepared for further education in:

- professional health programs
 - genetic counseling
 - medical school (<http://www.unh.edu/uac/premed-advising/explore-medicine>)
 - dental school
 - allied health programs (physician assistant (<http://www.unh.edu/uac/premed-advising/explore-physician-assistant>), pharmacist (<http://www.unh.edu/uac/premed-advising/explore-pharmacy>), nursing (<https://chhs.unh.edu/nursing/direct-entry-masters-nursing>) or pathologist's assistant (<http://www.pathassist.org>) programs)
- graduate programs
 - Genetics and Genomics
 - Integrative Biology
 - Neurogenomics
 - Molecular Biology
 - Microbiology
 - Environmental Sciences
 - Public Health
 - Computer Science

Requirements

Students majoring in Genetics with the Genomics option take seven Foundation courses, six Bioscience Core courses, four Genetics Core courses and five Major Elective courses. One capstone experience, supervised and approved within the major, is required of all seniors. The capstone explores areas of interest based on the integration of prior learning. In addition, all other University requirements must be completed, including those for the Discovery Program (<http://www.unh.edu/undergrad-catalog/gi.cfm?thisid=242&masterid=27&headingid=27/#242>) and the University Writing Requirement (<http://www.unh.edu/undergrad-catalog/gi.cfm?thisid=28&masterid=27&headingid=27/#28>).

A grade of C-minus or better required in statistics and all Biological Science Foundation, GEN Core, and Major Elective courses.

Foundation Courses

Code	Title	Credits
CHEM 403	General Chemistry I	4
CHEM 404	General Chemistry II	4
CHEM 545 & CHEM 546	Organic Chemistry and Organic Chemistry Laboratory ¹	5
MATH 424B	Calculus for Life Sciences	4
BIOL 528	Applied Biostatistics I	4
PHYS 401	Introduction to Physics I	4
PHYS 402	Introduction to Physics II	4

Bioscience Core Courses

Code	Title	Credits
BIOL 411	Introductory Biology: Molecular and Cellular	4
BIOL 412	Introductory Biology: Evolution, Biodiversity and Ecology	4
GEN 604	Principles of Genetics	4
BMS 503 & BMS 504	General Microbiology and General Microbiology Laboratory	5
BMCB 605	Eukaryotic Cell and Developmental Biology	4
BMCB 658 & BMCB 659	General Biochemistry and General Biochemistry Lab	5

Genetics Core Courses

Code	Title	Credits
GEN 401	Professional Perspectives in Genetics	1
GEN 606	Genetics Lab	4
GEN 711	Genomics and Bioinformatics	4
Select one of the following:		
GEN 704	Genetics of Prokaryotic Microbes ²	5
GEN 771	Molecular Genetics ²	4

Major Electives

A total of five **unique** major electives is required: GEN 712, GEN 721, two courses from the population or evolutionary genetics elective group, and one course from the bioscience major elective group.

Required Major Electives

Code	Title	Credits
GEN 712	Programming for Bioinformatics	5
GEN 721	Comparative Genomics	4

Population or Evolutionary Genetics Major Electives (Select Two)

Code	Title	Credits
GEN 705	Population and Quantitative Genetics	4
GEN 713	Microbial Ecology and Evolution	4

GEN 715	Molecular Evolution	4
GEN 772	Evolutionary Genetics of Plants	4

Bioscience Major Electives (Select One)

Code	Title	Credits
GEN 704	Genetics of Prokaryotic Microbes ²	5
GEN 705	Population and Quantitative Genetics	4
GEN 706	Human Genetics	4
GEN 712	Programming for Bioinformatics	5
GEN 713	Microbial Ecology and Evolution	4
GEN 715	Molecular Evolution	4
GEN 717	Molecular Microbiology	5
GEN 721	Comparative Genomics	4
GEN 771	Molecular Genetics ²	4
GEN 772	Evolutionary Genetics of Plants	4
GEN 774	Techniques in Plant Genetic Engineering and Biotechnology	4
GEN 795	Investigations in Genetics (4 credit minimum)	1-4
GEN 795W	Investigations in Genetics (4 credit minimum)	1-4
GEN 799	Senior Thesis (4 credit minimum)	1-4
GEN 799H	Honors Senior Thesis (4-credit minimum)	1-4
ANSC 602	Animal Rights and Societal Issues	4
ANSC 701	Physiology of Reproduction	4
BIOL 702	Techniques in Plant Physiology and Biochemistry	4
BIOL 704	Plant-Microbe Interactions	3
BIOL 711	Applied Biostatistics II	4
BIOL 752	Mycology	4
BMCB 750	Physical Biochemistry	3
BMCB 753	Cell Culture	5
BMCB 754	Molecular Biology Research Methods	5
BMCB 760	Pharmacology	4
BMCB 763	Biochemistry of Cancer	4
BMCB #783	Proteomics for Biological Discoveries	4
BMCB 794	Protein Structure and Function	4
BMS 650	Molecular Diagnostics	4
BMS 702	Endocrinology	4
BMS 705	Immunology	3
BMS 706	Virology	3
BMS 718	Mammalian Physiology	4
INCO 790	Advanced Research Experience (4-credit minimum)	1-4
NR 706	Soil Ecology	4
ZOOL 625 & ZOOL 626	Principles of Animal Physiology and Animal Physiology Laboratory	5
ZOOL 690	Evolution	4
ZOOL 777	Neuroethology	3

Approved GEN Capstone Courses

The capstone explores areas of interest based on the integration of prior learning. The capstone requirement may be satisfied through a course, created work or product, or some form of experiential learning (e.g., honors thesis, mentored research project, or other approved student activity). The capstone requirement can only be fulfilled once a student

has senior standing in the major. Submit a Capstone Approval form prior to beginning the experience.

Code	Title	Credits
GEN 704	Genetics of Prokaryotic Microbes	5
GEN 705	Population and Quantitative Genetics	4
GEN 715	Molecular Evolution	4
GEN 717	Molecular Microbiology	5
GEN 790	Undergraduate Teaching Experience (4 credit minimum; classroom presentation required)	1-4
GEN 795	Investigations in Genetics (4-credit minimum)	1-4
GEN 795W	Investigations in Genetics (4-credit minimum)	1-4
GEN 799	Senior Thesis (4-credit minimum)	1-4
GEN 799H	Honors Senior Thesis (4-credit minimum)	1-4
INCO 790	Advanced Research Experience (4-credit minimum)	1-4

¹ Students applying to health profession schools need a full year of English, a full year of Introductory Biology, and a full year of Organic Chemistry. ENGL 502 or ENGL 503 should be taken in addition to ENGL 401; CHEM 651/CHEM 653 and CHEM 652/CHEM 654 should be taken in place of CHEM 545/CHEM 546. See Pre-Professional Health Program Advising (<http://www.unh.edu/uacc/premed-advising/advising>).

² Can be used as a Genetic Core course or Bioscience Major Elective but not both.

Degree Plan

SAMPLE Course Sequence for Genomics

Course	Title	Credits
First Year		
Fall		
GEN 401	Professional Perspectives in Genetics	1
BIOL 411	Introductory Biology: Molecular and Cellular	4
ENGL 401	First-Year Writing	4
CHEM 403	General Chemistry I	4
Discovery course		4
		Credits
		17
Spring		
BIOL 412	Introductory Biology: Evolution, Biodiversity and Ecology	4
MATH 424B	Calculus for Life Sciences	4
CHEM 404	General Chemistry II	4
Discovery course		4
		Credits
		16
Second Year		
Fall		
GEN 604	Principles of Genetics	4
CHEM 545 & CHEM 546	Organic Chemistry and Organic Chemistry Laboratory	5
BIOL 528	Applied Biostatistics I	4
Discovery course		4
		Credits
		17

Spring		
GEN 606	Genetics Lab	4
BMS 503 & BMS 504	General Microbiology and General Microbiology Laboratory	5
Major Elective (Bioscience)		4
Discovery course		4
Credits		17
Third Year		
Fall		
BMCB 658 & BMCB 659	General Biochemistry and General Biochemistry Lab	5
PHYS 401	Introduction to Physics I	4
Discovery course		4
Elective (any course)		4
Credits		17
Spring		
Genetics Core course		4
PHYS 402	Introduction to Physics II	4
BMCB 605	Eukaryotic Cell and Developmental Biology	4
Discovery course		4
Credits		16
Fourth Year		
Fall		
Major Elective (Pop/Evol Genetics)		4
GEN 711	Genomics and Bioinformatics	4
GEN 712	Programming for Bioinformatics	4
Elective (any course)		4
Credits		16
Spring		
GEN 721	Comparative Genomics	4
Major Elective (Pop/Evol Genetics)		4
Elective (any course)		4
Credits		12
Total Credits		128

Genetics Minor

<https://colsa.unh.edu/mcbs/genetics/minor-genetics>

Description

Students in other majors who wish to develop a focus in the area of genetics and genomics can complement their major academic program with a minor in genetics.

Requirements

The minor consists of a minimum of 20 credits, no more than 8 of which can also be used to fulfill major requirements. A C average (2.00) is required in courses that the minor department approves. It is the student's responsibility to file an Intent to Minor form with the GEN minor advisor by the end of the junior year and to complete a Certification of Completion of Minor (<http://www.unh.edu/registrar/forms/minorform.pdf>) form during their final semester at UNH.

Required Course

Code	Title	Credits
GEN 604	Principles of Genetics	4

Choose at least one Transmission/Population Genetics course and one Molecular Genetics course. To reach the minimum of 20 credits for the minor, 4 credits of GEN 795 Investigations in Genetics may be used.

Transmission/Population Genetics Courses (Choose at least One)

Code	Title	Credits
NR 664	Conservation Genetics	4
GEN 705	Population and Quantitative Genetics	4
GEN 706	Human Genetics	4
GEN 713	Microbial Ecology and Evolution	4
GEN 715	Molecular Evolution	4
GEN 772	Evolutionary Genetics of Plants	4

Molecular Genetics Courses (Choose at least One)

Code	Title	Credits
BMCB 754	Molecular Biology Research Methods	5
GEN 704	Genetics of Prokaryotic Microbes	5
GEN 711	Genomics and Bioinformatics	4
GEN 712	Programming for Bioinformatics	5
GEN 717	Molecular Microbiology	5
GEN 721	Comparative Genomics	4
GEN 771	Molecular Genetics	4
GEN 774	Techniques in Plant Genetic Engineering and Biotechnology	4

GeoSpatial Analysis

Programs

- GeoSpatial Analysis Minor (p. 266)

GeoSpatial Analysis Minor

<https://colsa.unh.edu/interdisciplinary-minors/geospatial-analysis-minor>

Description

The geospatial analysis minor is designed for students who wish to have more learning and experience using the tools of geospatial analysis such as statistics, aerial photography, satellite imagery, and geographic information systems (GIS) as they relate to their chosen field of study. Students interested in completing the geospatial analysis minor must complete a total of 20 credits. A grade of C- or better is required in each minor course and no course can be taken pass/fail. A total of not more than 8 credits from the student's major requirements can be counted toward the minor.

Requirements

Code	Title	Credits
Basic Statistics		
Select one of the following:		4
BIOL 528	Applied Biostatistics I	
PSYC 402	Statistics in Psychology	
SOC 502	Statistics	
Other basic statistics course as approved by minor advisor		
Introductory/Field/or Overview		
Select one of the following:		4
NR 458	The Science of Where	
CEE 404	Surveying and Mapping	
NR 415	Natural Resources Field Methods	
NR 603	Landscape Ecology	
GEOG 590	Field Research	
NR/GEOG 757	Remote Sensing of the Environment	
ANTH 674	Archaeological Survey and Mapping in Belize	
GIS		
Select one of the following:		4
NR/GEOG 658	Introduction to Geographic Information Systems	
NR/GEOG 760	Geographic Information Systems in Natural Resources	
CEE 796	Special Topics (GIS in Water Resources)	
FORT 581	Applied Geographic Information Systems (GIS) Techniques	
Remote Sensing		
Select one of the following:		4
NR/GEOG 757	Remote Sensing of the Environment	
NR/GEOG 759	Digital Image Processing for Natural Resources	
Advanced Analysis		
Select one of the following:		4
NR 707	Environmental Modeling	
NR 713	Quantitative Ecology	
NR 740	Inventory and Monitoring of Ecological Communities	
NR 749	Forest Inventory and Modeling	
NR 782	Forest Health in a Changing World	
EREC 760	Ecological-Economic Modeling for Decision Making	
Total Credits		20

Students with questions about the minor or who would like more information should contact Dr. Russell G. Congalton in the Department of Natural Resources and the Environment, (603) 862-4644, russ.congalton@unh.edu.

Green Real Estate

Programs

- Green Real Estate Minor (p. 267)

Green Real Estate Minor

<https://colsa.unh.edu/interdisciplinary-minors/green-real-estate-minor>

Description

The green real estate minor will include the basic fundamentals of real estate (a class which is accredited by the New Hampshire Real Estate Commission). Students will learn about local and regional planning, environmental economics and market forces, and environmental issues as they pertain to real estate. In addition, students may choose complementary classes, such as architecture, surveying, land design, soils, wetland delineation, law, etc. Students must complete five courses (18 to 20 credits), get a C- or better in each course, and maintain a 2.0 average or better.

Requirements

Code	Title	Credits
Required Courses		
CEP 672	Fundamentals of Real Estate	4
CEP 673	Green Real Estate	4
CEP 508	Applied Community Development	4
Electives		
Select two from one of the following groups:		8
Green Design and Building		
Land Conservation		
Finance and Law		
Total Credits		20

Green Design and Building

Ideal for future architects and builders

Code	Title	Credits
ARTS 455	Architectural Design Studio	4
CHE 410	Energy and Environment	4
CEE 444	Housing - Everyone Needs a Place to Live	4
CT 541	Legal Aspects of Surveying	4
CT 538	Construction Contracting	4
CT 581	Architecture I History and Design	4
CT 423	Introduction to Surveying and Mapping	3
CT 557	Land Design and Regulations	4

Land Conservation

Ideal for future conservation commission members, planners, and environmental advocates in general

Code	Title	Credits
EREC 606	Land Economics Perspectives: Uses, Policies, and Taxes	4
NR 507	Introduction to our Energy System and Sustainable Energy	4
NR 785	Systems Thinking for Sustainable Solutions	4

Finance and Law

Ideal for future green mortgage lenders and social choice investment portfolio managers. NOTE: Business majors only

Code	Title	Credits
ACFI 701	Financial Policy	4
ACFI 702	Investments Analysis	4
MGT 798	Topics	4

Marine, Estuarine, and Freshwater Biology (MEFB)

The marine, estuarine, and freshwater biology (MEFB) B.S. program is designed to provide a broad background for undergraduates interested in marine, estuarine, and freshwater biology, aquaculture, and fisheries. The program integrates theoretical and practical (hands-on laboratory and field) courses. Students are encouraged to become involved in one or more of the numerous undergraduate research opportunities available in the marine, estuarine, and freshwater sciences.

UNH is located on a seacoast that provides an extraordinary diversity of marine and estuarine habitats. It is also only a short distance from mountain streams, rivers, marshes, bogs, ponds, and lakes. All of the habitats provide outstanding resources for field courses and research. The marine, estuarine, and freshwater faculty are spread across all four departments of the College of Life Sciences and Agriculture. UNH is a Sea Grant university and has an international reputation for teaching and research in aquatic sciences. UNH has aquaculture facilities, and coastal and estuarine research laboratories. In collaboration with Cornell, UNH jointly administers the summer undergraduate programs at the Shoals Marine Laboratory on Appledore Island, seven miles off the coast of New Hampshire and Maine.

<https://colsa.unh.edu/biological-sciences>

Programs

- Marine, Estuarine and Freshwater Biology Major (B.S.) (p. 268)
- Marine Biology Minor (p. 270)

Faculty

<https://colsa.unh.edu/biological-sciences/people>

Marine, Estuarine and Freshwater Biology Major (B.S.)

<https://colsa.unh.edu/biological-sciences/program/bs/marine-estuarine-and-freshwater-biology>

Description

The Major in Marine, Estuarine and Freshwater Biology is intended to give students interested in the fields of marine and freshwater biology the background to pursue careers, including potential advanced study, in this area of biology. The major builds on a broad set of basic scientific courses represented by a core curriculum in math, chemistry, physics and

biology. The background in basic science is combined with a series of required and elective courses in the aquatic sciences from watershed to ocean. The goal is to provide a solid foundation of knowledge in freshwater, estuarine and marine biology while having the flexibility to focus on particular areas of scientific interest from molecular biology to ecosystem studies. Students will have the opportunity to specialize in areas of their own interest, such as aquaculture and fisheries or animal behavior.

The University's location and facilities provide unique opportunities for the study of aquatic organisms and systems due to its access to the seacoast and the lakes region of New Hampshire, White Mountain National Forest, and the presence of two coastal marine laboratories, as well as estuarine and freshwater facilities. There is a strong teaching and research emphasis on ecological and physiological processes in aquatic plants, animals and ecosystems. A major strength of the program is the hands-on approach to teaching combined with an emphasis on involving undergraduate students in research.

Requirements

Code	Title	Credits
Biological Sciences Core		
BIOL 412	Introductory Biology: Evolution, Biodiversity and Ecology	4
BIOL 411	Introductory Biology: Molecular and Cellular	4
BIOL 541	General Ecology	4
BMS 503 & BMS 504	General Microbiology and General Microbiology Laboratory	5
GEN 604	Principles of Genetics	4
CHEM 403	General Chemistry I	4
CHEM 404	General Chemistry II	4
CHEM 545 & CHEM 546	Organic Chemistry and Organic Chemistry Laboratory	5
BMCB 658 & BMCB 659	General Biochemistry and General Biochemistry Lab	5
MATH 424B	Calculus for Life Sciences	4
or BIOL 633	Quantitative Reasoning and Analysis for Life Sciences	
or BIOL 711	Applied Biostatistics II	
BIOL 528	Applied Biostatistics I	4
PHYS 401	Introduction to Physics I	4
PHYS 402	Introduction to Physics II	4
MEFB Required Courses		
MEFB 401	Marine Estuarine and Freshwater Biology: Freshmen Seminar	1
MEFB 503	Introduction to Marine Biology	4
MEFB 525	Introduction to Aquatic Botany	4
MEFB 527	Aquatic Animal Diversity	4
Choose one Freshwater course:		4
MEFB 719	Field Studies in Lake Ecology (C)	4
or MEFB 717	Lake Ecology	
Choose one Physiology/Function course:		4-5
ZOOL 625 & ZOOL 626	Principles of Animal Physiology and Animal Physiology Laboratory	
or ZOOL 773	Physiology of Fish	
Choose one Marine or Estuarine course:		4

MEFB 725	Marine Ecology or ZOOL 750 Biological Oceanography	
MEFB Electives: Choose 3		
Evolution, Systematics and Biodiversity		
BIOL 566	Systematic Botany	4
GEN 713	Microbial Ecology and Evolution	4
MEFB 625	Introduction to Marine Botany	4
MEFB 722	Marine Phycology	4
ZOOL 518	Vertebrate Morphology	5
ZOOL 542	Ornithology	4
ZOOL 628	Marine Invertebrate Evolution and Ecology	5
ZOOL 690	Evolution (C) ¹	4
ZOOL 710	Ichthyology	4
MEFB 510	Field Ornithology (SML)	4
MEFB 630	Biodiversity and Biology of Marine Invertebrates (SML)	4
MEFB 754	Anatomy and Function of Marine Vertebrates (SML)	4
Fisheries and Aquaculture		
ZOOL 610	Principles of Aquaculture	4
ZOOL 710	Ichthyology	4
ZOOL 750	Biological Oceanography ¹	4
ZOOL 772	Fisheries Biology	3
ZOOL 773	Physiology of Fish ¹	4
MEFB 702	Sustainable Marine Fisheries (SML)	4
Marine, Estuarine and Freshwater Ecology		
NR 744	Biogeochemistry	4
ESCI 501	Introduction to Oceanography	4
GEN 713	Microbial Ecology and Evolution	4
NR 504	Freshwater Resources	4
NR 703	Watershed Water Quality Management	4
NR 711	Wetland Ecology and Management	4
MEFB 625	Introduction to Marine Botany	4
MEFB 717	Lake Ecology ¹	4
MEFB 719	Field Studies in Lake Ecology (C) ¹	4
MEFB 725	Marine Ecology (C) ¹	4
MEFB 732	Lake Management (C)	4
MEFB 747	Aquatic Plants in Restoration/Management	4
ZOOL 628	Marine Invertebrate Evolution and Ecology	5
ZOOL #721	Aquatic Invasive Species (C)	4
ZOOL 733	Behavioral Ecology (C)	4
ZOOL 750	Biological Oceanography ¹	4
MEFB 515	Marine Environmental Science and Conservation (SML)	4
MEFB 674	Ecology and Marine Environment (SML)	4
MEFB 714	Field Animal Behavior (SML)	4
MEFB 751	Research in Marine Biology (SML, C)	4
Physiology, Behavior and Cell Biology		
ANSC 701	Physiology of Reproduction	4
BIOL 701	Plant Physiology	5
BMCB 605	Eukaryotic Cell and Developmental Biology	4
BMS 716	Public Health: Food- and Water-borne Diseases	4
MEFB 714	Field Animal Behavior (SML)	4

MEFB 727	Algal Physiology	3
ZOOL 625 & ZOOL 626	Principles of Animal Physiology and Animal Physiology Laboratory ¹	5
ZOOL 733	Behavioral Ecology	4
ZOOL 773	Physiology of Fish ¹	4
ZOOL 777	Neuroethology	3
Research and Special Projects ²		
BIOL 600	Field Experience (C)	1-4
BIOL 795	Independent Investigations (C)	1-4
BMS 795	Investigations in Biomedical Science (C)	1-8
MEFB 732	Lake Management (C)	4
MEFB 730	Underwater Research (SML, C)	4
MEFB 751	Research in Marine Biology (SML, C)	4
TECH 797	Undergraduate Ocean Research Project (C) ³	2
ZOOL 795	Special Investigations (C)	1-4
Capstone		

¹ Courses used to satisfy MEFB major requirements may not also be used to satisfy the 3 required electives.

² Primary focus of the project must be Marine, Estuarine and/or Freshwater.

³ Year long course - 2 credits each semester

Courses marked with (SML) are courses taught in the summer at the Shoals Marine Laboratory.

Courses marked with (C) can be used to fulfill the Capstone requirement.

Courses listed in more than one category will satisfy requirements in only one category.

One 600 or 795 experience totaling three or more credits or any two 795 experiences of two credits each can fulfill one course requirement in any category with adviser approval. A Petition for Academic Variance approved by the chair of the Department of Biological Sciences is required to count 795 experiences for more than one major required course.

The capstone explores areas of interest based on the integration of prior learning. The capstone requirement may be satisfied through a course, created work or product, or some form of experiential learning (e.g., honors thesis, mentored research project, and other special student activity). Departments are responsible for certifying that graduating seniors have met the capstone requirement for their majors.

A minimum grade of C- is required in all biological science courses that are counted toward the requirements for a degree in MEFB. Students who expect to compete successfully for post-baccalaureate programs should attain a cumulative GPA of 3.0 or higher by the end of the sophomore year and maintain it at that level.

Note: It is strongly recommended that students participate in an exchange semester at another university or in a field-oriented program or internship. There are many exchange opportunities available in which a full semester of credits toward the major may be earned. In addition, students should explore the courses at the Shoals Marine Laboratory (SML), which provides an excellent setting for several "field-oriented" courses during the summer. Often there is financial support available for the SML programs (see the SML website for details <http://marine.unh.edu/sml/> or the Cornell web site at www.sml.cornell.edu (<http://www.sml.cornell.edu>)). It is further recommended that students

explore possibilities of one or more semesters of independent investigation (research projects). For details, students should contact their adviser. Financial support is available for most of these programs.

Pre-health Professional Program

MEFB majors who wish to pursue postgraduate degrees in the health care professions should visit www.unh.edu/premed-advising (<http://www.unh.edu/premed-advising>). The following elective courses will be helpful in preparing for admission to post-baccalaureate programs in the health professions and for their required aptitude examinations: BMS 702, ZOOL 518, ZOOL 625 and ZOOL 626, BMCB 605, BMCB 751 and BMCB 752, ANSC 511 and ANSC 512.

Marine Biology Minor

<https://colsa.unh.edu/biological-sciences/program/minor/marine-biology>

Description

The Marine Biology minor is designed to provide a foundation in marine biology and related sciences to any UNH undergraduate student, with the exception of students majoring in marine, estuarine, and freshwater biology. It is offered through the Department of Biological Sciences. The minor consists of 20 credits with grades of C- or better and no pass/fail courses. No more than eight major requirement credits may be used to complete the minor. The minor consists of 1 of a introductory Marine Science courses and 4 courses selected in consultation with the minor advisor.

Requirements

Required

Five courses (20 credits); two of the five courses (eight credits) can count toward the student's major.

Code	Title	Credits
Select one of the following introductory courses in marine science:		4
MEFB 503	Introduction to Marine Biology	
ESCI 501	Introduction to Oceanography	
Four additional courses selected in consultation with the minor adviser		16
Total Credits		20

In addition, students are encouraged to become involved in a research project, either by working in a professor's laboratory or by participating in the Undergraduate Ocean Research Project (TECH 797 Undergraduate Ocean Research Project).

Neuroscience and Behavior (NSB)

Neuroscience is one of the fastest-growing scientific fields, and the discoveries that are being made today are having an immediate and significant impact on our society. The importance of understanding animal behavior is likewise increasing, particularly in the face of a rapidly-changing environment. The B.S. in Neuroscience and Behavior is a great way for students to combine interests in neurobiology and animal behavior. The curriculum prepares students for various post-graduate

degrees, including medical, veterinary, and graduate school, and we offer students a variety of opportunities to get hands-on research experience.

<https://colsa.unh.edu/biological-sciences>

Programs

- Animal Behavior Minor (p. 270)
- Neuroscience and Behavior Major (B.S.) (p. 271)

Faculty

College of Liberal Arts Faculty

<https://cola.unh.edu/psychology/faculty-staff-directory>

College of Life Sciences & Agriculture Faculty

<https://colsa.unh.edu/biological-sciences/people>

Animal Behavior Minor

<https://colsa.unh.edu/biological-sciences/program/minor/animal-behavior>

Description

This minor is designed for students who are interested in learning more about animal behavior, including the mechanisms that underlie behaviors and the evolutionary forces that may have shaped them. Students will also gain practical skills in the methods used to study animal behavior in laboratory and field settings.

If interested in or completing the minor, contact Dr. Daniel R. Howard in the Department of Biological Sciences, (603) 862-0242, daniel.howard@unh.edu to be included on the list of students working toward minor completion, to receive emails on special events and activities for Animal Behavior students, and/or to complete the Certification of Completion of Minor form (<http://www.unh.edu/registrar/forms/minorform.pdf>). This form should be completed at the beginning of your final semester. If a student is interested in using a course that he or she feels is relevant but that is not included on this list, contact Dr. Howard with details on the course and to request permission.

Requirements

Students must earn a grade of C- or better in all courses taken for the minor. No more than 8 credits taken for the minor may be used toward a student's major.

Code	Title	Credits
Required		
ZOOL 613	Animal Behavior (Fall)	5
NSB 728	Research Methods in Animal Behavior (Spring) ¹	4
Electives		
Minimum of 11 additional credits; At least two of the three electives must come from the Category I list below; the remaining course may be from either Category I or Category II.		
Category I:		
NSB 727	Animal Communication	4

PSYC 720	Animal Cognition	4
ZOOL 726	Conservation Behavior	4
ZOOL 733	Behavioral Ecology	4
ZOOL 736	Genes and Behavior	4
ZOOL 777	Neuroethology	3
ZOOL 795	Special Investigations	1-4
MEFB 714	Field Animal Behavior	4
Category II:		
ZOOL 625 & ZOOL 626	Principles of Animal Physiology and Animal Physiology Laboratory	5
ZOOL 690	Evolution	4
BMS 718	Mammalian Physiology	4
AAS 525	Canine Learning Theory and Application	4
PSYC 512	Psychology of Primates	4

If a student is interested in using a course that he or she feels is relevant but that is not included on this list, contact Dr. Howard with details on the course and to request permission.

¹ New program requirements that include NSB 728 apply to students entering in fall 2018; if you began working toward completing the minor prior to this, you will be grandfathered in under the old minor requirements.

Neuroscience and Behavior Major (B.S.)

<https://colsa.unh.edu/biological-sciences/program/bs/neuroscience-and-behavior-major>

Description

The major in neuroscience and behavior (NSB) offers an interdisciplinary approach to human and non-human behavior, focusing on the evolution and adaptiveness of certain behaviors, as well as their underlying neural mechanisms. Students who have always been fascinated by how the brain functions will be well served by this major, as will those who love wild animals and wish to better understand their behavior. The B.S. in neuroscience and behavior is based on a solid foundation in biology, chemistry, physics, statistics, and genetics (foundation courses). These are followed by a two-semester course sequence that covers the fundamentals of neuroscience and behavior. Students can then pick five or more electives focusing on areas of interest.

NSB students are encouraged to take advantage of research experiences in the laboratories of the psychology and biology faculty in the program. This provides valuable experience with cutting-edge equipment and techniques. Some students may share aspects of a larger project, whereas others may be relatively independent and design their own project under supervision. In either case, important skills are gained by the discipline of gathering data, analyzing and interpreting it, and presenting it to a broader audience.

The curriculum provides most of the requirements and recommended courses for students seeking admission to graduate school and to professional schools in medicine and veterinary medicine. Students who might choose not to go on to advanced degrees are well-prepared for employment as skilled technicians in research laboratories or, if their interests are in animal behavior, as field research assistants or

animal trainers. With additional courses in education, the B.S. in NSB also qualifies graduates to teach at the elementary, junior high, and high school levels.

Faculty participating in the NSB major combine a love of teaching and student mentoring with a passion for research, and encourage student participation. Research facilities that students can use include the aviary, the confocal imaging center, the Hubbard Center for Genomic Studies, and the many marine, freshwater, and estuarine laboratories associated with UNH programs. Students can also take summer courses at the Shoals Marine Laboratory.

Requirements

Students majoring in NSB are required to take foundation courses in basic science, core courses, and five electives from an extensive list of courses, including some offered by other departments including biochemistry, molecular and cellular biology, and natural resources. Finally, a capstone experience is required. This may be independent research, an advanced seminar, or other special student activity. It is meant to integrate prior experience and take the student to a new level in an area of special interest.

Code	Title	Credits
NSB Foundation courses		
NSB 400	Topics Neuroscience & Behavior	1
BIOL 411 & BIOL 412	Introductory Biology: Molecular and Cellular and Introductory Biology: Evolution, Biodiversity and Ecology (2 semesters)	8
CHEM 403 & CHEM 404	General Chemistry I and General Chemistry II (2 semesters)	8
CHEM 545 & CHEM 546	Organic Chemistry and Organic Chemistry Laboratory	5
BMCB 658 & BMCB 659	General Biochemistry and General Biochemistry Lab	5
PHYS 401	Introduction to Physics I	4
PSYC 402 or BIOL 528	Statistics in Psychology and Applied Biostatistics I	4
GEN 604	Principles of Genetics	4
NSB 500 & NSB 501	Fundamentals of Neuroscience and Behavior I and Fundamentals of Neuroscience and Behavior I Laboratory	5
NSB 502 & NSB 503	Fundamentals of Neuroscience and Behavior II/ Systems Neuroscience and Fundamentals of Neuroscience and Behavior II Laboratory	5
Electives (Choose 5)		20-22
BIOL 541	General Ecology	
BMCB 605	Eukaryotic Cell and Developmental Biology	
BMS 507 & BMS 508	Human Anatomy and Physiology I and Human Anatomy and Physiology II ¹	
BMS 702	Endocrinology	
BMS 711	Toxicology	
BMS 718	Mammalian Physiology	
GEN 706	Human Genetics	
KIN 706 & KIN 707	Neurology and Neurology Lab ¹	

MEFB 714	Field Animal Behavior (SML, C)
NSB 705	Molecular and Cellular Neurobiology (C)
NSB 727	Animal Communication (C)
NSB 728	Research Methods in Animal Behavior (C)
PHIL 630	Neuroscience and Philosophy
PSYC 511	Sensation and Perception
PSYC 512	Psychology of Primates
PSYC 513	Cognitive Psychology
PSYC 521	Behavior Analysis
PSYC 710	Visual Perception (C)
PSYC 716	Cognitive Neuroscience (C)
PSYC 720	Animal Cognition (C)
PSYC 731	Brain and Behavior (C)
PSYC 733	Drugs and Behavior (C)
PSYC 735	Neurobiology of Mood Disorders (C)
PSYC 736	Attention Disorders (C)
PSYC 737	Behavioral Medicine (C)
PSYC 741	Advanced Topics
PSYC 741W	Advanced Topics (Neuroscience of Memory, Behavioral Neuroscience C)
ZOOL 613	Animal Behavior
ZOOL 625 & ZOOL 626	Principles of Animal Physiology and Animal Physiology Laboratory (C) ¹
ZOOL 690	Evolution (C)
ZOOL 726	Conservation Behavior (C)
ZOOL 733	Behavioral Ecology (C)
ZOOL 736	Genes and Behavior (C)
ZOOL 777	Neuroethology
795/796 or 799	Independent Study, C
Capstone ²	
Total Credits	69-71

¹ Both must be taken to count as one of the 5 required major electives

² Courses that are eligible to fulfill the Capstone requirement are indicated with a (C) and must be taken senior year. You can: 1) designate a course as a Capstone course, with additional requirements as determined by the instructor; 2) complete one semester of Capstone Research (BIOL 795, PSYC 795, or INCO 790); 3) do an honors thesis in Neuroscience (NSB 799H) or Biology or Psychology (BIOL 799 or PSYC 797/799) or; 4) participate in an advanced graduate seminar.

NSB majors may use BIOL 411, BIOL 412, CHEM 403, CHEM 404, PHYS 401, PHYS 407 and either PSYC 402 or BIOL 528 to fulfill the Biological Sciences, Physical Sciences, Discovery Lab, and Quantitative Reasoning Discovery requirements.

Nutrition (NUTR)

Nutrition is the study of how nutrients and food components function at molecular, cellular, and whole-body levels to impact human health and disease. Students are grounded in fundamental sciences as they develop nutrition-specific competencies in nutrition and health, foods, nutritional assessment, wellness, life cycle nutrition, and/or metabolic biochemistry.

The nutrition program prepares students for entry-level positions in health care, education, or the biotechnology industry, or entry into

post-baccalaureate professional programs such as dietetic internship, medical school, dental school, or graduate school. Nutrition faculty have expertise in clinical nutrition, sports nutrition, and food science, as well as assessing risk factors of chronic disease risk (i.e. obesity, diabetes, cardiovascular, cognitive) in diverse populations (pediatric, young adult, older adult). Undergraduate students actively participate in ongoing research projects in these areas. The College Health and Nutrition Assessment Survey (CHANAS) (<https://colsa.unh.edu/agriculture-nutrition-food-systems/college-health-nutrition-assessment-survey>) is one resource that supports nutrition research at the University of New Hampshire.

Students pursuing the B.S. degree in Nutrition choose from one of three areas of specialization: Dietetics, Nutrition and Wellness, or Nutritional Sciences.

The curriculum for the Dietetics option is accredited by the Academic Council for Education in Nutrition and Dietetics (ACEND) of the Academy of Nutrition and Dietetics (AND). Students who complete the B.S. in Nutrition with the Dietetics option are eligible to apply for a dietetic internship, a prerequisite for becoming a registered dietitian.

Students who complete the Nutrition and Wellness option are prepared for jobs in agencies or businesses that have an emphasis on health and wellness, including schools, fitness centers, and non-profit or community organizations.

Students in the Nutritional Sciences option most often enter the biomedical/biotechnology workplace or enroll in a post-graduate educational degree program (e.g., medical school, graduate school, dental school, etc.).

Pre-Professional Health Programs

Students interested in postgraduate careers in the health care professions should visit the Pre-Professional Health Programs Advising Office (<http://www.unh.edu/uacc/premed-advising>). Requirements for specific types of professional schools (e.g., medical, dental, physician's assistant, pharmacy, etc.) are also provided at the Pre-Professional Health Programs Advising website (<http://www.unh.edu/uacc/premed-advising>). While many of the prerequisite courses required by professional schools are also requirements of the Nutrition major, you should consult with your faculty adviser to create a plan of study that best prepares you for pursuing a career in one of these health professions.

<https://colsa.unh.edu/agriculture-nutrition-food-systems>

Programs

- Nutrition Major (B.S.) (p. 273)
- Nutrition Major: Dietetics Option (B.S.) (p. 273)
- Nutrition Major: Nutrition and Wellness Option (B.S.) (p. 274)
- Nutrition Major: Nutritional Sciences Option (B.S.) (p. 276)
- Nutrition Minor (p. 277)

Faculty

<https://colsa.unh.edu/agriculture-nutrition-food-systems/faculty-staff-directory>

Nutrition Major (B.S.)

<https://colsa.unh.edu/agriculture-nutrition-food-systems/program/bs/nutrition-major>

Description

Nutrition is the study of food, the nutrients found in food, and the body's metabolism of these nutrients to maintain and promote health. Nutrition is an interdisciplinary science based on biochemistry and physiology, but also integrates sociology, psychology, molecular biology, and genetics.

Students have three curriculum options within the major to pursue a bachelor's degree in nutrition. The option is declared within the nutrition major after their second semester in the program. Options include:

- **Dietetics option** - is the first step to becoming a registered dietitian. The Didactic Program in Dietetics (DPD) curriculum is accredited by The Accreditation Council for Education in Nutrition and Dietetics (ACEND). It prepares you for a dietetic internship.
- **Nutrition and Wellness option** - provides a foundation in chemistry, anatomy, physiology and microbiology and includes courses on stress, wellness and exercise science. Students gain real-world experience providing hands-on nutrition and health guidance.
- **Nutritional Sciences option** - provides a comprehensive background in biology, chemistry, physiology, nutrition, biochemistry and physics, and includes courses on nutritional assessment, life cycle nutrition, nutrition and health and careers in nutrition.

The program prepares students for success by offering real-world learning opportunities throughout the curriculum. These opportunities include applied research, field experiences, internships, community engagement and study abroad offerings. Our diverse group of faculty are dedicated to student success in and outside of the classroom. Coursework supports diverse postgraduate pathways including dietetic internships, allied health programs, medical and dental schools and graduate school. The rigorous curriculum is designed to offer a science-based foundation and foster critical-thinking and strong communication skills for future professional success of our students.

Requirements

Students take 16-18 credits per semester. All students complete foundational courses in the sciences, nutrition core courses, and additional option-specific requirements as noted in the program descriptions (i.e. Dietetics, Nutrition and Wellness, and Nutritional Sciences). Discovery Program requirements (including the Inquiry requirement in the first two years) and elective courses are taken as well.

Nutrition Major: Dietetics Option (B.S.)

<https://colsa.unh.edu/agriculture-nutrition-food-systems/program/bs/nutrition-major-dietetics-option>

Description

Students majoring in the dietetics option must take: (i) four Foundation courses; (ii) five Science Core courses; (iii) four Nutrition Core courses;

and (iv) twelve courses for the Dietetics Option. One capstone experience, supervised and approved within the major, is required of all seniors. In addition, all other university academic requirements, including those for the Discovery Program (<https://www.unh.edu/undergrad-catalog/gi.cfm?thisid=243&masterid=27&headingid=27/#243>) and the University Writing Requirement, (p. 28) must be completed.

Requirements

A grade of C-minus or better must be earned in all NUTR courses required by the major.

Foundation Courses

Code	Title	Credits
BMS 507	Human Anatomy and Physiology I	4
BMS 508	Human Anatomy and Physiology II	4
SOC 400	Introductory Sociology	4
or PSYC 401	Introduction to Psychology	
Choose ONE statistics course		4
BIOL 528	Applied Biostatistics I	
PSYC 402	Statistics in Psychology	
SOC 502	Statistics	

Science Core Courses

Code	Title	Credits
CHEM 403	General Chemistry I	4
CHEM 404	General Chemistry II	4
BMS 501	Microbes in Human Disease	4
CHEM 545 & CHEM 546	Organic Chemistry and Organic Chemistry Laboratory	5
BMCB 658	General Biochemistry	3

Nutrition Core Courses

Code	Title	Credits
NUTR 400	Nutrition in Health and Well Being	4
NUTR 401	Professional Perspectives on Nutrition	1
NUTR 476	Nutritional Assessment	4
NUTR 650	Life Cycle Nutrition	4

Dietetics Option Courses

Code	Title	Credits
NUTR 504	Managerial Skills in Dietetics	4
NUTR 550	Food Science: Principle and Practice	4
NUTR 610	Nutrition Education and Counseling	4
NUTR 700	Career Development in Dietetics	1
NUTR 720	Community Nutrition	4
NUTR 750	Nutritional Biochemistry	4
NUTR 773	Clinical Nutrition	4
NUTR 775	Practical Applications in Medical Nutrition Therapy	4
NUTR 780	Critical Issues in Nutrition	4
ABM 508	Managerial Accounting	4

HMG 403	Introduction to Food Management	4
HMP 401	United States Health Care Systems	4

Dietetics Capstone Experience

One capstone experience, supervised and approved within the major, is required of all seniors. The capstone explores areas of interest based on the integration of prior learning. The capstone requirement may be satisfied through a course (NUTR 720 Community Nutrition or NUTR 780 Critical Issues in Nutrition), created work or product, or some form of experiential learning (e.g., honors thesis, mentored research project, or other special student activity).

Degree Plan

SAMPLE Course Sequence for Dietetics

Course	Title	Credits
First Year		
Fall		
NUTR 400	Nutrition in Health and Well Being	4
NUTR 401	Professional Perspectives on Nutrition	1
BMS 507	Human Anatomy and Physiology I	4
SOC 400 or PSYC 401	Introductory Sociology or Introduction to Psychology	4
ENGL 401	First-Year Writing	4
Credits		17
Spring		
NUTR 476	Nutritional Assessment	4
BMS 508	Human Anatomy and Physiology II	4
HMP 401	United States Health Care Systems	4
Discovery Course		4
Credits		16
Second Year		
Fall		
CHEM 403	General Chemistry I	4
HMG 403	Introduction to Food Management	4
Select one of the following:		4
PSYC 402	Statistics in Psychology	
SOC 502	Statistics	
BIOL 528	Applied Biostatistics I	
Inquiry Course		4
Credits		16
Spring		
ABM 508	Managerial Accounting	4
CHEM 404	General Chemistry II	4
Discovery Course		4
Discovery Course		4
Credits		16
Third Year		
Fall		
NUTR 550	Food Science: Principle and Practice	4
NUTR 610	Nutrition Education and Counseling	4
BMS 501	Microbes in Human Disease	4

CHEM 545 & CHEM 546	Organic Chemistry and Organic Chemistry Laboratory	5
Credits		17

Spring

NUTR 504	Managerial Skills in Dietetics	4
NUTR 600	Field Experience in Nutrition	2
NUTR 650	Life Cycle Nutrition	4
NUTR 773	Clinical Nutrition	4
BMCB 658	General Biochemistry (no lab required)	3
Credits		17

Fourth Year**Fall**

NUTR 700	Career Development in Dietetics	1
NUTR 750	Nutritional Biochemistry	4
NUTR 775	Practical Applications in Medical Nutrition Therapy	4
Discovery Course		4
Elective (any course)		1-4
Credits		14-17

Spring

NUTR 720	Community Nutrition	4
NUTR 780	Critical Issues in Nutrition	4
Discovery Course		4
Elective (any course)		3-4
Credits		15-16
Total Credits		128-132

Nutrition Major: Nutrition and Wellness Option (B.S.)

<https://colsa.unh.edu/agriculture-nutrition-food-systems/program/bs/nutrition-major-nutrition-wellness-option>

Description

Students choosing the Nutrition and Wellness option take: (i) four Foundation courses; (ii) three Science Core courses; (iii) four Nutrition Core courses; and (iv) thirteen courses in Nutrition and other subject areas. One capstone experience, supervised and approved within the major, is required of all seniors. In addition, all other university academic requirements, including those for the Discovery Program (p. 24) and the University Writing Requirement, (p. 28) must be completed.

Nutrition and Wellness students are strongly encouraged to complete a minor or concentration depending on career goals and interests.

Requirements

A minimum grade of C-minus or better must be earned in all NUTR courses required by the major.

Code	Title	Credits
Foundation Courses		
BMS 507	Human Anatomy and Physiology I	4
BMS 508	Human Anatomy and Physiology II	4

SOC 400	Introductory Sociology	4
or PSYC 401	Introduction to Psychology	
Choose ONE statistics course		4
BIOL 528	Applied Biostatistics I	
PSYC 402	Statistics in Psychology	
SOC 502	Statistics	

Science Core Courses

CHEM 411	Introductory Chemistry for Life Sciences	4
BMS 501	Microbes in Human Disease	4
BMCB 501	Biological Chemistry	5

Nutrition Core Courses

NUTR 400	Nutrition in Health and Well Being	4
NUTR 401	Professional Perspectives on Nutrition	1
NUTR 476	Nutritional Assessment	4
NUTR 650	Life Cycle Nutrition	4

Nutrition and Wellness Courses

NUTR 506	Nutrition and Wellness	4
NUTR 546	Nutrition in Exercise and Sports	4
NUTR 610	Nutrition Education and Counseling	4
NUTR 720	Community Nutrition	4
NUTR 755	Treatment of Adult Obesity	3
NUTR 758	Practicum in Weight Management	2
OT 513	Stressed Out: The Science and Nature of Human Stress	4

ENGL 502	Professional and Technical Writing	4
or ENGL 503	Persuasive Writing	
HMG T 403	Introduction to Food Management	4
HMP 401	United States Health Care Systems	4
HMP 501	Epidemiology and Community Medicine	4
KIN 620	Physiology of Exercise	4
or KIN 648	Current Issues in Teaching Health	

700-level elective 4-5

NUTR Capstone

The capstone explores areas of interest based on the integration of prior learning. The capstone requirement may be satisfied through NUTR 720 Community Nutrition or NUTR 755 Treatment of Adult Obesity, a created work or product, or some form of experiential learning (e.g., honors thesis, mentored research project, or other special student activity).

Degree Plan

SAMPLE Course Sequence for Nutrition and Wellness

Course	Title	Credits
First Year		
Fall		
NUTR 400	Nutrition in Health and Well Being	4
NUTR 401	Professional Perspectives on Nutrition	1
BMS 507	Human Anatomy and Physiology I	4
SOC 400	Introductory Sociology	4
or PSYC 401	or Introduction to Psychology	
ENGL 401	First-Year Writing	4
Credits		17

Spring		
NUTR 476	Nutritional Assessment	4
BMS 508	Human Anatomy and Physiology II	4
HMP 401	United States Health Care Systems	4
Discovery course		4
Credits		16

Second Year

Fall		
CHEM 411	Introductory Chemistry for Life Sciences	4
HMG T 403	Introduction to Food Management	4
Select one of the following: 4		
BIOL 528	Applied Biostatistics I	
PSYC 402	Statistics in Psychology	
SOC 502	Statistics	
Inquiry course		4
Credits		16

Spring		
NUTR 506	Nutrition and Wellness	4
BMCB 501	Biological Chemistry	5
OT 513	Stressed Out: The Science and Nature of Human Stress	4
Elective (WI)		4
Credits		17

Third Year

Fall		
NUTR 546	Nutrition in Exercise and Sports	4
NUTR 610	Nutrition Education and Counseling	4
BMS 501	Microbes in Human Disease	4
Discovery Course		4
Credits		16

Spring		
NUTR 650	Life Cycle Nutrition	4
ENGL 502	Professional and Technical Writing	4
or ENGL 503	or Persuasive Writing	
HMP 501	Epidemiology and Community Medicine	4
Discovery Course		4
Credits		16

Fourth Year

Fall		
NUTR 755	Treatment of Adult Obesity	3
NUTR 758	Practicum in Weight Management	2
KIN 620	Physiology of Exercise	4
or KIN 648	or Current Issues in Teaching Health	
Discovery Course		4
Elective (any course)		3-4
Credits		16-17

Spring		
NUTR 720	Community Nutrition	4
700-level Elective		4
Discovery Course		4

Elective (any course)	2-4
Credits	14-16
Total Credits	128-131

Nutrition Major: Nutritional Sciences Option (B.S.)

<https://colsa.unh.edu/agriculture-nutrition-food-systems/program/bs/nutrition-major-nutritional-sciences-option>

Description

Students choosing the Nutritional Sciences option take: (i) four Foundation courses; (ii) eight Science Core courses; (iii) four Nutrition Core courses; and (iv) six Nutritional Science Option courses. One capstone experience, supervised and approved within the major, is required of all seniors. In addition, all other University academic requirements must be completed, including those for the Discovery Program (p. 24) and the University Writing Requirement (p. 28).

Requirements

A minimum grade of C- or above is required in all NUTR courses required by the major.

Code	Title	Credits
Foundation Courses		
BMS 507	Human Anatomy and Physiology I	4
BMS 508	Human Anatomy and Physiology II	4
SOC 400	Introductory Sociology	4
or PSYC 401	Introduction to Psychology	
Choose ONE statistics course:		4
BIOL 528	Applied Biostatistics I	
PSYC 402	Statistics in Psychology	
SOC 502	Statistics	
Science Core Courses		
BIOL 411	Introductory Biology: Molecular and Cellular	4
BIOL 412	Introductory Biology: Evolution, Biodiversity and Ecology	4
BMCB 658 & BMCB 659	General Biochemistry and General Biochemistry Lab	5
BMS 503 & BMS 504	General Microbiology and General Microbiology Laboratory	5
CHEM 403	General Chemistry I	4
CHEM 404	General Chemistry II	4
CHEM 545 & CHEM 546	Organic Chemistry and Organic Chemistry Laboratory	5
GEN 604	Principles of Genetics	4
Nutrition Core Courses		
NUTR 400	Nutrition in Health and Well Being	4
NUTR 401	Professional Perspectives on Nutrition	1
NUTR 476	Nutritional Assessment	4
NUTR 650	Life Cycle Nutrition	4
Nutritional Science Option Courses		
MATH 424B	Calculus for Life Sciences	4

NUTR 750	Nutritional Biochemistry	4
NUTR 751	Nutritional Biochemistry of Micronutrients	4

Major Elective Courses

Two nutrition Electives and a third Elective outside the major are chosen in consultation with the student's advisor, based on the student's career interests.

Choose 2 NUTR courses (minimum 8 credits)

NUTR 405	Food and Society	4
NUTR 504	Managerial Skills in Dietetics	4
NUTR 506	Nutrition and Wellness	4
NUTR 525	Food and Culture in Italy	4
NUTR 530	Critical Analysis in Food Studies	4
NUTR 535	History of Food in Italy	4
NUTR 546	Nutrition in Exercise and Sports	4
NUTR 550	Food Science: Principle and Practice	4
NUTR 560	Introduction to Research in Nutrition	2
NUTR 595	Mediterranean Diet and Culture	4
NUTR 610	Nutrition Education and Counseling	4
NUTR 625	From Farm to the Italian Table	4
NUTR 709	Nutritional Epidemiology	4
NUTR 720	Community Nutrition	4
NUTR 730	From Seed to Sea: Examining Sustainable Food Systems	4
NUTR #733	Inv Diet Supplements & Herbs	4
NUTR 740	Nutrition for Children with Special Needs	4
NUTR 755 & NUTR 758	Treatment of Adult Obesity and Practicum in Weight Management	5
NUTR 760 & NUTR 761	Research Experience Nutrition I and Research Experience Nutrition II	4
NUTR 765	Geriatric Nutrition	4
NUTR 773	Clinical Nutrition	4
NUTR 775	Practical Applications in Medical Nutrition Therapy	4
NUTR 780	Critical Issues in Nutrition	4

Elective Outside the Major at 600- or 700-Level (4 credits)

Nutritional Science Capstone Experience

One capstone experience, supervised and approved within the major, is required of all seniors. The capstone explores areas of interest based on the integration of prior learning. The capstone requirement may be satisfied through a course (NUTR 720 *Community Nutrition* or NUTR 751 *Nutritional Biochemistry of Micronutrients*), created work or product, or some form of experiential learning (e.g., honors thesis, mentored research project, or other special student activity).

Degree Plan

SAMPLE Course Sequence for Nutritional Science

Course	Title	Credits
First Year		
Fall		
NUTR 400	Nutrition in Health and Well Being	4
NUTR 401	Professional Perspectives on Nutrition	1
ENGL 401	First-Year Writing	4
BIOL 411	Introductory Biology: Molecular and Cellular	4

CHEM 403	General Chemistry I	4
Credits		17

Spring

NUTR 476	Nutritional Assessment	4
BIOL 412	Introductory Biology: Evolution, Biodiversity and Ecology	4
CHEM 404	General Chemistry II	4
MATH 424B	Calculus for Life Sciences	4
Credits		16

Second Year

Fall

CHEM 545 & CHEM 546	Organic Chemistry and Organic Chemistry Laboratory	5
BMS 507	Human Anatomy and Physiology I	4
Discovery Course		4
Select one of the following:		4
PSYC 402	Statistics in Psychology	
SOC 502	Statistics	
BIOL 528	Applied Biostatistics I	
Credits		17

Spring

BMS 503 & BMS 504	General Microbiology and General Microbiology Laboratory	5
BMS 508	Human Anatomy and Physiology II	4
SOC 400 or PSYC 401	Introductory Sociology or Introduction to Psychology	4
Elective (any course)		4
Credits		17

Third Year

Fall

GEN 604	Principles of Genetics	4
Nutrition Elective		2
Discovery Course		4
Elective (any course)		4
Credits		14

Spring

NUTR 650	Life Cycle Nutrition	4
BMCB 658 & BMCB 659	General Biochemistry and General Biochemistry Lab	5
Discovery Course		4
Nutrition Elective		3-4
Credits		16-17

Fourth Year

Fall

NUTR 750	Nutritional Biochemistry	4
Discovery Course		4
Elective (any course)		4
Elective (any course)		4
Credits		16

Spring

NUTR 751	Nutritional Biochemistry of Micronutrients	4
600 or 700-Level Elective Outside the Major		4
Discovery Course		4

Elective (any course)	4
Credits	16
Total Credits	129-130

Nutrition Minor

<https://colsa.unh.edu/agriculture-nutrition-food-systems/program/minor/nutrition>

Description

The nutrition minor is particularly suited to students interested in pursuing professional careers related to human health and wellness. The minor consists of a minimum of 20 credits, no more than 8 of which can also be used to fulfill major requirements. A C average (2.00) is required in courses that the minor department approves; a grade of C-minus or better is required in all courses to be counted toward the minor. Courses taken on a Pass/Fail basis may not be used for a minor.

Students declare the nutrition minor by submitting the Intent to Minor in Nutrition (<https://colsa.unh.edu/agriculture-nutrition-food-systems/intent-minor-nutrition-form>) form to the Nutrition minor advisor, preferably prior to the start of their junior year. Submission of the Intent to Minor form is required to gain registration preference in certain courses if space is available and by discretion of the instructor. To complete the minor, students submit a Certification of Completion of Minor (<http://www.unh.edu/registrar/forms/minorform.pdf>) form during their final semester at UNH.

Requirements

Required Course:

Code	Title	Credits
NUTR 400	Nutrition in Health and Well Being	4

Additional Courses:

Students may tailor the minor in Nutrition to personal interests or professional aspirations. Note that many courses have prerequisites and/or require special permission.

Code	Title	Credits
Choose a minimum of 16-credits from the list below. At least 4 credits must be at the 600- or 700-level		
NUTR 405	Food and Society	4
NUTR 476	Nutritional Assessment	4
NUTR 504	Managerial Skills in Dietetics	4
NUTR 506	Nutrition and Wellness	4
NUTR 525	Food and Culture in Italy	4
NUTR 530	Critical Analysis in Food Studies	4
NUTR 535	History of Food in Italy	4
NUTR 546	Nutrition in Exercise and Sports	4
NUTR 550	Food Science: Principle and Practice	4
NUTR 595	Mediterranean Diet and Culture	4
NUTR 610	Nutrition Education and Counseling	4
NUTR 625	From Farm to the Italian Table	4
NUTR 650	Life Cycle Nutrition	4

NUTR 709	Nutritional Epidemiology	4
NUTR 720	Community Nutrition	4
NUTR 730	From Seed to Sea: Examining Sustainable Food Systems	4
NUTR 740	Nutrition for Children with Special Needs	4
NUTR 750	Nutritional Biochemistry	4
NUTR 751	Nutritional Biochemistry of Micronutrients	4
NUTR 755	Treatment of Adult Obesity	3
NUTR 758	Practicum in Weight Management	2
NUTR 765	Geriatric Nutrition	4
NUTR 773	Clinical Nutrition	4
HMG 403	Introduction to Food Management	4

Sustainable Agriculture and Food Systems (SAFS)

The sustainable agriculture and food systems (SAFS) program offers a flexible curriculum to students seeking integrated knowledge and experiences in modern agricultural and food systems to prepare for varied careers in these fields. It draws upon diverse course offerings across the College of Life Sciences and Agriculture and the Thompson School of Applied Sciences, as well as from other colleges at UNH.

Students in this program will obtain knowledge in a variety of topics including sustainable agricultural practices, the science and management of working landscapes, locally produced foods, value-added agricultural products, and the promotion of healthy eating through sustainable food production and food policies. SAFS graduates will be prepared to pursue careers in a wide range of fields including the production of food, fiber, and agricultural services; management and marketing of agricultural operations; management of working lands, landscapes and ecosystems; agriculture/food/nutrition/natural resources-related research; policy-making; and other current and emerging professions.

The program offers both a bachelor of science (B.S.) degree and a bachelor of arts (B.A.) degree. The B.A. degree offers more flexibility to take courses from a variety of disciplines or pursuing a dual degree, second major, or minor. The B.S. degree best serves those seeking a strong foundation in scientific and technical knowledge and/or who envision pursuing an advanced degree.

<https://colsa.unh.edu/agriculture-nutrition-food-systems>

Programs

- Sustainable Agriculture and Food Systems Major (B.A.) (p. 278)
- Sustainable Agriculture and Food Systems Major (B.S.) (p. 280)
- Brewing Minor (p. 282)
- Environmental Horticulture Minor (p. 283)
- Sustainable Agriculture and Food Systems Minor (p. 283)

Faculty

<https://colsa.unh.edu/agriculture-nutrition-food-systems/faculty-staff-directory>

Sustainable Agriculture and Food Systems Major (B.A.)

<https://colsa.unh.edu/agriculture-nutrition-food-systems/program/ba/sustainable-agriculture-food-systems-major>

Description

The **Bachelor of Arts (B.A.) degree in Sustainable Agriculture and Food Systems** is designed for students interested in obtaining a well-rounded education in this field. As compared with the B.S. degree, the B.A. degree offers more flexibility to take courses from a variety of disciplines or to pursue a dual degree, second major or minor.

Requirements

The SAFS B.A. program structure includes FOUR major components: foundation courses, courses in a student-designed emphasis area, program elective courses, and a capstone.

Foundation courses include 36 credits, which satisfy 5 of the University Discovery requirements. You must earn a minimum grade of C- in these courses.

Student-Designed Emphasis courses include 20 credits that make up a cohesive emphasis or focus area. Courses may be selected from the *List of Approved Program Electives*, but do not need to be on that list. An appropriate group of courses transferred from a completed 2-year program such as TSAS could serve as an emphasis area. Each student will define their emphasis area in consultation with their advisor and submit it to the SAFS program committee for approval prior to the start of their 6th semester.

Program Elective courses include 20 credits, chosen from the *List of Approved Program Elective* courses.

A **Capstone** experience is a University requirement. Capstone experiences may include formal coursework, pre-approved honors theses or mentored research projects or other special activities that address appropriate and relevant aspects of the capstone experience. *This must take place during the senior year.*

Of the Student-Designed Emphasis and Program Elective courses, **at least 16 credits (not counting the capstone) must be earned at the 600-700 level.** Further, **at least 4 credits must qualify as Experiential.**

Code	Title	Credits
Foundation Courses		36
ANSC 421	Animal Agriculture Today	
or AAS 431	Introduction to Animal Science	
BIOL 528	Applied Biostatistics I	
or EREC 525	Statistical Methods and Applications	
CHEM 411	Introductory Chemistry for Life Sciences	
or CHEM 403	General Chemistry I	
EREC 411	Environmental and Resource Economics Perspectives	
or ECON 402	Principles of Economics (Micro)	
NR 501	Studio Soils	
NUTR 405	Food and Society	

	or NUTR 400 Nutrition in Health and Well Being	
	or NUTR 730 From Seed to Sea: Examining Sustainable Food Systems	
SAFS 405	Sustainable Agriculture and Food Production	
SAFS 421	Introductory Horticulture	
SAFS 502	Agroecology	
Student-Designed Emphasis Area		20
Select 20 credits from the approved electives list.		
Program Electives		20
Select 20 credits from the approved electives list.		
Senior Capstone		
Select one from the following:		
SAFS 733	Advanced Topics in Sustainable Agriculture	
SAFS 679 & SAFS 680	Food Production Field Experience I and Food Production Field Experience II	
SAFS 795	Investigations	
SAFS 799	Honors Senior Thesis	
ANSC 698	Cooperative for Real Education in Agricultural Management (CREAM)	
ECOG 701	EcoGastronomy Capstone (EcoGastronomy majors)	

University Requirements

In addition to meeting the SAFS major requirements, students must satisfy all University requirements including those that pertain to the minimum number of credits, grade-point average, writing-intensive courses, the Discovery Program, and foreign language (only for B.A. students).

Approved Electives

Code	Title	Credits
Animal Courses		
AAS 402	Introduction to Livestock and Poultry Management	2
AAS 421	Large Animal Behavior and Handling Techniques	2
AAS 423	Dairy Selection	2
AAS 424	Animal Law and Regulations	3
AAS 425	Introduction to Dairy Herd Management	4
AAS 431	Introduction to Animal Science	4
AAS 432	Introduction to Forage and Grassland Management	3
AAS 439	Fundamentals of Animal Health	2
AAS 535	Animal Nutrition	3
AAS 540	Animal Breeding	3
AAS 574	Dairy Cattle Disease Seminar	2
ANSC 510	Integration of Culture and Agriculture in Ireland: Past, Present, and Future	2 or 4
ANSC 602	Animal Rights and Societal Issues	4
ANSC 609	Principles of Animal Nutrition	4
ANSC 612	Genetics of Domestic Animals	4
ANSC 625	Diseases of Small Ruminants, Swine, Poultry, and Camelids	4
ANSC 650	Dairy Industry Travel Course	1

ANSC 698	Cooperative for Real Education in Agricultural Management (CREAM)	4
ANSC 701	Physiology of Reproduction	4
ANSC 708	Ruminant Nutritional Physiology	3
ANSC 710	Dairy Nutrition	4
ANSC 715	Physiology of Lactation	4
ANSC 724	Reproductive Management and Artificial Insemination	4
ANSC 727	Advanced Dairy Management I	4
ANSC 728	Advanced Dairy Management II	4
ANSC 750	Collaborative Farm Design and Development	4
ZOOL 610	Principles of Aquaculture	4
ZOOL 772	Fisheries Biology	3
ZOOL 773	Physiology of Fish	4

Business/Technical Practices/Policy Courses

ABM 404A & ABM 404B	Introduction to Business I and Introduction to Business II	4
ABM 407	Applied Marketing	4
ABM 506	Human Resource Management	4
AAS 546	Animal Business Applications	4
EREC 601	Agribusiness Economics and Management	4
EREC 680	Agricultural and Food Policy	4
EREC 760	Ecological-Economic Modeling for Decision Making	4

Environment Courses

BIOL 541	General Ecology	4
CHE 410	Energy and Environment	4
CEP 415	Community Development Perspectives	4
GEOG 670	Climate and Society	4
NR 435	Contemporary Conservation Issues and Environmental Awareness	4
NR 504	Freshwater Resources	4
NR #621	Field Description of Soils	3
NR 650	Principles of Conservation Biology	4
NR 701	Ecological Sustainability and Values	4
NR 706	Soil Ecology	4
NR #735	Land Conservation Principles and Practices	4
NR 760	Geographic Information Systems in Natural Resources	4
NR 761	Environmental Soil Chemistry	4
NR 765	Community Ecology	4
NR 785	Systems Thinking for Sustainable Solutions	4
NR 795	Investigations (Topic: Soil Fertility and the Environment, 4cr)	1-4

SAFS 729	Agricultural Waste Management	4
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Experiential Courses

SAFS 733	Advanced Topics in Sustainable Agriculture	4
SAFS 795	Investigations	1-4
SAFS 799	Honors Senior Thesis	1-4
ANSC 795	Investigations	1-4
NUTR 795	Investigations	1-4

Food/Nutrition Courses

CAN 407	Hospitality Sanitation and Safety	1
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CAN 422	Cuisine and Culture	4
CAN 528	Culinary Nutrition	2
ECOG 401	Introduction to Ecogastronomy	4
HMG 403	Introduction to Food Management	4
HMG 570	International Food and Culture	4
BMS 503	General Microbiology	3
NUTR 400	Nutrition in Health and Well Being	4
NUTR 550	Food Science: Principle and Practice	4
NUTR 720	Community Nutrition	4
NUTR 730	From Seed to Sea: Examining Sustainable Food Systems	4

Forest Courses

FORT 564	Arboriculture	3
FORT 576	Forest Products	4
FORT 577	Forest Harvesting Systems	4
FORT 579	Forest Fire Control and Use	2
NR 425	Field Dendrology	4
NR 506	Forest Entomology	4
NR 527	Forest Ecology	4
NR #542	Forestland Measurement and Mapping	1
NR 602	Natural Resources and Environmental Policy	4
NR 643	Economics of Forestry	4
NR 729	Silviculture	4
NR 749	Forest Inventory and Modeling	4
NR 782	Forest Health in a Changing World	4
NR #783	Forest Communities of New Hampshire	4

Plant Courses

BIOL 408	Plants and Civilization	4
BIOL 409	Introductory Botany	4
BIOL 510	Mushrooms, Molds, and Mildews: Introduction to the Fungal Kingdom	4
BIOL 566	Systematic Botany	4
BIOL 701	Plant Physiology	5
BIOL 720	Plant-Animal Interactions	4
BIOL 752	Mycology	4
GEN 774	Techniques in Plant Genetic Engineering and Biotechnology	4
HT 404	Plant Propagation	4
HT 554	Sustainable Irrigation and Rain Harvesting	3
HT 460	Sustainable Plant Management	4
SAFS 410	A Taste of the Tropics	4
SAFS 415	Introduction to Brewing Art and Science	4
SAFS 510	Agriculture and Development in the Neotropics	4
SAFS 601	Fruit Crop Production	4
SAFS 632	Urban Agriculture	4
SAFS 651	Plant Pathology	4
SAFS 679	Food Production Field Experience I	4
SAFS 680	Food Production Field Experience II	4
SAFS 689	Greenhouse Management and Operation	4
SAFS 760	Insect Pest Management	4

Sustainable Agriculture and Food Systems Major (B.S.)

<https://colsa.unh.edu/agriculture-nutrition-food-systems/program/bs/sustainable-agriculture-food-systems-major>

Description

The Bachelors of Science (B.S.) degree in Sustainable Agriculture and Food Systems is designed to combine a strong foundation in the biological sciences with a broad base of knowledge and experiences related to modern agricultural and food systems. As compared with the Bachelor of Arts (B.A.) degree, the B.S. places additional emphasis on foundational science courses.

Requirements

The SAFS B.S. program structure includes FIVE major components: foundation courses, core science courses, courses in a student-designed emphasis area, program elective courses, and a capstone.

Foundation courses include 36 credits, which satisfy 5 of the University Discovery requirements. You must earn a minimum grade of C- in these courses.

Course Science Courses (12 credits) chosen from the *List of Approved Core Science Courses*.

Student-Designed Emphasis courses include 20 credits that make up a cohesive emphasis or focus area. Courses may be selected from the *List of Approved Program Electives*, but do not need to be on that list. An appropriate group of courses transferred from a completed 2-year program such as TSAS could serve as an emphasis area. Each student will define their emphasis area in consultation with their advisor and submit it to the SAFS program committee for approval prior to the start of their 6th semester.

Program Elective courses include 20 credits, chosen from the *List of Approved Program Elective* courses.

A **Capstone** experience is a University requirement. Capstone experiences may include formal coursework, pre-approved honors theses or mentored research projects or other special activities that address appropriate and relevant aspects of the capstone experience. *This must take place during the senior year.*

Of the Student-Designed Emphasis and Program Elective courses, **at least 16 credits (not counting the capstone) must be earned at the 600-700 level.** Further, **at least 4 credits must qualify as Experiential.**

Code	Title	Credits
Foundation Requirements		
SAFS 405	Sustainable Agriculture and Food Production	4
CHEM 411	Introductory Chemistry for Life Sciences	4
or CHEM 403	General Chemistry I	
SAFS 502	Agroecology	4
NUTR 405	Food and Society	4
or NUTR 400	Nutrition in Health and Well Being	
or NUTR 730	From Seed to Sea: Examining Sustainable Food Systems	

ANSC 421 or AAS 431	Animal Agriculture Today Introduction to Animal Science	4
SAFS 421	Introductory Horticulture	4
EREC 411 or ECON 402	Environmental and Resource Economics Perspectives Principles of Economics (Micro)	4
NR 501	Studio Soils	4
BIOL 528 or EREC 525	Applied Biostatistics I Statistical Methods and Applications	4

Core Science Courses

Choose 12 credits from:

BIOL 411	Introductory Biology: Molecular and Cellular	4
BIOL 412	Introductory Biology: Evolution, Biodiversity and Ecology	4
BIOL 541	General Ecology	4
BMCB 501	Biological Chemistry	5
CHEM 404	General Chemistry II	4
CHEM 545 & CHEM 546	Organic Chemistry and Organic Chemistry Laboratory	5
BMCB 658 & BMCB 659	General Biochemistry and General Biochemistry Lab	5
PHYS 401	Introduction to Physics I	4
PHYS 402	Introduction to Physics II	4
MATH 424B	Calculus for Life Sciences	4
GEN 604	Principles of Genetics	4
GEN 606	Genetics Lab	4
BMS 503 & BMS 504	General Microbiology and General Microbiology Laboratory	5
GEN 713	Microbial Ecology and Evolution	4
ANSC 511	Anatomy and Physiology	4
ANSC 512	Anatomy and Physiology	4

Student-Designed Emphasis Area

20

Select 20 credits from the approved electives list

Program Electives

20

Select 20 credits from the approved electives list

Senior Capstone Experience

Select at least four credits in a course approved and supervised by the SAFS Program

Total Credits 144

Approved Electives

Code	Title	Credits
Animal Courses		
AAS 402	Introduction to Livestock and Poultry Management	2
AAS 421	Large Animal Behavior and Handling Techniques	2
AAS 423	Dairy Selection	2
AAS 424	Animal Law and Regulations	3
AAS 425	Introduction to Dairy Herd Management	4
AAS 431	Introduction to Animal Science	4
AAS 432	Introduction to Forage and Grassland Management	3
AAS 439	Fundamentals of Animal Health	2
AAS 535	Animal Nutrition	3

AAS 540	Animal Breeding	3
AAS 574	Dairy Cattle Disease Seminar	2
ANSC 510	Integration of Culture and Agriculture in Ireland: Past, Present, and Future	2 or 4
ANSC 602	Animal Rights and Societal Issues	4
ANSC 609	Principles of Animal Nutrition	4
ANSC 612	Genetics of Domestic Animals	4
ANSC 625	Diseases of Small Ruminants, Swine, Poultry, and Camelids	4
ANSC 650	Dairy Industry Travel Course	1
ANSC 698	Cooperative for Real Education in Agricultural Management (CREAM)	4
ANSC 701	Physiology of Reproduction	4
ANSC 708	Ruminant Nutritional Physiology	3
ANSC 710	Dairy Nutrition	4
ANSC 715	Physiology of Lactation	4
ANSC 724	Reproductive Management and Artificial Insemination	4
ANSC 727	Advanced Dairy Management I	4
ANSC 728	Advanced Dairy Management II	4
ANSC 750	Collaborative Farm Design and Development	4
ZOOL 610	Principles of Aquaculture	4
ZOOL 772	Fisheries Biology	3
ZOOL 773	Physiology of Fish	4

Business/Technical Practices/Policy Courses

ABM 404A & ABM 404B	Introduction to Business I and Introduction to Business II	4
ABM 407	Applied Marketing	4
ABM 506	Human Resource Management	4
AAS 546	Animal Business Applications	4
EREC 601	Agribusiness Economics and Management	4
EREC 680	Agricultural and Food Policy	4
EREC 760	Ecological-Economic Modeling for Decision Making	4

Environment Courses

BIOL 541	General Ecology	4
CHE 410	Energy and Environment	4
CEP 415	Community Development Perspectives	4
GEOG 670	Climate and Society	4
NR 435	Contemporary Conservation Issues and Environmental Awareness	4
NR 504	Freshwater Resources	4
NR #621	Field Description of Soils	3
NR 650	Principles of Conservation Biology	4
NR 701	Ecological Sustainability and Values	4
NR 706	Soil Ecology	4
NR #735	Land Conservation Principles and Practices	4
NR 760	Geographic Information Systems in Natural Resources	4
NR 761	Environmental Soil Chemistry	4
NR 765	Community Ecology	4
NR 785	Systems Thinking for Sustainable Solutions	4

NR 795	Investigations (Topic: Soil Fertility and the Environment, 4cr)	1-4
SAFS 729	Agricultural Waste Management	4
Experiential Courses		
SAFS 733	Advanced Topics in Sustainable Agriculture	4
SAFS 795	Investigations	1-4
SAFS 799	Honors Senior Thesis	1-4
ANSC 795	Investigations	1-4
NUTR 795	Investigations	1-4
Food/Nutrition Courses		
CAN 407	Hospitality Sanitation and Safety	1
CAN 422	Cuisine and Culture	4
CAN 528	Culinary Nutrition	2
ECOG 401	Introduction to Ecogastronomy	4
HMG 403	Introduction to Food Management	4
HMG 570	International Food and Culture	4
BMS 503	General Microbiology	3
NUTR 400	Nutrition in Health and Well Being	4
NUTR 550	Food Science: Principle and Practice	4
NUTR 720	Community Nutrition	4
NUTR 730	From Seed to Sea: Examining Sustainable Food Systems	4
Forest Courses		
FORT 564	Arboriculture	3
FORT 576	Forest Products	4
FORT 577	Forest Harvesting Systems	4
FORT 579	Forest Fire Control and Use	2
NR 425	Field Dendrology	4
NR 506	Forest Entomology	4
NR 527	Forest Ecology	4
NR #542	Forestland Measurement and Mapping	1
NR 602	Natural Resources and Environmental Policy	4
NR 643	Economics of Forestry	4
NR 729	Silviculture	4
NR 749	Forest Inventory and Modeling	4
NR 782	Forest Health in a Changing World	4
NR #783	Forest Communities of New Hampshire	4
Plant Courses		
BIOL 408	Plants and Civilization	4
BIOL 409	Introductory Botany	4
BIOL 510	Mushrooms, Molds, and Mildews: Introduction to the Fungal Kingdom	4
BIOL 566	Systematic Botany	4
BIOL 701	Plant Physiology	5
BIOL 720	Plant-Animal Interactions	4
BIOL 752	Mycology	4
GEN 774	Techniques in Plant Genetic Engineering and Biotechnology	4
HT 404	Plant Propagation	4
HT 554	Sustainable Irrigation and Rain Harvesting	3
HT 460	Sustainable Plant Management	4
SAFS 410	A Taste of the Tropics	4
SAFS 415	Introduction to Brewing Art and Science	4

SAFS 510	Agriculture and Development in the Neotropics	4
SAFS 601	Fruit Crop Production	4
SAFS 632	Urban Agriculture	4
SAFS 651	Plant Pathology	4
SAFS 679	Food Production Field Experience I	4
SAFS 680	Food Production Field Experience II	4
SAFS 689	Greenhouse Management and Operation	4
SAFS 760	Insect Pest Management	4

Brewing Minor

<https://colsa.unh.edu/agriculture-nutrition-food-systems/program/minor/brewing>

Description

Through completion of the brewing minor, students will gain a well-rounded knowledge of the brewing industry to complement their major field of study. This series of courses will encompass all aspects of beer brewing from agricultural production of raw ingredients to quality control and distribution of the final product. Undergraduates in any major field of study may minor in brewing.

Brewing is unique in that it requires a balanced knowledge of math, science, engineering, and business as well as an understanding of how and why the product plays an important role in society and culture. With this minor, you will learn how to integrate various fields of study together, a skill which can be applied to any career. You will also gain specific skills and knowledge for a fast growing industry.

Requirements

Minor Requirements

- Complete 5 Courses with a minimum of 20 credits from the courses listed below, with a grade of C- or better.
- No more than 8 credits used to satisfy major requirements may be used for the minor.
- Pass/Fail courses may not be used for the minor.

Code	Title	Credits
Required Courses:		
SAFS 415	Introduction to Brewing Art and Science	4
SAFS 515	Technical Brewing	4
SAFS 517	Advanced Aspects of Brewing	4
Elective in Business/Finance: Choose one:		
ABM 407	Applied Marketing	4
ABM 508	Managerial Accounting	4
ACFI 501	Survey of Accounting	4
ADMN 502	Financial Accounting	4
ADMN 585	Marketing	4
EREC 601	Agribusiness Economics and Management	4
MKTG 550	Survey of Marketing	4
MGT 598	Topics ¹	4
Elective in Food/Culture: Choose one:		
HMG 403	Introduction to Food Management	4

HMG 405	Introduction to Food and Service Management
HMG 771	International Wine and Beverage
HIST 425	Foreign Cultures ²
NUTR 550	Food Science: Principle and Practice
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Total Credits	20

¹ MGT 598 Topics: Thinking like an Entrepreneur - fulfills this elective requirement. Not offered every year.

² HIST 425 Foreign Cultures: Beer in World History

Environmental Horticulture Minor

<https://colsa.unh.edu/agriculture-nutrition-food-systems/program/minor/environmental-horticulture>

Description

A minor in environmental horticulture is designed to provide a flexible and broad selection of applied horticulture courses to complement any other major area of study. A minimum of 20 credits is required. A minimum grade of C- is required for all minor courses.

Interested students should contact Dr. Catherine Neal in the Department of Agriculture, Nutrition, and Food Systems, (603) 862-3208.

Requirements

Code	Title	Credits
Required Core		
SAFS 421	Introductory Horticulture	4
Electives		
Select an additional 16 credits of the following:		16
BIOL 409	Introductory Botany	
BIOL 566	Systematic Botany	
SAFS 405	Sustainable Agriculture and Food Production	
SAFS 410	A Taste of the Tropics	
SAFS 601	Fruit Crop Production	
SAFS 632	Urban Agriculture	
SAFS 651	Plant Pathology	
SAFS 679	Food Production Field Experience I (4 cr each) or SAFS 680 Food Production Field Experience II	
SAFS 689	Greenhouse Management and Operation	
SAFS 760	Insect Pest Management	
SAFS 795	Investigations (Horticulture related topics)	
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Total Credits		20

Up to 8 of the 16 credits may be fulfilled by the following TSAS (Thompson School of Applied Sciences) Horticulture Technology classes:

Code	Title	Credits
HT 404	Plant Propagation	
HT 427	Greenhouse Operation and Design ¹	
HT 454	Irrigation Design	
HT 460	Sustainable Plant Management	
HT 565	Turf Management	

HT 572	Landscape Design Studio
HT 576	Greenhouse Crop Production ¹

¹ HT 427 and HT 576 can only be used to satisfy minor requirements if SAFS 689 is not used as part of the minor.

Sustainable Agriculture and Food Systems Minor

<https://colsa.unh.edu/agriculture-nutrition-food-systems/program/minor/sustainable-agriculture-food-systems>

Description

A minor in Sustainable Agriculture and Food Systems is designed to provide a flexible and broad selection of courses to complement any other major area of study. A minimum of 20 credits is required. A minimum grade of C- is required for all minor courses.

Certificate of Minor

During the student's final semester, an application should be made to the COLSA Dean's Office to have the minor shown on the academic transcript. The student should fill out a Certification of Completion of Minor form and obtain the signatures of the student's major advisor, minor advisor, and the COLSA Dean's Office.

Requirements

Code	Title	Credits
Required SAFS Core Course		
SAFS 405	Sustainable Agriculture and Food Production	4
Electives¹		
16		
AAS 432	Introduction to Forage and Grassland Management	
ANSC 421	Animal Agriculture Today	
ANSC 750	Collaborative Farm Design and Development	
EREC 680	Agricultural and Food Policy	
NR 501	Studio Soils	
NUTR 405	Food and Society	
NUTR 730	From Seed to Sea: Examining Sustainable Food Systems	
SAFS 421	Introductory Horticulture	
SAFS 502	Agroecology	
SAFS 510	Agriculture and Development in the Neotropics	
SAFS 632	Urban Agriculture	
SAFS 651	Plant Pathology	
SAFS 679	Food Production Field Experience I	
SAFS 680	Food Production Field Experience II	
SAFS 689	Greenhouse Management and Operation	
SAFS 729	Agricultural Waste Management	
SAFS 733	Advanced Topics in Sustainable Agriculture	
SAFS 760	Insect Pest Management	
ZOOL 610	Principles of Aquaculture	
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Total Credits		20

¹ Electives - 16 credits of elective coursework, 8 credits must be at the 600/700 level, selected from the courses listed.

Students are encouraged to discuss their intent to minor with the minor advisor as early as possible, typically no later than the end of the junior year. Not all classes are offered every year.

Sustainable Energy

- Sustainable Energy Minor (p. 284)

Sustainable Energy Minor

Description

The Minor in Sustainable Energy provides the flexibility and focus that allows for students to expand their exposure to the topic within the context of their own major. The goal of the program is to match the developing nature of the field with the skills needed to understand sustainable energy in the greater context of its opportunities and challenges. Courses in the minor will build on existing competencies and create an experience that provides an exposure to new the perspectives and conceptual framework that is at the core of the developing field of sustainable energy.

Objectives

The objectives of the Minor in Sustainable Energy are to provide students with the educational experience necessary to participate in one of the fastest growing fields of employment. Coupled with an ability to focus on meaningful employment, is our challenge to confront a changing climate; students will be given an opportunity to be a part of the solution.

Curriculum and Requirements

The curriculum and requirements for the minor are based on exposure to three competencies that reflect the exposure necessary to grasp the basic understanding of sustainable energy:

- Technical – Requires a basic understanding of the grid, energy flow, energy usage and the technologies of efficiency, generation and management of energy and generation sources.
- Economics and Finance – Requires a basic understanding of utility structure, energy markets and utility rate-making. An additional focus includes the business aspect of financing and projecting the cost-effectiveness of energy generation sources and fuels – including the development of innovative business models for deploying sustainable energy.
- Policy – Requires a basic understanding in policy-making and implementation, including a historic perspective of our utilities, incentives and subsidies and their impact on market forces. An additional focus includes the policy impacts of aspects related to sustainable energy deployment, including, interconnection, net metering and feed in tariffs and tax incentives.

Contact Information

Students with questions about the minor or who would like more information should contact Dr. Clayton Mitchell in the Department of Natural Resources and the Environment, clayton.mitchell@unh.edu

Requirements

Code	Title	Credits
Required Courses		11-12
Introduction:		
NR 507	Introduction to our Energy System and Sustainable Energy	
Critical Thinking (choose one):		
NR 606	International Energy Topics	
or CEE 705	Introduction to Sustainable Engineering	
Competency:		
NR 787	Advanced Topics in Sustainable Energy	
Select at least one course from each of the following categories:		7-8
Technology/Engineering Category:		
CHE 410	Energy and Environment	
CEE 520	Environmental Pollution and Protection: A Global Context	
CEE 719	Green Building Design	
Social & Economic Policy Category:		
NR 602	Natural Resources and Environmental Policy	
CEP 673	Green Real Estate	
EREC 572	Introduction to Natural Resource Economics	
SOC 565	Environment and Society	
TOUR 767	Social Impact Assessment	
NR 606	International Energy Topics	
Total Credits		18-20

- Students must earn a grade of C- or better in order for a course to be counted for credit toward the minor.
- No pass/fail graded course shall count toward the minor.
- Up to 8 credits can be used to satisfy both major and minor requirements.
- Appropriate course substitutes from other study-abroad programs may also be used with permission.

Tourism Management

Programs

- Tourism Management Minor (p. 284)

Tourism Management Minor

<https://paulcollege.unh.edu/hospitality-management/program/minor/tourism-management>

Description

“Tourism” is the world’s largest and most diverse industry. Tourism is a composite of activities, services, and industries delivering travel experiences through transportation, accommodations, eating and drinking establishments, shops, entertainment, activity facilities (parks, sports, and amusement parks), historic sites, natural resources, among others.

The faculty of Recreation Management and Policy [RMP], Hospitality Management [HMGT], and Natural Resources and the Environment [NREN] Tourism [Tour] have bundled a number of courses for non-majors which, when combined with certain elective courses, can constitute a Minor in Tourism Management. Each of the courses offered for this minor are already offered in each of the three departments. These programs represent the three Colleges of the College of Health and Human Services, Peter T. Paul College of Business and Economics, and the College of Life Sciences and Agriculture.

Questions about the MINOR shall be directed to:

Recreation and Policy Management – Dr. Bob Barcelona,

Bob.Barcelona@unh.edu

Tourism Management – Dr. Rob Robertson, Rob.Robertson@unh.edu

Hospitality Management – Dr. Nelson A. Barber, nelson.barber@unh.edu

Approval of the Minor for Graduation, verification and sign-off must be coordinated with Dr. Rob Robertson.

Requirements

Code	Title	Credits
Required Courses		
TOUR 400	Introduction to Tourism	4
HMGT 401	Introduction to the Hospitality Industry	4
RMP 490	Recreation and Leisure in Society	4
	The remaining two courses for the minor may be used to focus your study in an area of interest. One course must be and experiential learning course. Areas of interest, with sample course, include:	8
Lodging and Resort Management:		
HMGT 681	Contemporary Resort Development and Management	
HMGT 662	Convention Sales and Service Management	
HMGT 570	International Food and Culture ¹	
HMGT 554	Lodging Operations Management	
HMGT 682	Private Club Management	
RMP 775	Entrepreneurial and Commercial Recreation ¹	
TOUR 767	Social Impact Assessment	
Event Planning and Management:		
HMGT 662	Convention Sales and Service Management	
HMGT 661	Event Design, Planning, and Management	
RMP 680	Festival and Event Planning	
RMP 560	Recreational Sport Management	
TOUR 767	Social Impact Assessment	
International Travel and Tourism:		
HMGT 570	International Food and Culture ¹	
TOUR 510	Tourism and Global Understanding ¹	
EREC 444	The New Pirates of the Caribbean	
ECOG 401	Introduction to Ecogastronomy	
TOUR 767	Social Impact Assessment	
HMGT 756	International Franchising	
RMP 711	Recreation Resource Management	
Total Credits		20

¹ Identification of experiential learning courses.

Courses taken during study abroad maybe considered as part of the minor; prior approval of an advisor is required.

Please Note:

The courses may be taken in any order, and you are responsible for checking pre-requisites for the elective courses.

Following University policy, you must complete 20 semester hours with a grade of C- or better and a 2.0 grade point average.

Courses taken on a Pass/Fail basis may not be used toward the minor.

No more than 8 credits used by the student to satisfy major requirements may be used for the minor.

No transfer courses may be used toward the minor.

Water Resources Management

Programs

- Water Resources Management Minor (p. 285)

Water Resources Management Minor

<https://colsa.unh.edu/interdisciplinary-minors/water-resources-management-minor>

Description

Students in biology, environmental conservation studies, forestry, plant biology, wildlife and conservation biology, environmental engineering, environmental and resource economics, community and environmental planning, and related fields should consider a minor in water resources management. There is a strong demand among consulting firms, state and federal agencies, and not-for-profit organizations for persons with knowledge and experience relevant to water resource management. The minor consists of 20 credits (totaling five courses) with grades of C- or better, and no pass/fail courses. No more than 8 credits used to satisfy major requirements may be used for the minor.

Requirements

Code	Title	Credits
NR 504	Freshwater Resources	4
NR 703	Watershed Water Quality Management	4
ESCI 705	Principles of Hydrology	4
	Select 8 additional credits of the following:	8
NR 658	Introduction to Geographic Information Systems	
NR 711	Wetland Ecology and Management	
NR #719	Wetlands Restoration and Mitigation	
NR 751	Aquatic Ecosystems	
NR 760	Geographic Information Systems in Natural Resources	
ESCI 710	Groundwater Hydrology	
MEFB 717	Lake Ecology	
Total Credits		20

For additional information, contact the Department of Natural Resources and the Environment, (603) 862-1022.

Wetland Ecology

Programs

- Wetland Ecology Minor (p. 286)

Wetland Ecology Minor

<https://colsa.unh.edu/interdisciplinary-minors/wetland-ecology-minor>

Description

Students in biology, environmental conservation studies, forestry, plant biology, environmental sciences, wildlife and conservation biology, and related majors should consider obtaining a minor in wetland ecology. There is a strong demand among consulting firms, private conservation groups, and state and federal agencies for employees with knowledge and experience relevant to wetland resource management. The minor consists of 20 credits (totaling five courses) with grades of C- or better, and no pass/fail courses. No more than 8 credits used to satisfy major requirements may be used for the minor.

Requirements

Code	Title	Credits
Required		
NR 504	Freshwater Resources	4
or NR 703	Watershed Water Quality Management	
NR 711	Wetland Ecology and Management	4
Select one field-oriented course:		4
NR #719	Wetlands Restoration and Mitigation	
MEFB 747	Aquatic Plants in Restoration/Management	
Elective Courses - choose two from the list below for a minimum of 8 additional credits:		
BIOL 566	Systematic Botany	
GEN 713	Microbial Ecology and Evolution	
MEFB 722	Marine Phycology	
NR 527	Forest Ecology	
NR 765	Community Ecology	
NR 751	Aquatic Ecosystems	
NR 425	Field Dendrology	
NR 501	Studio Soils	
NR 602	Natural Resources and Environmental Policy	
NR #621	Field Description of Soils	
NR 706	Soil Ecology	
MEFB 725	Marine Ecology	

Total Credits

12

Wildlife and Conservation Biology

The Wildlife & Conservation Biology major provides students with the knowledge and tools to study, conserve, and manage wildlife and their habitats.

Our students combine science with their passion for nature and the outdoors. Our courses emphasize hands-on experience and place fundamental principles within an applied context. Students are encouraged to conduct research alongside faculty, and faculty actively assist students in obtaining internships.

Our students become research biologists and resource managers at state/federal agencies and non-profit organizations, conservation law officers, and environmental educators. Many go on to obtain an advanced degree.

<https://colsa.unh.edu/natural-resources-environment>

Programs

- Wildlife and Conservation Biology Major (B.S.) (p. 286)
- Wildlife and Conservation Biology Minor (p. 288)

Faculty

<https://colsa.unh.edu/natural-resources-environment/people>

Wildlife and Conservation Biology Major (B.S.)

<https://colsa.unh.edu/nren/wcb/wildlife-and-conservation-biology-bs>

Description

The Wildlife & Conservation Biology major provides students with the knowledge and tools to study, conserve, and manage wildlife and their habitats.

Our students combine science with their passion for nature and the outdoors. Our courses emphasize hands-on experience and place fundamental principles within an applied context. Students are encouraged to conduct research alongside faculty, and faculty actively assist students in obtaining internships.

Our students become research biologists and resource managers at state/federal agencies and non-profit organizations, conservation law officers, and environmental educators. Many go on to obtain an advanced degree.

Requirements

In addition to the Wildlife and Conservation Biology degree requirements (below), students must complete the University Discovery Program and the University Writing Requirements. Given the flexibility of this major, many students complete a minor or dual major in a second area of interest, or apply for certification by The Wildlife Society (<http://wildlife.org/learn/professional-development-certification/certification-programs>).

Code	Title	Credits
Requirements		
BIOL 411	Introductory Biology: Molecular and Cellular	4
BIOL 412	Introductory Biology: Evolution, Biodiversity and Ecology	4
EREC 411	Environmental and Resource Economics Perspectives	4
MATH 424B or MATH 420	Calculus for Life Sciences Finite Mathematics	4
NR 425	Field Dendrology	4
NR 433	Wildlife Ecology	4
CHEM 411	Introductory Chemistry for Life Sciences	4
BMCB 501	Biological Chemistry	5
Select one of the following Communication Skills courses:		4
ENGL 501	Introduction to Creative Nonfiction	
ENGL 502	Professional and Technical Writing	
ENGL 503	Persuasive Writing	
CMN 500	Public Speaking	
NR 527 or BIOL 541	Forest Ecology General Ecology	4
NR 415	Natural Resources Field Methods	2
NR 417	Sophomore Seminar: Wildlife and Conservation Biology	2
NR 658	Introduction to Geographic Information Systems	4
Select one of the following Vertebrate Ecology, Evolution, and Diversity courses:		4
NR 655	Vertebrate Biology	
NR 712	Mammalogy	
MEFB 510	Field Ornithology	
ZOOL 542	Ornithology	
ZOOL 710	Ichthyology	
BIOL 528	Applied Biostatistics I	4
NR 602	Natural Resources and Environmental Policy	4
NR 650	Principles of Conservation Biology	4
NR 615 or NR 603	Wildlife Habitats Landscape Ecology	4
NR 640	Wildlife Population Ecology	4
NR 664 or ZOOL 690	Conservation Genetics Evolution	4
Select one of the following Physiology/Behavior courses:		3-5
NR 625	Physiological Ecology	
ZOOL 625	Principles of Animal Physiology	
ZOOL 613	Animal Behavior	
NR 740	Inventory and Monitoring of Ecological Communities	4
NR 750	Sustaining Biological Diversity (Capstone)	4
Select one of the following additional Ecology courses:		4
NR 642	Introduction to Biogeography	
NR 765	Community Ecology	
NR 603	Landscape Ecology	
Total Credits		92-94

Degree Plan

Course	Title	Credits
First Year		
BIOL 411	Introductory Biology: Molecular and Cellular	4
BIOL 412	Introductory Biology: Evolution, Biodiversity and Ecology	4
ENGL 401	First-Year Writing	4
EREC 411	Environmental and Resource Economics Perspectives	4
MATH 424B or MATH 420	Calculus for Life Sciences or Finite Mathematics	4
NR 425	Field Dendrology	4
NR 433	Wildlife Ecology	4
Discovery electives		
Credits		28
Second Year		
CHEM 411	Introductory Chemistry for Life Sciences	4
BMCB 501	Biological Chemistry	5
Select one of the following:		4
ENGL 501	Introduction to Creative Nonfiction	
ENGL 502	Professional and Technical Writing	
ENGL 503	Persuasive Writing	
CMN 500	Public Speaking	
NR 527 or BIOL 541	Forest Ecology or General Ecology	4
NR 415	Natural Resources Field Methods	2
NR 417	Sophomore Seminar: Wildlife and Conservation Biology	2
NR 658	Introduction to Geographic Information Systems	4
Select one of the following:		4
NR 655	Vertebrate Biology	
NR 712	Mammalogy	
MEFB 510	Field Ornithology	
ZOOL 542	Ornithology	
ZOOL 710	Ichthyology	
Discovery electives		
Credits		29
Third Year		
BIOL 528	Applied Biostatistics I	4
NR 602	Natural Resources and Environmental Policy	4
NR 650	Principles of Conservation Biology	4
NR 615 or NR 603	Wildlife Habitats or Landscape Ecology	4
NR 640	Wildlife Population Ecology	4
NR 664 or ZOOL 690	Conservation Genetics or Evolution	4
Select one of the following:		4-5
NR 625	Physiological Ecology	
ZOOL 625	Principles of Animal Physiology	
ZOOL 613	Animal Behavior	

Discovery electives		
	Credits	28-29
Fourth Year		
NR 750	Sustaining Biological Diversity (Capstone)	4
NR 740	Inventory and Monitoring of Ecological Communities	4
	Select one of the following:	4
NR 642	Introduction to Biogeography	
NR 765	Community Ecology	
NR 603	Landscape Ecology	
Discovery electives		
	Credits	12
	Total Credits	97-98

Wildlife and Conservation Biology Minor

<https://colsa.unh.edu/nren/wcb/wildlife-and-conservation-biology-minor>

Description

The minor in Wildlife and Conservation Biology serves as a concentrated study, beyond a student's primary major, that allows students to explore their interest in wildlife ecology and conservation and their passion for nature and the outdoors.

Students interested in a minor in Wildlife and Conservation Biology must complete a minimum of 5 courses and 20 credits. Up to 8 credits can be used to satisfy both major and minor requirements. A maximum of 2 EcoQuest courses may be used to satisfy requirements. Appropriate course substitutes from other study-abroad programs may also be used with permission.

Requirements

Code	Title	Credits
Category 1		4
NR 650 or NR 433	Principles of Conservation Biology ¹ Wildlife Ecology	
Category 2		
	Select one of the following:	4
NR 425	Field Dendrology	
NR 506	Forest Entomology	
NR 655	Vertebrate Biology	
NR 712	Mammalogy	
ZOOL 542	Ornithology	
ZOOL 628	Marine Invertebrate Evolution and Ecology	
ZOOL 710	Ichthyology	
ZOOL 745	Biology and Diversity of Insects	
Category 3		
	Remaining 12 credits may be chosen from the following:	12
NR 615	Wildlife Habitats ²	
NR 625	Physiological Ecology	
NR 640	Wildlife Population Ecology	

NR 642 or NR 603	Introduction to Biogeography ³ Landscape Ecology	
NR 650	Principles of Conservation Biology ¹	
NR 664	Conservation Genetics	
NR 711	Wetland Ecology and Management	
NR 734	Tropical Ecology	
NR 740	Inventory and Monitoring of Ecological Communities ^{2,4}	
NR 750	Sustaining Biological Diversity ²	
NR 765	Community Ecology	
NR 795	Investigations ⁵	
ZOOL 613 or ZOOL 733	Animal Behavior Behavioral Ecology	
Total Credits		20

- ¹ NR 661 is considered an appropriate equivalent.
- ² Enrollments are capped and admission is not guaranteed to those pursuing a minor.
- ³ NR 660 is considered an appropriate equivalent.
- ⁴ NR 663 is considered an appropriate equivalent.
- ⁵ NR 795 requires working with an individual WCB faculty member on a special problem/issue.

Zoology (ZOOL)

The zoology majors (B.S. and B.A.) build on the common background of the biology core curriculum (two semesters of introductory biology, ecology, and genetics), with an additional six (B.A.) or seven (B.S.) courses that include morphology; physiology; three choices between courses in development, evolution, animal behavior and animal survey (ornithology, mammalogy, marine invertebrates); and one (B.A.) or two (B.S.) electives in a biological science. The B.A. also has a foreign language requirement. Zoology majors are required to achieve a 2.0 or better GPA and a minimum of C- in each biological science course. The zoology majors also require passing grades in chemistry (two semesters for the B.A. and four semesters for the B.S.), physics (one semester for the B.A. and two for the B.S.), and mathematics (calculus or biostatistics for the B.A. and both courses for the B.S.). Students will have opportunities in these majors to specialize in areas of their own interest, such as completing a minor in animal behavior.

The University's location and facilities provide unique opportunities for the study of aquatic and terrestrial animals due to its access to the seacoast and the lakes region of New Hampshire, White Mountain National Forest, and the presence of two coastal marine laboratories, as well as estuarine and freshwater facilities. There is a strong teaching and research emphasis on ecological and physiological processes in aquatic animals and ecosystems. Major strengths of the program are the hands-on approach to teaching and emphasis on involving undergraduates in research.

<https://colsa.unh.edu/biological-sciences>

Programs

- Zoology Major (B.A.) (p. 289)
- Zoology Major (B.S.) (p. 289)
- Zoology Minor (p. 290)

Faculty

<https://colsa.unh.edu/biological-sciences/people>

Zoology Major (B.A.)

<https://colsa.unh.edu/dbs/zoology/zoology-ba>

Description

Built upon the common background of the biology core curriculum, the Bachelor of Arts (B.A.) in Zoology is designed for students to create an interdisciplinary or dual major, particularly if they want to pursue public relations, teaching, or other careers in combination with a liberal arts background. Students have more flexibility when choosing courses from the biology core and may enter this program as freshmen or transfer in from other liberal arts or science programs. Students must fulfill a foreign language requirement in lieu of one advanced elective.

New England Regional Student Program

The bachelor's degree in zoology is one of the specialized curricula recognized by the New England Board of Higher Education and participates in the New England Regional Student Program. Under this program, students from the state of Massachusetts pay the UNH in-state tuition rate plus 75 percent.

General Science Certification

See Department of Education

Requirements

Code	Title	Credits
BIOL 411	Introductory Biology: Molecular and Cellular	4
BIOL 412	Introductory Biology: Evolution, Biodiversity and Ecology	4
BIOL 528	Applied Biostatistics I	4
	or MATH 424B Calculus for Life Sciences	
BIOL 541	General Ecology	4
BMCB 501	Biological Chemistry	5
CHEM 411	Introductory Chemistry for Life Sciences	4
GEN 604	Principles of Genetics	4
PHYS 401	Introduction to Physics I	4
ZOOL 400	Professional Perspectives in Zoology	1
ZOOL 518	Vertebrate Morphology	5
	or ZOOL 628 Marine Invertebrate Evolution and Ecology	
ZOOL 625	Principles of Animal Physiology	3
Zoology Electives		
Zoology Elective Courses (Choose 2)		8-9

ZOOL 529	Developmental Biology	
ZOOL 613	Animal Behavior	
ZOOL 690	Evolution	
Animal Survey Courses (Choose 1)		4-5
MEFB 527	Aquatic Animal Diversity	
ZOOL 542	Ornithology	
ZOOL 628	Marine Invertebrate Evolution and Ecology	
ZOOL 710	Ichthyology	
ZOOL 745	Biology and Diversity of Insects	
NR 712	Mammalogy	
Biological Science Elective		
Select one course ²		4-5
Capstone ¹		

¹ Students must complete a Capstone during their senior year. Students should consult with their advisor to determine coursework that may satisfy this requirement.

² Biological Sciences Electives (Biology, Zoology, BMS, BMCB, Genetics, and Natural Resources) can be used to satisfy elective requirements.

Zoology Major (B.S.)

<https://colsa.unh.edu/dbs/zoology/zoology-bs>

Description

The Bachelor of Science (B.S.) in Zoology builds from the common background of the biology core curriculum to provide ample time for third- and fourth-year students to concentrate in specialized disciplines such as marine and freshwater biology, behavior, cell and developmental biology, ecology, evolution, fisheries, physiology, and neurobiology while giving students the foundation from which they can specialize in the area of zoology. Undergraduate students are encouraged to conduct field or lab-based research which helps determine advanced education disciplines for graduate studies. Many students ultimately work in the agricultural, pharmaceutical, and biotechnology industries, government, environmental agencies or education where they conduct advanced research and/or teaching.

New England Regional Student Program

The bachelor's degree in zoology is one of the specialized curricula recognized by the New England Board of Higher Education and participates in the New England Regional Student Program. Under this program, students from the state of Massachusetts pay the UNH in-state tuition rate plus 75 percent.

Requirements

Major Requirements

Code	Title	Credits
BIOL 411	Introductory Biology: Molecular and Cellular	4
BIOL 412	Introductory Biology: Evolution, Biodiversity and Ecology	4
BIOL 528	Applied Biostatistics I	4
BIOL 541	General Ecology	4

BMCB 658 & BMCB 659	General Biochemistry and General Biochemistry Lab	5
CHEM 403	General Chemistry I	4
CHEM 404	General Chemistry II	4
CHEM 545 & CHEM 546	Organic Chemistry and Organic Chemistry Laboratory	5
GEN 604	Principles of Genetics	4
MATH 424B	Calculus for Life Sciences	4
PHYS 401	Introduction to Physics I	4
PHYS 402	Introduction to Physics II	4
ZOOL 400	Professional Perspectives in Zoology	1
ZOOL 518 or ZOOL 628	Vertebrate Morphology or Marine Invertebrate Evolution and Ecology	5
ZOOL 625 & ZOOL 626	Principles of Animal Physiology and Animal Physiology Laboratory	5
Zoology Electives		
Zoology Elective Courses (Choose 2)		8-9
ZOOL 529	Developmental Biology	
ZOOL 613	Animal Behavior	
ZOOL 690	Evolution	
Animal Survey Courses (Choose 1)		4-5
MEFB 527	Aquatic Animal Diversity	
ZOOL 542	Ornithology	
ZOOL 628	Marine Invertebrate Evolution and Ecology	
ZOOL 710	Ichthyology	
ZOOL 745	Biology and Diversity of Insects	
NR 712	Mammalogy	
Biological Science Electives		
Select two courses ¹		
Capstone ²		

¹ Biological Sciences Electives (Biology, Zoology, BMS, BMCB, Genetics, and Natural Resources) can be used to satisfy elective requirements.

² Students must complete a Capstone during their senior year. Students should consult with their advisor to determine coursework that may satisfy this requirement.

Zoology Minor

<https://colsa.unh.edu/dbs/zoology/zoology-minor>

Description

The Zoology Minor is designed to provide a general introduction to animals and their ecology, while requiring in-depth knowledge of the diversity of at least one group (Animal Survey Course), a course dealing with animal structure, behavior, or physiology, and an additional animal-focused course at the 600 or higher level of the student's choice.

Requirements

The Zoology minor requires five courses.

Code	Title	Credits
Required:		
BIOL 412	Introductory Biology: Evolution, Biodiversity and Ecology	4
BIOL 541	General Ecology	4
Choose one Animal Survey Course:		4-5
MEFB 527	Aquatic Animal Diversity	
NR 712	Mammalogy	
ZOOL 542	Ornithology	
ZOOL 628	Marine Invertebrate Evolution and Ecology	
ZOOL 710	Ichthyology	
ZOOL 745	Biology and Diversity of Insects	
Choose one animal structure, behavior or physiology course:		4-5
ZOOL 518	Vertebrate Morphology	
ZOOL 529	Developmental Biology	
ZOOL 613	Animal Behavior	
ZOOL 628	Marine Invertebrate Evolution and Ecology	
ZOOL 690	Evolution	
Chose one additional animal-focused course at the 600 level or higher chosen from the courses above		4-5

College of Life Sciences and Agriculture students: two courses in the major may be used toward the minor, as long as selected from the courses listed above.

Peter T. Paul College of Business and Economics

Deborah Merrill-Sands, Dean

Neil B. Niman, Associate Dean of Academic Programs

Victoria A. Parker, Associate Dean of Graduate Education and Faculty Administration

The Peter T. Paul College of Business and Economics (Paul College) empowers students to be mindful, dynamic leaders through rigorous academics and experiential-learning opportunities led by industry experts and researchers—creating an engaged academic and professional community. Paul College prepares students for careers in Business, Economics, and Hospitality Management. Each program has its unique disciplinary traditions and the simultaneous commitment to broad educational excellence in critical thought, communication, analytic skills, digital literacy, and ethical reasoning.

Paul College's undergraduate curricula combine a breadth of liberal education with specifics of professional education in business administration, economics, and hospitality management. In tandem with their studies at Paul College, undergraduates enrolled in Paul College programs take part of their coursework in other colleges in the University in order to fulfill the Discovery Program requirements. Beyond those requirements, students are encouraged to elect additional courses in the arts, social sciences, humanities, mathematics, and sciences. Thus, students who complete the Paul College programs in business administration, economics, and hospitality management develop an impressive portfolio of marketable skills and knowledge base that may be applied to a variety of fields.

Accreditation

Peter T. Paul College of Business and Economics is accredited by the Association to Advance Collegiate Schools of Business (AACSB) for the degree programs of business administration and hospitality management.

Degrees

- Bachelor of Arts (B.A.) in Economics
- Bachelor of Science (B.S) in Business Administration, Analytical Economics, or Hospitality Management

For information concerning advanced degrees, see the Graduate Catalog.

Degree Requirements

Paul College degree candidates must satisfy all of the University Discovery Program requirements for graduation as well as the particular requirements of their individual major programs. Modifications tend to occur in major(option) programs during the four-year period of a student's undergraduate career; Students are expected to conform to these changes. In addition, candidates must complete a math course (MATH 422 Mathematics for Business Applications, MATH 424A Calculus for Social Sciences, or equivalent) and an ethics course (PHIL 431 Business Ethics or equivalent). Bachelor of Science in Business Administration degree students are required to earn 136 credits. Economics majors must also satisfy specific requirements associated with the bachelor of arts degree (see bachelor of arts degree requirements).

In order to graduate, students must achieve a grade-point average of at least 2.3 (2.0 for the B.A. in economics) in the major courses and a minimum grade of C- (for ADMN 403 Computing Essentials for Business, students must obtain credit) in each major course. Course listings are provided by program, or in the case of business administration by department:

- Accounting and Finance (ACFI)
- Business Administration (ADMN)
- Decision Sciences (DS)
- EcoGastronomy (ECOG)
- Economics (ECON)
- Hospitality Management (HMGT)
- Management (MGT)
- Marketing (MKTG)

Prior to attaining junior rank, students will be considered "provisional Paul" students. A minimum overall GPA of 2.3 at UNH must be maintained by all Paul students in order to remain in the College. If the minimum overall GPA drops below 2.3 during the provisional period, the student will be placed on Paul College probation for one (1) semester. Failure to achieve a minimum overall GPA of 2.3 after the probationary semester will require the student to change to a major outside Paul College.

Paul College courses may not be taken on a pass/fail basis by a student majoring in business administration, economics, or hospitality management. Any Paul College major required course (including ADMN 403 Computing Essentials for Business) in which a grade below C- is obtained must be repeated. No more than two Paul College courses may be repeated and each course may be repeated at most one time.

Students transferring into Paul College from other universities must have business, economics, and hospitality management courses reviewed and approved by the faculty through the Paul College Undergraduate Programs Office to be considered for major requirements. Transfer credit is normally granted only for 400- and 500-level courses, and normally only when the transferring institution is AACSB-accredited.

Paul College Programs FIRE (First-year Innovation and Research Experience)

FIRE is an integrated, team-based, and game-like experience, developed for first-year students. Launched in the 2015-2016 academic year and under the direction of the Undergraduate Programs and Advising Office, this program was designed to expand upon the principles and mission of the Peer Advising program by engaging first-year students in developing habits and strategies for success. Students complete a one-credit, credit/fail course each semester (PAUL 405 Freshman Academic Experience I/PAUL 406 Freshman Academic Experience II), guided by peer mentors (selected upper-class students) and alumni. Students collaborate and compete, both individually and in teams, through academic challenges, research, and game scenarios culminating in participation at the Undergraduate Research Conference (URC)

More information can be found on the FIRE (<https://paulcollege.unh.edu/fire-first-year-innovation-research-experience>) webpage.

Independent Study/Internship

Juniors or seniors in high academic standing in the Paul College may elect the internship or independent study course for variable credit.

For either course, the student must secure a faculty sponsor in the area of interest and submit a written proposal prior to the start of the semester in which the project is to be undertaken. Independent study normally involves research, while internships are usually undertaken with cooperation of an off-campus organization and involve a non-routine but practical application of skills and concepts acquired in a student's program.

Independent studies and internships require considerable self-direction and self-monitoring on the part of the student, who must be in high academic standing. Careful prior review of requirements with the undergraduate adviser and faculty sponsor is necessary. Students may earn no more than 16 credits combined in internships, independent studies, field experience, and supervised student teaching experience.

The Washington Center internship (<https://www.unh.edu/washington>), a semester of supervised work experience in Washington, D.C., as well as the Semester in the City internship (<https://www.unh.edu/social-innovation/semesterinthecity>), in Boston, are open to any major.

International Programs

International education is a high priority of Paul College with many Education Abroad opportunities available. Through semester abroad and short-term programs, students have the ability to immerse themselves in a variety cultural environments to better prepare for a career in a globalized business industry. Paul College students may engage in a diverse array of opportunities:

- Study abroad in countries including, but not limited to: Australia, China, Hungary, Ireland, Italy, Korea, Portugal, and Spain
- Faculty-led programs to destinations such as Ascoli Piceno, Italy; Budapest, Hungary; the Caribbean; Dominican Republic; and Dijon, France.
- International internships
- Research grant programs
- Volunteer or non-profit work

Students are encouraged to begin planning their international experiences early on in their academic careers by visiting the Paul College Undergraduate Programs and Advising Office. In most cases, students are able to take a semester abroad without losing any time towards graduation. Paul College students are highly encouraged to study abroad at schools accredited by the AACSB (Association to Advance Collegiate Schools of Business) and/or EQUIS (European Quality Improvement System). More information about international experiences can be found on the Paul College website (<https://paulcollege.unh.edu/study-abroad>) as well as by programs offered through UNH Global (<https://www.unh.edu/global>).

Paul College Honors Program

The Paul College Honors Program is designed to provide high achieving students with an enhanced academic experience. Students in the University Honors Program or current students in Paul College have the opportunity to apply to the program at the beginning of the second semester sophomore year. The application process is competitive and based upon grade point average, extra-curricular experiences, and student interests.

The Program consists of the following elements:

Designation and Designation Workshop (PAUL 790 Honors/The Workshop) — Students pick a course to designate as honors and work with the

professor to create a special honors project related to the course. The Designation Workshop brings all honors students together to share, build upon, and ultimately present their designation work.

Consulting Project (PAUL 792 Honors/The Consulting Project)—Designed to broaden perspective and build a bridge to the real world, the Honors Experience matches students with small businesses across New Hampshire. With the help of the Small Business Development Center, we will identify real-world projects and give students a chance to apply their learning.

Research Seminar (PAUL 794 Honors/The Research Process)—The Research Seminar is dedicated to preparing students to write their honors thesis. The thesis process is broken into steps, and students complete a thesis proposal. Students will attend and discuss faculty research presented at the Paul Scholars series.

Thesis—The culminating experience of Paul Honors is the thesis. Students apply what they have learned and undertake their own research with the help of a faculty mentor.

Five-Year Programs

Four-One Program: B.S.-M.B.A.

After completion of the bachelors degree program, students may apply to the Paul College masters of business administration full-time program. This innovative curriculum is designed specifically to accelerate your progress through this highly-ranked AACSB-accredited MBA program. Details are provided in the Programs of Study sections of this catalog and the Graduate Catalog.

Four-One Program: B.S.-M.S.A.

The American Institute of Certified Public Accountants (AICPA), the national association of professional accountants, mandated that five years of university education be required for national certified public accountant (CPA) certification as of the year 2000. Most states have approved similar requirements for licensing/certification. The Paul College offers a five-year program designed for students who desire a professional accounting career. The program leads to the joint awarding of a bachelor of science in business administration and a master of science in accounting degree. Application for admission to this highly selective program is made in the senior year. Details are provided in the Programs of Study sections of this catalog and the Graduate Catalog.

Paul College—Minors and Courses for Non-majors

Minors

Paul College faculty has developed a group of courses for non-majors, which, when combined with certain other courses, can constitute a minor in business administration, economics, entrepreneurship, hospitality management, or leadership. A list of minor requirements is available at the Paul College Undergraduate Programs and Advising Office, Suite 101, Paul College.

Non-majors

Paul College also serves the needs of undergraduates elsewhere in the University, within the limits of its resources, for whom selected courses in business administration, economics, or hospitality management are desirable complements to their primary course of study. To the extent that space is available after majors have enrolled, a limited number of Paul College courses are open to non-majors who have the prerequisite

preparation. A maximum of 32 credits in courses offered by the Peter T. Paul College of Business and Economics may be taken by non-Paul College students. Students interested in these courses should contact the Paul College Undergraduate Programs and Advising Office.

Advising System

Undergraduate advising in the Paul College is carried out jointly by dedicated academic advisers and faculty. The academic advisers are based in the Paul College Undergraduate Programs and Advising Office (<https://paulcollege.unh.edu/undergraduate-advising>), where student academic records are kept. The advisers assist students in program planning, preregistration, understanding and meeting general academic/degree requirements, and general career planning. In addition, the advisers coordinate study abroad and domestic exchange programs, as well as the honors programs.

Undergraduates are encouraged to develop an advisory relationship with one or more faculty members with whom they have mutual interests. By providing their own experience and expertise, faculty may provide additional support to students for course, program, and career selection. All students are urged to seek as much assistance as they need from appropriate sources, but are reminded that theirs is the ultimate responsibility for knowing and meeting the various academic requirements for a degree.

<https://paulcollege.unh.edu/>

Departments

- Business Administration (p. 293)
- Economics (p. 304)
- Hospitality Management (p. 309)

Programs of Study

- Business Administration (ADMN) (p. 293)
- Ecogastronomy (ECOG) (p. 303)
- Economics (ECON) (p. 304)
- Entrepreneurship (p. 309)
- Hospitality Management (HMGT) (p. 309)
- Leadership (p. 311)
- Sales (p. 312)
- Tourism Management (p. 313)

Business Administration (ADMN)

The business administration program provides students with the pillars of a business education as well as specialized options to propel them on their career paths. The curriculum consists of fifteen core courses as well as option/major courses, which imparts students with expertise in one or two areas of business. At the same time, Paul College students achieve a well-rounded education by selecting courses in the liberal arts and the sciences from other colleges and schools in the University, including to complete University Discovery requirements. The Peter T. Paul College's program in business administration is accredited by the Association to Advance Collegiate Schools of Business (AACSB) and is separate from the business program at the UNH-Manchester campus.

Core Curriculum

The business administration's core curriculum constitutes the fundamental theories, principles, concepts, and skill sets necessary for students to thrive in the professional business world. Each required core course equips students with the knowledge and skills utilized in key areas of business, while building upon their social, competitive, and analytical intelligence. The business administration program also augments its core curriculum with math, ethics, and economics.

In order to graduate, students must achieve a grade-point average of at least 2.3 in the major courses and a minimum grade of C- (for ADMN 403 Computing Essentials for Business, students must obtain credit) in each Paul College major course. Core courses are generally completed in the first five semesters of enrollment at Paul College, with the exception of ADMN 703 (capstone course):

- MATH 422 Mathematics for Business Applications, or MATH 424A Calculus for Social Sciences
- PHIL 431 Business Ethics
- ECON 401 Principles of Economics (Macro)
- ECON 402 Principles of Economics (Micro)
- ADMN 400 Introduction to Business
- ADMN 403 Computing Essentials for Business (1 credit)
- ADMN 410 Management Information Systems
- ADMN 420 Business Statistics
- ADMN 502 Financial Accounting
- ADMN 503 Managerial Accounting
- ADMN 570 Introduction to Financial Management
- ADMN 575 Behavior in Organizations
- ADMN 580 Quantitative Decision Making
- ADMN 585 Marketing
- ADMN 703 Strategic Management: Decision Making (Capstone course, satisfies capstone requirement for the University Discovery Program)

Additional requirements:

- PAUL 405 Freshman Academic Experience I
- PAUL 406 Freshman Academic Experience II
- PAUL 660 BiP-Social Intelligence Topics
- PAUL 670 BiP-Analytical Intelligence Topics
- PAUL 680 BiP-Competitive Intelligence Topics
- PAUL 690 BiP-Professional Intelligence Topics

Options in the Business Administration Program

As students advance, they declare an option within the business administration program. Bachelor of Science in Business Administration requires the completion of 136 credits total. Declaration of an option is occurs during their second semester sophomore year, thus focusing on a particular area of business during their last three semesters. The sophomore option declaration date is set by the Undergraduate Programs and Advising Office and usually by February of the sophomore year. Students are encouraged to discuss their interests with several faculty members and an academic adviser in this decision-making process. Options comprise a minimum of four courses, but requirements do vary

by option and are determined by the nature of the career field. Current business administration options are:

- Accounting
- Entrepreneurial Studies
- Finance
- Information Systems and Business Analytics
- International Business and Economics
- Management
- Marketing
- Student-Designed

Due to the dynamic nature of the business world, the portfolio of options offered may change from time to time. Students are expected to stay attuned to these changes through Paul College Undergraduate Programs and Advising Office. A change of option/major may only be made once per semester.

Business in Practice (BiP) Program

The Business in Practice (BiP) program enhances Paul College's rigorous academics by bridging the gap between theory and practical application. Through experiential learning projects, you work directly with industry leaders and companies to acquire a deeper grasp of real business issues and responsibilities, giving you the tools, skills and know-how to launch a successful and meaningful business career. The program is designed to be flexible and optimizes your skill level in key intelligence areas most valued by employers.

BiP INTELLIGENCES AND LEARNING GOALS

You will take a minimum of four courses*, one in each of the intelligence areas:

- PAUL 660 BiP-Social Intelligence Topics - ability to navigate complex social relationships and environments.
- PAUL 670 BiP-Analytical Intelligence Topics - ability to analyze and evaluate ideas, solve problems and make decisions.
- PAUL 680 BiP-Competitive Intelligence Topics - ability to gather, analyze and distribute information and ideas about products, customers, competitors or the external environment.
- PAUL 690 BiP-Professional Intelligence Topics - ability to achieve professional success.

*Other Paul College courses or opportunities may be assigned with BiP Intelligence attributes and satisfy a BiP course requirement. Please check with Paul College Undergraduate Advising Office for other potential courses designated with a BiP Intelligence attribute.

<https://paulcollege.unh.edu/business-administration>

Programs

- Business Administration Major (B.S.) (p. 294)
- Business Administration Major: Accounting Option (B.S.) (p. 295)
- Business Administration Major: Entrepreneurial Studies Option (B.S.) (p. 296)
- Business Administration Major: Finance Option (B.S.) (p. 297)
- Business Administration Major: Information Systems and Business Analytics Option (B.S.) (p. 297)

- Business Administration Major: International Business and Economics Option (B.S.) (p. 299)
- Business Administration Major: Management Option (B.S.) (p. 299)
- Business Administration Major: Marketing Option (B.S.) (p. 300)
- Business Administration Major: Student Designed Option (B.S.) (p. 301)
- Business Administration Minor (p. 302)

Faculty

<https://paulcollege.unh.edu/directory/all>

Business Administration Major (B.S.)

<https://paulcollege.unh.edu/business-administration/program/bs/business-administration-major>

Description

A Bachelor of Science in business administration will help you build the skills, knowledge and experience to land a job and thrive in today's evolving economy. Graduates are in demand in a variety of industries including accounting, finance, information systems and business analytics, management and marketing. Whether you aspire to work for a high-powered firm, start-up or non-profit or launch your own business, a business administration degree opens the doors to many career opportunities.

At Paul College, students in the business administration major take foundation courses in their freshman and sophomore years that cover the fundamental theories, principles, concepts and skill sets in key areas of business, while building upon their social, analytical, competitive and professional intelligence. These foundation courses prepare you to move into a variety of fields and companies. You also must declare an option within your major during the second semester of your sophomore year that provides deeper expertise in a specific business area to propel you on your career path. Many students choose more than one! Options within the major include: accounting, entrepreneurial studies, finance, information systems and business analytics, international business and economics, management, marketing, and student designed.

Requirements

The following courses are major-required courses. Students take 16-18 credits per semester. Discovery Program requirements (including the Inquiry requirement in the first two years) and elective courses are taken as well. Students are expected to follow this course plan. In the first three semesters, students cannot take more than two major courses in a single semester. The options have additional requirements as noted in those program descriptions. For a detailed schedule/plan of study for each option, students should check with the Paul College Undergraduate Programs and Advising Office for specific recommendations.

A typical plan of study follows, showing the major-required courses. Students take 16-18 credits per semester. Discovery Program requirements (including the Inquiry requirement in the first two years) and elective courses are taken as well. Students are expected to follow this course plan. In the first three semesters, students cannot take more than two major courses in a single semester. The options have additional

requirements as noted. For a detailed schedule/plan of study for each option, students should check with the Paul College Undergraduate Programs and Advising Office for specific recommendations.

Code	Title	Credits
Business Administration core requirements		
ADMN courses:		
ADMN 400	Introduction to Business	4
ADMN 403	Computing Essentials for Business	1
ADMN 410	Management Information Systems	4
ADMN 420	Business Statistics	4
ADMN 502	Financial Accounting	4
ADMN 503	Managerial Accounting	4
ADMN 570	Introduction to Financial Management	4
ADMN 575	Behavior in Organizations	4
ADMN 580	Quantitative Decision Making	4
ADMN 585	Marketing	4
ADMN 703	Strategic Management: Decision Making ¹	4
Other subject code courses:		
ECON 401	Principles of Economics (Macro)	4
ECON 402	Principles of Economics (Micro)	4
MATH 422	Mathematics for Business Applications	4
	or MATH 424A Calculus for Social Sciences	
PHIL 431	Business Ethics	4
PAUL 405	Freshman Academic Experience I	1
PAUL 406	Freshman Academic Experience II	1
PAUL 660	BiP-Social Intelligence Topics ²	2
PAUL 670	BiP-Analytical Intelligence Topics ²	2
PAUL 680	BiP-Competitive Intelligence Topics ²	2
PAUL 690	BiP-Professional Intelligence Topics ²	2

¹ This is the capstone course in the business administration program, and satisfies the capstone requirement of the Discovery Program. Students may be required to concurrently enroll in ADMN 700 PAUL Assessment of Core Knowledge (zero credits) for AACSB accreditation purposes.

² Students may satisfy PAUL 660, PAUL 670, PAUL 680, PAUL 690 requirements through other courses/experiences with approved intelligence attributes assigned.

Depending of the choice of option and the specific requirements thereof, students may be able to take PAUL or non-PAUL electives in their junior or senior year.

Business Administration Major: Accounting Option (B.S.)

<https://paulcollege.unh.edu/business-administration/program/bs/business-administration-major-accounting-option>

Description

The Option in Accounting prepares students for careers in accounting and the qualifications to obtain certifications, such as certified public accountant (CPA), certified management accountant (CMA), and certified internal auditor (CIA). Accounting is called "the first language" of

business for good reason: the fate of many products and marketing campaigns hinges on the financial officer's final analysis. For this reason, successful accounting professionals often assume leadership roles within their companies.

Further, this option provides students with opportunities in a variety of fields, including internal audit, external audit, tax preparation and planning, and consulting. Demand for accountants is consistently strong. Students may also take advantage of the four-one (5 year) program to earn a M.S. in accounting at Paul College. Obtaining a master's degree aids in preparation and eligibility for the CPA exam and is recommended for future career progression.

Requirements

A typical plan of study follows, showing the major-required courses. Students take 16-18 credits per semester. Discovery Program requirements (including the Inquiry requirement in the first two years) and elective courses are taken as well. Students are expected to follow this course plan. In the first three semesters, students cannot take more than two major courses in a single semester. The options have additional requirements as noted. For a detailed schedule/plan of study for each option, students should check with the Paul College Undergraduate Programs and Advising Office for specific recommendations.

Code	Title	Credits
Business Administration core requirements		
ADMN courses:		
ADMN 400	Introduction to Business	4
ADMN 403	Computing Essentials for Business	1
ADMN 410	Management Information Systems	4
ADMN 420	Business Statistics	4
ADMN 502	Financial Accounting	4
ADMN 503	Managerial Accounting	4
ADMN 570	Introduction to Financial Management	4
ADMN 575	Behavior in Organizations	4
ADMN 580	Quantitative Decision Making	4
ADMN 585	Marketing	4
ADMN 703	Strategic Management: Decision Making ¹	4
Other subject code courses:		
ECON 401	Principles of Economics (Macro)	4
ECON 402	Principles of Economics (Micro)	4
MATH 422	Mathematics for Business Applications	4
	or MATH 424A Calculus for Social Sciences	
PHIL 431	Business Ethics	4
PAUL 405	Freshman Academic Experience I	1
PAUL 406	Freshman Academic Experience II	1
PAUL 660	BiP-Social Intelligence Topics ²	2
PAUL 670	BiP-Analytical Intelligence Topics ²	2
PAUL 680	BiP-Competitive Intelligence Topics ²	2
PAUL 690	BiP-Professional Intelligence Topics ²	2

¹ This is the capstone course in the business administration program, and satisfies the capstone requirement of the Discovery Program. Students may be required to concurrently enroll in ADMN 700 PAUL Assessment of Core Knowledge (zero credits) for AACSB accreditation purposes.

² Students may satisfy PAUL 660, PAUL 670, PAUL 680, PAUL 690 requirements through other courses/experiences with approved intelligence attributes assigned.

Depending of the choice of option and the specific requirements thereof, students may be able to take PAUL or non-PAUL electives in their junior or senior year.

Option in Accounting

Code	Title	Credits
Required courses:		
ACFI 621	Intermediate Financial Accounting I	4
ACFI 622	Intermediate Financial Accounting II	4
ACFI 723	Advanced Managerial Accounting Concepts and Applications	4
ACFI 724	Auditing	4
ACFI 726	Introduction to Federal Income Tax	4
MGT 647	Business Law I	4
Select one of the following:		
ACFI 725	Financial Statement Analysis	4
ACFI 740	Topics in Accounting II	4
ACFI 752	Independent Studies in Accounting	4
ACFI 799	Honors Thesis/Project in Accounting	4
Total Credits		28

Business Administration Major: Entrepreneurial Studies Option (B.S.)

<https://paulcollege.unh.edu/business-administration/program/bs/business-administration-major-entrepreneurial-studies-option>

Description

The **Option in Entrepreneurial Studies** is designed for students interested in entrepreneurship and creativity and who seek to learn about starting high growth business, working for a new venture, investing in start-ups or becoming involved in a new venture creation within an established organization. The ES option fosters an entrepreneurial culture throughout the program with a priority on applied learning in the dynamic environment of entrepreneurial ventures. Students apply what they've learned to a senior project and in conducting due diligence for investors. The ES option studies entrepreneurship from the entrepreneurs, employees and the investor's perspective.

Requirements

A typical plan of study follows, showing the major-required courses. Students take 16-18 credits per semester. Discovery Program requirements (including the Inquiry requirement in the first two years) and elective courses are taken as well. Students are expected to follow this course plan. In the first three semesters, students cannot take more than two major courses in a single semester. The options have additional requirements as noted. For a detailed schedule/plan of study for each option, students should check with the Paul College Undergraduate Programs and Advising Office for specific recommendations.

Code	Title	Credits
Business Administration core requirements		
ADMN courses:		
ADMN 400	Introduction to Business	4
ADMN 403	Computing Essentials for Business	1
ADMN 410	Management Information Systems	4
ADMN 420	Business Statistics	4
ADMN 502	Financial Accounting	4
ADMN 503	Managerial Accounting	4
ADMN 570	Introduction to Financial Management	4
ADMN 575	Behavior in Organizations	4
ADMN 580	Quantitative Decision Making	4
ADMN 585	Marketing	4
ADMN 703	Strategic Management: Decision Making ¹	4
Other subject code courses:		
ECON 401	Principles of Economics (Macro)	4
ECON 402	Principles of Economics (Micro)	4
MATH 422	Mathematics for Business Applications	4
	or MATH 424A Calculus for Social Sciences	
PHIL 431	Business Ethics	4
PAUL 405	Freshman Academic Experience I	1
PAUL 406	Freshman Academic Experience II	1
PAUL 660	BiP-Social Intelligence Topics ²	2
PAUL 670	BiP-Analytical Intelligence Topics ²	2
PAUL 680	BiP-Competitive Intelligence Topics ²	2
PAUL 690	BiP-Professional Intelligence Topics ²	2

¹ This is the capstone course in the business administration program, and satisfies the capstone requirement of the Discovery Program. Students may be required to concurrently enroll in ADMN 700 PAUL Assessment of Core Knowledge (zero credits) for AACSB accreditation purposes.

² Students may satisfy PAUL 660, PAUL 670, PAUL 680, PAUL 690 requirements through other courses/experiences with approved intelligence attributes assigned.

Depending of the choice of option and the specific requirements thereof, students may be able to take PAUL or non-PAUL electives in their junior or senior year.

Option in Entrepreneurial Studies

Code	Title	Credits
Required		
MKTG 763	Marketing Analytics	4
	or MKTG 764 New Product Development	
DS 741	Private Equity/Venture Capital	4
DS/MGT 742	Internship in Entrepreneurial and Management Practice	4
MGT 732	Exploration in Entrepreneurial Management	4
Total Credits		16

Business Administration Major: Finance Option (B.S.)

<https://paulcollege.unh.edu/business-administration/program/bs/business-administration-major-finance-option>

Description

The **Option in Finance** provides students with the knowledge and analytical skills necessary to make informed financial decisions for themselves and their organizations. Business students interested in numbers, quantitative analysis, problem solving, utilizing creativity, and practical applications will appreciate this option. Opportunities exist in a variety of fields, including commercial and investment banking, insurance, corporate finance, money management, venture capital, risk management, and real estate.

The job outlook for finance students is strong, and starting and mid-career salaries are typically among the highest of all majors at a university. Many premier jobs in business, such as hedge fund manager, investment banker, and CFO, are in finance.

The goal of the finance option is to provide students with general exposure to the field while allowing them to specialize in one of three tracks: analytics and quantitative finance, financial analyst, and real estate. Tracks are not required; please inquire with the finance option coordinator for details.

Requirements

A typical plan of study follows, showing the major-required courses. Students take 16-18 credits per semester. Discovery Program requirements (including the Inquiry requirement in the first two years) and elective courses are taken as well. Students are expected to follow this course plan. In the first three semesters, students cannot take more than two major courses in a single semester. The options have additional requirements as noted. For a detailed schedule/plan of study for each option, students should check with the Paul College Undergraduate Programs and Advising Office for specific recommendations.

Code	Title	Credits
Business Administration core requirements		
ADMN courses:		
ADMN 400	Introduction to Business	4
ADMN 403	Computing Essentials for Business	1
ADMN 410	Management Information Systems	4
ADMN 420	Business Statistics	4
ADMN 502	Financial Accounting	4
ADMN 503	Managerial Accounting	4
ADMN 570	Introduction to Financial Management	4
ADMN 575	Behavior in Organizations	4
ADMN 580	Quantitative Decision Making	4
ADMN 585	Marketing	4
ADMN 703	Strategic Management: Decision Making ¹	4
Other subject code courses:		
ECON 401	Principles of Economics (Macro)	4
ECON 402	Principles of Economics (Micro)	4

MATH 422	Mathematics for Business Applications	4
	or MATH 424A Calculus for Social Sciences	
PHIL 431	Business Ethics	4
PAUL 405	Freshman Academic Experience I	1
PAUL 406	Freshman Academic Experience II	1
PAUL 660	BiP-Social Intelligence Topics ²	2
PAUL 670	BiP-Analytical Intelligence Topics ²	2
PAUL 680	BiP-Competitive Intelligence Topics ²	2
PAUL 690	BiP-Professional Intelligence Topics ²	2

¹ This is the capstone course in the business administration program, and satisfies the capstone requirement of the Discovery Program. Students may be required to concurrently enroll in ADMN 700 PAUL Assessment of Core Knowledge (zero credits) for AACSB accreditation purposes.

² Students may satisfy PAUL 660, PAUL 670, PAUL 680, PAUL 690 requirements through other courses/experiences with approved intelligence attributes assigned.

Depending of the choice of option and the specific requirements thereof, students may be able to take PAUL or non-PAUL electives in their junior or senior year.

Option in Finance

Code	Title	Credits
Required		
ACFI 701	Financial Policy	4
ACFI 702	Investments Analysis	4
Select two of the following:		8
ACFI 703	International Financial Management	
ACFI 704	Derivative Securities and Markets	
ACFI 705	Financial Institutions	
ACFI 706	Financial Modeling and Analytics	
ACFI 707	Equity Analysis and Firm Valuation	
ACFI 708	Real Estate Finance	
ACFI 709	Mortgage Banking and Fixed Income Securities	
ACFI 720	Topics in Finance II (Big Data in Finance) ²	
ACFI 720	Topics in Finance II (Hedge Fund Analytics) ²	
ACFI 720	Topics in Finance II (Investment Banking) ²	
ACFI 720W	Topics in Finance II (Financial Scandals, Upheavals, and Crises (Writing Intensive)) ²	
Total Credits		16

² ACFI 720 and ACFI 720W are ACFI topics course numbers; please make ensure that ACFI topics courses match course titles listed.

Business Administration Major: Information Systems and Business Analytics Option (B.S.)

<https://paulcollege.unh.edu/business-administration/program/bs/business-administration-major-information-systems-business>

Description

The Option in Information Systems and Business Analytics will appeal to students who wish to learn how to take advantage of contemporary technologies to solve complex business problems. Pivotal contributors to the success of any venture, Information Systems and Business Analysts must be able to understand and communicate both the business needs as well as the technical details of solutions. The option prepares students for a career in a wide range of industries by helping them master the fundamentals of information systems, as well as the ability to implement solutions or provide leading-edge, analytics-based solutions to real business problems. Students work on real-world industry projects and apply concepts and problem-solving skills learned in the classroom.

All students in the option develop functional knowledge and skills in information systems and business analytics. Beyond the required courses in the option, students choose between an emphasis in Information Systems or an emphasis in Business Analytics. The ISBA option can be completed as a single or dual options. In either case, the graduate will have tangible knowledge and skills. Regardless of one's interest area or degree, employers look for people that can help them solve problems immediately. The ISBA option prepares students to do just that, and continue learning as technology and business continue to change.

Requirements

A typical plan of study follows, showing the major-required courses. Students take 16-18 credits per semester. Discovery Program requirements (including the Inquiry requirement in the first two years) and elective courses are taken as well. Students are expected to follow this course plan. In the first three semesters, students cannot take more than two major courses in a single semester. The options have additional requirements as noted. For a detailed schedule/plan of study for each option, students should check with the Paul College Undergraduate Programs and Advising Office for specific recommendations.

Code	Title	Credits
Business Administration core requirements		
ADMN courses:		
ADMN 400	Introduction to Business	4
ADMN 403	Computing Essentials for Business	1
ADMN 410	Management Information Systems	4
ADMN 420	Business Statistics	4
ADMN 502	Financial Accounting	4
ADMN 503	Managerial Accounting	4
ADMN 570	Introduction to Financial Management	4
ADMN 575	Behavior in Organizations	4
ADMN 580	Quantitative Decision Making	4
ADMN 585	Marketing	4
ADMN 703	Strategic Management: Decision Making ¹	4
Other subject code courses:		
ECON 401	Principles of Economics (Macro)	4
ECON 402	Principles of Economics (Micro)	4
MATH 422	Mathematics for Business Applications	4
	or MATH 424A Calculus for Social Sciences	
PHIL 431	Business Ethics	4

PAUL 405	Freshman Academic Experience I	1
PAUL 406	Freshman Academic Experience II	1
PAUL 660	BiP-Social Intelligence Topics ²	2
PAUL 670	BiP-Analytical Intelligence Topics ²	2
PAUL 680	BiP-Competitive Intelligence Topics ²	2
PAUL 690	BiP-Professional Intelligence Topics ²	2

¹ This is the capstone course in the business administration program, and satisfies the capstone requirement of the Discovery Program. Students may be required to concurrently enroll in ADMN 700 PAUL Assessment of Core Knowledge (zero credits) for AACSB accreditation purposes.

² Students may satisfy PAUL 660, PAUL 670, PAUL 680, PAUL 690 requirements through other courses/experiences with approved intelligence attributes assigned.

Depending on the choice of option and the specific requirements thereof, students may be able to take PAUL or non-PAUL electives in their junior or senior year.

Option in Information Systems and Business Analytics

Code	Title	Credits
Required		
DS 773	Database Management and Systems Analysis	4
DS 775	Corporate Project Experience	4
Select three courses from an emphasis:		12
Information Systems Emphasis		
Business Analytics Emphasis		
Total Credits		20

Information Systems Emphasis

Code	Title	Credits
Required courses:		
DS 562	Business Applications Development	4
or CS 405	Introduction to Applications Programming	
DS 774	E-Business	4
Select one of the following:		4
DS 766	Business Analytics and Spreadsheet Modeling	
DS 768	Forecasting Analytics	
DS 798	Topics (with approval)	
Other approved course		
Total Credits		12

Business Analytics Emphasis

Code	Title	Credits
Required courses:		
DS 766	Business Analytics and Spreadsheet Modeling	4
DS 768	Forecasting Analytics	4
Select one of the following:		4
DS 562	Business Applications Development	
DS 774	E-Business	
DS 798	Topics (with approval)	

Other approved course	
Total Credits	12

Business Administration Major: International Business and Economics Option (B.S.)

<https://paulcollege.unh.edu/business-administration/program/bs/business-administration-major-international-business-economics>

Description

The **Option in International Business and Economics** offers an interdisciplinary course of study, providing strong business training for students pursuing careers at organizations with an international focus, particularly in multinational corporations, international banks, and government agencies. It achieves this by combining general business training with in-depth knowledge in economics, finance, and management. Students are strongly encouraged to round out their education with either an internship at an international organization or by studying abroad for one semester.

Requirements

A typical plan of study follows, showing the major-required courses. Students take 16-18 credits per semester. Discovery Program requirements (including the Inquiry requirement in the first two years) and elective courses are taken as well. Students are expected to follow this course plan. In the first three semesters, students cannot take more than two major courses in a single semester. The options have additional requirements as noted. For a detailed schedule/plan of study for each option, students should check with the Paul College Undergraduate Programs and Advising Office for specific recommendations.

Code	Title	Credits
Business Administration core requirements		
ADMN courses:		
ADMN 400	Introduction to Business	4
ADMN 403	Computing Essentials for Business	1
ADMN 410	Management Information Systems	4
ADMN 420	Business Statistics	4
ADMN 502	Financial Accounting	4
ADMN 503	Managerial Accounting	4
ADMN 570	Introduction to Financial Management	4
ADMN 575	Behavior in Organizations	4
ADMN 580	Quantitative Decision Making	4
ADMN 585	Marketing	4
ADMN 703	Strategic Management: Decision Making ¹	4
Other subject code courses:		
ECON 401	Principles of Economics (Macro)	4
ECON 402	Principles of Economics (Micro)	4
MATH 422	Mathematics for Business Applications	4
	or MATH 424A Calculus for Social Sciences	
PHIL 431	Business Ethics	4
PAUL 405	Freshman Academic Experience I	1

PAUL 406	Freshman Academic Experience II	1
PAUL 660	BiP-Social Intelligence Topics ²	2
PAUL 670	BiP-Analytical Intelligence Topics ²	2
PAUL 680	BiP-Competitive Intelligence Topics ²	2
PAUL 690	BiP-Professional Intelligence Topics ²	2

¹ This is the capstone course in the business administration program, and satisfies the capstone requirement of the Discovery Program. Students may be required to concurrently enroll in ADMN 700 PAUL Assessment of Core Knowledge (zero credits) for AACSB accreditation purposes.

² Students may satisfy PAUL 660, PAUL 670, PAUL 680, PAUL 690 requirements through other courses/experiences with approved intelligence attributes assigned.

Depending on the choice of option and the specific requirements thereof, students may be able to take PAUL or non-PAUL electives in their junior or senior year.

Option in International Business and Economics

Code	Title	Credits
Required courses:		
ECON 645	International Economics	4
Select three of the following: ¹		12
ACFI 703	International Financial Management	
MGT 755	International Management	
MKTG 760	International Marketing	
ECON 611	Intermediate Macroeconomic Analysis	
ECON 746	International Finance	
A pre-approved course in International Business		
Select one of the following:		4
One of the remaining courses from list above		
4-credit graded internship at an international organization		
One-semester study abroad experience that involves at least one approved international business or economics course and that results in at least 12 academic credits being transferred back to UNH		
ACFI 704	Derivative Securities and Markets	
ECON 655	Innovation in the Global Economy	
ECON 668	Economic Development	
ECON #747	Multinational Enterprises	
Total Credits		20

¹ Students should consult with their academic adviser and/or the faculty option coordinator in their selection of these courses according to their interests.

Business Administration Major: Management Option (B.S.)

<https://paulcollege.unh.edu/business-administration/program/bs/business-administration-major-management-option>

Description

The Option in Management provides students with opportunities to develop a substantial foundation in the principles of managing the human, organizational, technical, and financial resources of organizations to enhance strategic competitiveness. Courses emphasize critical thinking, problem-solving, planning, interpersonal skills related to ethical leadership in the global economy, managing innovation and technology, organizational change and sustainability, and international and cross-cultural issues in organizations.

The option emphasizes the generalist's mindset in concert with a specialist's functional understanding of the firm. This is an excellent option for students who see themselves as "big picture" people. Future career paths include an array of management, supervisory, entrepreneurial, human resources, and other positions in for-profit and non-profit organizations. The option is also recommended for students considering graduate education in management or law.

Requirements

A typical plan of study follows, showing the major-required courses. Students take 16-18 credits per semester. Discovery Program requirements (including the Inquiry requirement in the first two years) and elective courses are taken as well. Students are expected to follow this course plan. In the first three semesters, students cannot take more than two major courses in a single semester. The options have additional requirements as noted. For a detailed schedule/plan of study for each option, students should check with the Paul College Undergraduate Programs and Advising Office for specific recommendations.

Code	Title	Credits
Business Administration core requirements		
ADMN courses:		
ADMN 400	Introduction to Business	4
ADMN 403	Computing Essentials for Business	1
ADMN 410	Management Information Systems	4
ADMN 420	Business Statistics	4
ADMN 502	Financial Accounting	4
ADMN 503	Managerial Accounting	4
ADMN 570	Introduction to Financial Management	4
ADMN 575	Behavior in Organizations	4
ADMN 580	Quantitative Decision Making	4
ADMN 585	Marketing	4
ADMN 703	Strategic Management: Decision Making ¹	4
Other subject code courses:		
ECON 401	Principles of Economics (Macro)	4
ECON 402	Principles of Economics (Micro)	4
MATH 422	Mathematics for Business Applications	4
	or MATH 424A Calculus for Social Sciences	
PHIL 431	Business Ethics	4
PAUL 405	Freshman Academic Experience I	1
PAUL 406	Freshman Academic Experience II	1
PAUL 660	BiP-Social Intelligence Topics ²	2
PAUL 670	BiP-Analytical Intelligence Topics ²	2

PAUL 680	BiP-Competitive Intelligence Topics ²	2
PAUL 690	BiP-Professional Intelligence Topics ²	2

- ¹ This is the capstone course in the business administration program, and satisfies the capstone requirement of the Discovery Program. Students may be required to concurrently enroll in ADMN 700 PAUL Assessment of Core Knowledge (zero credits) for AACSB accreditation purposes.
- ² Students may satisfy PAUL 660, PAUL 670, PAUL 680, PAUL 690 requirements through other courses/experiences with approved intelligence attributes assigned.

Depending on the choice of option and the specific requirements thereof, students may be able to take PAUL or non-PAUL electives in their junior or senior year.

Option in Management

Code	Title	Credits
Required courses:		
MGT 614	Organizational Leadership and Structure	4
MGT 701	Business, Government, and Society	4
Select two of the following: ¹		8
MGT 647	Business Law I ²	
MGT 713	Leadership Assessment and Development	
MGT 732	Exploration in Entrepreneurial Management	
MGT 755	International Management	
MGT 798	Topics ³	
INCO 505I	Semester in the City Internship ⁴	
Total Credits		16

- ¹ Current offerings may change from year to year.
- ² MGT option students can count at most one Business Law course toward the MGT option.
- ³ Topics will change from year to year.
- ⁴ INCO 505I may be applied as 4 credits (1 elective course) towards the Management Option.

Business Administration Major: Marketing Option (B.S.)

<https://paulcollege.unh.edu/business-administration/program/bs/business-administration-major-marketing-option>

Description

The Option in Marketing focuses on how to develop, establish, and maintain products and services of high value for customers as well as how to deliver and communicate them, from both digital and traditional perspectives. The option addresses key linkages critical to effective customer and brand management, from understanding customer needs and problems to delivering appropriate solutions and services. It further examines decision choices facing managers concerning market selection, entry timing, positional advantage to be pursued, targeting, and executional approaches. The option emphasizes digital marketing and analytics across its courses.

Requirements

A typical plan of study follows, showing the major-required courses. Students take 16-18 credits per semester. Discovery Program requirements (including the Inquiry requirement in the first two years) and elective courses are taken as well. Students are expected to follow this course plan. In the first three semesters, students cannot take more than two major courses in a single semester. The options have additional requirements as noted. For a detailed schedule/plan of study for each option, students should check with the Paul College Undergraduate Programs and Advising Office for specific recommendations.

Code	Title	Credits
Business Administration core requirements		
ADMN courses:		
ADMN 400	Introduction to Business	4
ADMN 403	Computing Essentials for Business	1
ADMN 410	Management Information Systems	4
ADMN 420	Business Statistics	4
ADMN 502	Financial Accounting	4
ADMN 503	Managerial Accounting	4
ADMN 570	Introduction to Financial Management	4
ADMN 575	Behavior in Organizations	4
ADMN 580	Quantitative Decision Making	4
ADMN 585	Marketing	4
ADMN 703	Strategic Management: Decision Making ¹	4
Other subject code courses:		
ECON 401	Principles of Economics (Macro)	4
ECON 402	Principles of Economics (Micro)	4
MATH 422	Mathematics for Business Applications	4
	or MATH 424A Calculus for Social Sciences	
PHIL 431	Business Ethics	4
PAUL 405	Freshman Academic Experience I	1
PAUL 406	Freshman Academic Experience II	1
PAUL 660	BiP-Social Intelligence Topics ²	2
PAUL 670	BiP-Analytical Intelligence Topics ²	2
PAUL 680	BiP-Competitive Intelligence Topics ²	2
PAUL 690	BiP-Professional Intelligence Topics ²	2

¹ This is the capstone course in the business administration program, and satisfies the capstone requirement of the Discovery Program. Students may be required to concurrently enroll in ADMN 700 PAUL Assessment of Core Knowledge (zero credits) for AACSB accreditation purposes.

² Students may satisfy PAUL 660, PAUL 670, PAUL 680, PAUL 690 requirements through other courses/experiences with approved intelligence attributes assigned.

Depending on the choice of option and the specific requirements thereof, students may be able to take PAUL or non-PAUL electives in their junior or senior year.

Option in Marketing

Code	Title	Credits
Required courses:		
MKTG 752	Marketing Research	4
MKTG 753	Consumer/Buyer Behavior	4
MKTG 762	Marketing Workshop	4
MKTG 763	Marketing Analytics	4
Select two of the following courses:		
MKTG 750	Marketing Strategy	8
MKTG 759	The Business of Sales	
MKTG 757	Integrated Marketing Communication	
MKTG 760	International Marketing	
MKTG 764	New Product Development	
MKTG 765	Applications in Digital Marketing	
MKTG 798	Topics ¹	
Total Credits		24

¹ Offerings will vary from semester to semester.

For additional courses, students are encouraged to meet with department faculty or with the Academic Advising Office for help in choosing a career track and additional courses.

Business Administration Major: Student Designed Option (B.S.)

<https://paulcollege.unh.edu/business-administration/program/bs/business-administration-major-student-designed-option>

Description

A **Student-Designed Option in Business Administration** is available for those students whose interests are not fully satisfied by any of the other currently available options in business administration. Students desiring a self-designed option must submit the application to the faculty coordinator. After approval by the Faculty Coordinator*, the proposal must receive approval from the Undergraduate Programs Office in Paul College.

Students considering this option should begin to plan for it no later than the second semester of their Sophomore year. The formal application deadline is October 15 of a student's Junior year; students must have a cumulative grade point average of at least 3.0. The written proposal must contain an introduction to the option, the specific rationale for pursuing this program of study (including academic and career interests, and why none of the existing options are appropriate), and the specific program of study proposed (courses and schedule). The proposal will also include a current copy of the student's UNH transcript.

A Student-Designed Option in Business Administration shall consist of at least five Paul College courses, at least three of which shall be from the Business Administration departments (currently Accounting & Finance, Decision Sciences, Management, and Marketing).

*The Faculty Coordinator is Dr. Carole K. Barnett (carole.barnett@unh.edu), 862-3307, Office: 360L.

Requirements

Student-Designed Option

A typical plan of study follows, showing the major-required courses. Students take 16-18 credits per semester. Discovery Program requirements (including the Inquiry requirement in the first two years) and elective courses are taken as well. Students are expected to follow this course plan. In the first three semesters, students cannot take more than two major courses in a single semester. The options have additional requirements as noted. For a detailed schedule/plan of study for each option, students should check with the Paul College Undergraduate Programs and Advising Office for specific recommendations.

Code	Title	Credits
Business Administration core requirements		
ADMN courses:		
ADMN 400	Introduction to Business	4
ADMN 403	Computing Essentials for Business	1
ADMN 410	Management Information Systems	4
ADMN 420	Business Statistics	4
ADMN 502	Financial Accounting	4
ADMN 503	Managerial Accounting	4
ADMN 570	Introduction to Financial Management	4
ADMN 575	Behavior in Organizations	4
ADMN 580	Quantitative Decision Making	4
ADMN 585	Marketing	4
ADMN 703	Strategic Management: Decision Making ¹	4
Other subject code courses:		
ECON 401	Principles of Economics (Macro)	4
ECON 402	Principles of Economics (Micro)	4
MATH 422	Mathematics for Business Applications	4
	or MATH 424A Calculus for Social Sciences	
PHIL 431	Business Ethics	4
PAUL 405	Freshman Academic Experience I	1
PAUL 406	Freshman Academic Experience II	1
PAUL 660	BiP-Social Intelligence Topics ²	2
PAUL 670	BiP-Analytical Intelligence Topics ²	2
PAUL 680	BiP-Competitive Intelligence Topics ²	2
PAUL 690	BiP-Professional Intelligence Topics ²	2

¹ This is the capstone course in the business administration program, and satisfies the capstone requirement of the Discovery Program. Students may be required to concurrently enroll in ADMN 700 PAUL Assessment of Core Knowledge (zero credits) for AACSB accreditation purposes.

² Students may satisfy PAUL 660, PAUL 670, PAUL 680, PAUL 690 requirements through other courses/experiences with approved intelligence attributes assigned.

Depending of the choice of option and the specific requirements thereof, students may be able to take PAUL or non-PAUL electives in their junior or senior year.

Code	Title	Credits
Student Designed Option Requirements		

At least three (3) courses from ACFI, DS, MGT, or MKTG departments that meet approval	12
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At least two (2) other Paul College courses that meet approval	8
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Business Administration Minor

<https://paulcollege.unh.edu/business-administration/program/minor/business-administration>

Description

The **Minor in Business Administration** offers students majoring in other disciplines the opportunity to develop a well-rounded business background. Students complete coursework in core business areas such as accounting, marketing, management, as well as economics. The minor enables students to enter their selected industries with skills and experience that distinguish them as professionals.

Requirements

Business Administration Minor

Code	Title	Credits
Required courses:		
ECON 402	Principles of Economics (Micro)	4
ACFI 501	Survey of Accounting	4
	or ADMN 502 Financial Accounting	
MKTG 550	Survey of Marketing	4
MGT 580	Introduction to Organizational Behavior	4
One elective from the following courses:		
ACFI 640	Topics in Finance I	
ADMN 420	Business Statistics	
ADMN 503	Managerial Accounting	
DS 598	Topics in Decision Sciences	
ECON 401	Principles of Economics (Macro)	
ECON 625	Economic History of the United States	
ECON 698	Topics	
MGT 598	Topics	
MKTG 557	Promotion and Advertising	
MKTG 559	Foundations of Personal Selling	
MKTG 598	Topics in Marketing	
PAUL 450	Personal Finance	

*Other courses may be approved by petition

Please note:

- The courses may be taken in any order; you are responsible for checking pre-requisites for elective courses
- Capacity in most courses may be limited
- ACFI 501, MKTG 550, and MGT 580 are for Business Administration minor only; they do not carry credit toward Paul College majors
- The Business Administration minors must also follow UNH's policy on minors
- Following University policy, you must complete 20 semester hours with a grade of C- or better and a 2.0 grade point average.

- Courses taken on a Pass/Fail basis may not be used for the minor.
- No more than 8 credits used by the student to satisfy major requirements may be used for the minor.
- No transfer courses may be used toward the minor.

Ecogastronomy (ECOG)

The Peter T. Paul College of Business and Economics and the College of Life Sciences and Agriculture offer undergraduate students the opportunity to pursue a dual major in EcoGastronomy. The dual major requires completion of the EcoGastronomy program and any other major.

The EcoGastronomy program prepares students for professions within our rapidly evolving food community—from farm to fork to nutrition and health outcomes—where ever-greater integration of agriculture, food, and nutrition requires a broad perspective and a specific blend of skills and knowledge. The dual major in EcoGastronomy is international by providing a context for studying "gastronomy" in Ascoli-Piceno, Italy.

International Experience

All students who declare the dual major in EcoGastronomy spend a full semester abroad, most likely during their junior year. Students will study in Ascoli Piceno, Italy, (fall semester) or at the Burgundy School of Business in Dijon, France (spring semester).

Dual majors will complete a series of upper-level core courses such as history of cuisine and gastronomy, history of food, aesthetics, food law, food technology processes, cross-cultural comparisons, and language.

Portfolio

Students will be required to submit a portfolio annually to the director, and a cumulative portfolio to the instructor of their capstone course for final assessment.

The courses in the dual major program are multidisciplinary, taught by faculty from different departments in the University. They are designed to integrate UNH strengths in sustainable agriculture, hospitality management, and nutrition to offer a unique academic program emphasizing the interdisciplinary, international, and experiential knowledge that connects all three fields. The program is experiential by requiring students to work in the field growing food, in the kitchen preparing food, and developing the skills associated with both. They will also experience the local food cultures and get firsthand experience on the issues of food security locally, regionally, and globally.

Students who wish to declare a dual major in EcoGastronomy must have a cumulative grade-point average of 2.5; have declared, or be prepared to declare, a disciplinary major; and complete the Introduction to EcoGastronomy course (ECOG 401 Introduction to Ecogastronomy) with a grade of C or better.

ECOG 401 Introduction to Ecogastronomy is prerequisite for study abroad, ECOG 685 EcoGastronomy Study Abroad. All required classes and the elective are a pre/corequisite for the senior EcoGastronomy capstone course, ECOG 701 EcoGastronomy Capstone. Exceptions are possible with a late declaration of the dual major. All foreign experiences must be pre-approved by the EcoGastronomy director.

The completion of the dual major requires no additional credits for graduation beyond the 128 required of all UNH students. All coursework required for EcoGastronomy must be completed with a grade C or better.

For information, contact the dual major in EcoGastronomy, PCBE 370Z, (603) 862-3327, ecog.info@unh.edu.

<https://www.unh.edu/ecogastronomy/>

Programs

- Ecogastronomy Dual Major (p. 303)

Faculty

<https://www.unh.edu/ecogastronomy/faculty>

Ecogastronomy Dual Major

<https://www.unh.edu/ecogastronomy/curriculum>

Description

The Dual Major in EcoGastronomy integrates UNH strengths in sustainable agriculture, hospitality management, and nutrition. EcoGastronomy offers a unique academic program emphasizing the interdisciplinary, international, and experiential knowledge that connects all three fields.

The EcoGastronomy Dual Major is a collaboration with the University of New Hampshire's College of Life Sciences and Agriculture, Peter T. Paul College of Business and Economics, and the Sustainability Institute.

Requirements

EcoGastronomy Dual Major

Code	Title	Credits
Required Courses:		
ECOG 401	Introduction to Ecogastronomy	4
SAFS 405	Sustainable Agriculture and Food Production	4
HMG 403	Introduction to Food Management	4
NUTR 400	Nutrition in Health and Well Being	4
ECOG 685	EcoGastronomy Study Abroad	20
ECOG 701	EcoGastronomy Capstone ¹	2-4
Select one elective from the following courses:		
ANSC 602	Animal Rights and Societal Issues	
ANSC 694	Summer Cooperative for Real Education in Agricultural Management	
ANSC 698	Cooperative for Real Education in Agricultural Management (CREAM)	
EREC 680	Agricultural and Food Policy	
HIST 618	American Environmental History	
HMG 771	International Wine and Beverage	
HMG 570	International Food and Culture	
MGT 732	Exploration in Entrepreneurial Management	
NR 602	Natural Resources and Environmental Policy	
NR 620	Farm to Table: A Case Study in the Northern Beauce Region of France	
NR 701	Ecological Sustainability and Values	

NR 720	International Environmental Politics and Policies for the 21st Century	
NR 784	Sustainable Living - Global Perspectives	
NR 785	Systems Thinking for Sustainable Solutions	
NR 797	Special Topics	
NUTR 720	Community Nutrition	
NUTR 730	From Seed to Sea: Examining Sustainable Food Systems	
SAFS 679	Food Production Field Experience I	
SOC 665	Environmental Sociology	
TOUR #705	Ecotourism: Managing for the Environment	
ZOOL 610 & ZOOL #611	Principles of Aquaculture and Principles of Aquaculture Lab	
ZOOL 772	Fisheries Biology	
Total Credits		42-44

¹ Satisfies the capstone requirement of the Discovery Program for the EcoGastronomy major.

Economics (ECON)

Economics is the study of how societies organize themselves to produce goods and services and to distribute those products among the members of society. In the modern world, a combination of market forces, public policies, and social customs perform these basic economic tasks. Economists use concepts, models, and data to analyze efficiency of resource use, fairness of economic outcomes, and development of global and national economies. The economics programs are designed to introduce students to the tools of economic analysis and to show students how they can use those tools to analyze and better understand real-world situations.

Undergraduate training in economics is an excellent background for a variety of careers, including banking and financial services, journalism, international business, public service, the diplomatic corps, entrepreneurial ventures, and government administration. An undergraduate major in economics is also excellent preparation for those interested in graduate work in law, business administration, and international relations.

The department offers the choice of a B.A. degree in economics or a B.S. degree in analytical economics. The B.A. degree is designed to offer students maximum flexibility in designing a program of study. Students are encouraged to take a wide variety of courses, double major, and take advantage of study abroad programs. The B.S. degree differs from the B.A. degree in that it requires more quantitative and data analysis courses but does not require a foreign language. It provides more structure and direction than the B.A. degree and is more professionally focused. Please see Economics programs for further information.

Courses in economics are open to nonmajors on a space-available basis. An economics minor is also available, as students majoring in other programs have found that certain economics courses are useful supplements to their own majors and a help in gaining employment.

Students earning either the B.A. or the B.S. degree in economics may not use any of the following to satisfy Discovery Program requirements:

Code	Title	Credits
ECON 401	Principles of Economics (Macro)	4
ECON 402	Principles of Economics (Micro)	4
EREC 411	Environmental and Resource Economics Perspectives	4
ECON 411	Introduction to Macroeconomic Principles	4
ECON 412	Introduction to Microeconomic Principles	4

<https://paulcollege.unh.edu/economics>

Programs

- Analytical Economics Major (B.S.) (p. 304)
- Economics Major (B.A.) (p. 305)
- Economics Major: Global Trade and Finance Option (B.A.) (p. 305)
- Economics Major: Money and Financial Markets Option (B.A.) (p. 306)
- Economics Major: Public Policy and Sustainability Option (B.A.) (p. 307)
- Economics Minor (p. 308)

Faculty

<https://paulcollege.unh.edu/directory/all>

Analytical Economics Major (B.S.)

<https://paulcollege.unh.edu/economics/program/bs/analytical-economics-major>

Description

B.S. in Analytical Economics emphasizes the predictive and prescriptive modeling skills that are in high demand in today's labor market. Prescriptive modeling is quantitative and strategic decision analysis geared toward corporate decisions. Predictive modeling emphasizes data analysis skills used to develop the information needed to make these decisions.

B.S. analytical economics majors must complete ten courses in economics with a grade of at least a C- (1.67) in each Paul College major course and an average grade of 2.3 or better in the major courses. In addition, majors must complete MATH 424A and ADMN 403, ADMN 410, ADMN 420, and an ethics course (PHIL 431 or equivalent). ECON 775 is the capstone course for the B.S. major and satisfies the capstone requirement of the University Discovery Program.

Requirements

B.S. analytical economics majors must complete ten courses in economics with a grade of at least C- (1.67) in each course and an average grade of 2.3 or better in Paul College major courses.

B.S. in Analytical Economics degree requirements:

Code	Title	Credits
ECON 401	Principles of Economics (Macro)	4
ECON 402	Principles of Economics (Micro)	4

ADMN 403	Computing Essentials for Business	1
PAUL 405	Freshman Academic Experience I	1
PAUL 406	Freshman Academic Experience II	1
MATH 424A	Calculus for Social Sciences	4
ADMN 410	Management Information Systems	4
ADMN 420	Business Statistics	4
PHIL 431	Business Ethics	4
ECON 565	Predictive Modeling: Data Driven Economic Analysis	4
ECON 606	Intermediate Microeconomics with Calculus ¹	4
ECON 611	Intermediate Macroeconomic Analysis ¹	4
ECON 726	Introduction to Econometrics	4
ECON 727	Advanced Econometrics ²	4
ECON 775	Applied Research Skills for Economists ³	4
At least two (2) Economics electives		8
Total Credits		59

¹ Major credit toward ECON 606 Intermediate Microeconomics with Calculus and/or ECON 611 Intermediate Macroeconomic Analysis will be awarded to transfer students only if equivalent courses have been taken at the junior level or above. Transfer students must take at least five of their economics courses at UNH. All economics-related courses taken at other institutions must be approved by the economics department in order for them to count toward the major.

² Or other Department approved quantitative course

³ ECON 775 Applied Research Skills for Economists is the capstone course for the B.S. major and satisfies the capstone requirement of the University Discovery Program.

Students may petition to substitute one business administration course for an economics elective if the course is at the 600 level or above and if a grade of C- or better is earned. Students may earn no more than 16 credits in internships, independent studies, field experience, and supervised student teaching experience. All Analytical Economics majors must satisfy the bachelor of science degree requirements, and all Discovery Program requirements. Students satisfy the Inquiry requirement of the Discovery Program before the end of their sophomore year by completing an Inquiry or Inquiry-attribute course within the Paul College, or another course offered by another college at the University.

Economics Major (B.A.)

<https://paulcollege.unh.edu/economics/program/ba/economics-major>

Description

Bachelor of Arts in Economics is designed to offer students the maximum flexibility in tailoring a program of study and provides a powerful platform for launching careers in almost all walks of life. Students are encouraged to take a wide variety of courses, double major, and take advantage of study abroad programs.

B.A. economics majors may select to focus their major electives to satisfy the requirements of one of the three options defined by the Department of Economics: Money and Financial Markets, Global Trade and Finance, or Public Policy and Sustainability.

B.A. economics majors must complete nine (9) courses in economics, plus PAUL 405/406, ADMN 403, ADMN 410, a math course (MATH 422, MATH 424A, or equivalent), and an ethics course (PHIL 431 or equivalent). Coursework in accounting is recommended but not required.

Requirements

Economics Major (B.A.)

B.A. economics majors must complete nine courses in economics plus ADMN 420 Business Statistics with a grade of at least C- (1.67) in each Paul College major course and an average grade of 2.0 or better in major courses.

Code	Title	Credits
Freshman Year		
ECON 401	Principles of Economics (Macro)	4
ECON 402	Principles of Economics (Micro)	4
ADMN 403	Computing Essentials for Business	1
PAUL 405	Freshman Academic Experience I	1
PAUL 406	Freshman Academic Experience II	1
MATH 422	Mathematics for Business Applications	4
or MATH 424A Calculus for Social Sciences		
PHIL 431	Business Ethics	4
Sophomore Year		
ADMN 420	Business Statistics	4
ECON 605	Intermediate Microeconomic Analysis	4
or ECON 606 Intermediate Microeconomics with Calculus		
ECON 611	Intermediate Macroeconomic Analysis	4
Junior and Senior Years		
ECON 774	Senior Economics Seminar ¹	4
Select four (4) additional ECON electives ²		16
Total Credits		51

¹ ECON 774 Senior Economics Seminar is the capstone course for the B.A. major and satisfies the capstone requirement of the University Discovery Program.

² Specific electives for the BA Options must be chosen from an approved list of courses.

Coursework in accounting is recommended but not required. B.A. economics majors may choose to focus their major electives to satisfy the requirements of one of the three options defined by the Department of Economics.

Economics Major: Global Trade and Finance Option (B.A.)

<https://paulcollege.unh.edu/economics/program/ba/economics-major-global-trade-finance-option>

Description

The Option in Global Trade and Finance (B.A. degree) studies the global trade and financial systems and their importance for understanding macroeconomics and business activity, foreign direct investments and other international capital flows, globalization, economic growth and

development, international financial markets, and currency fluctuations and risk.

Students will learn about the role of the World Trade Organization (WTO), the International Monetary Fund (IMF), and other institutions undergirding the global economy. Students will develop institutional knowledge and analytical skills to study some of the most hotly debated issues of our day, including free-trade policies such as the North American Free Trade Agreement (NAFTA) and WTO, global financial crises, Basel III and other financial reforms, European monetary union, and international policy coordination.

The option is designed for students interested in careers at international organizations such as the IMF, WTO, World Bank, and Organization for Economic Cooperation and Development (OECD). This option also prepares students for careers in the financial services sector, including commercial and investment banking, financial trading, security analysis, portfolio management, and financial advising, and in the government sector, especially at the Federal Reserve System, U.S. Trade Administration, and U.S. State Department.

Requirements

Economics Major (B.A.)

B.A. economics majors must complete nine courses in economics plus ADMN 420 Business Statistics with a grade of at least C- (1.67) in each Paul College major course and an average grade of 2.0 or better in major courses.

Code	Title	Credits
Freshman Year		
ECON 401	Principles of Economics (Macro)	4
ECON 402	Principles of Economics (Micro)	4
ADMN 403	Computing Essentials for Business	1
PAUL 405	Freshman Academic Experience I	1
PAUL 406	Freshman Academic Experience II	1
MATH 422	Mathematics for Business Applications	4
	or MATH 424A Calculus for Social Sciences	
PHIL 431	Business Ethics	4
Sophomore Year		
ADMN 420	Business Statistics	4
ECON 605	Intermediate Microeconomic Analysis	4
	or ECON 606 Intermediate Microeconomics with Calculus	
ECON 611	Intermediate Macroeconomic Analysis	4
Junior and Senior Years		
ECON 774	Senior Economics Seminar ¹	4
	Select four (4) additional ECON electives ²	16
Total Credits		51

¹ ECON 774 Senior Economics Seminar is the capstone course for the B.A. major and satisfies the capstone requirement of the University Discovery Program.

² Specific electives for the BA Options must be chosen from an approved list of courses.

Coursework in accounting is recommended but not required. B.A. economics majors may choose to focus their major electives to satisfy

the requirements of one of the three options defined by the Department of Economics.

Global Trade and Finance Option Requirements

(Note: Some courses may have prerequisites that are not part of the option.)

Code	Title	Credits
Required courses:		
ECON 645	International Economics	4
Select two of the following (at least one course must be an ECON course):		8
ECON 635	Money and Banking	
ECON 655	Innovation in the Global Economy	
ECON 668	Economic Development	
ECON 726	Introduction to Econometrics	
ECON 746	International Finance	
ECON #747	Multinational Enterprises	
ACFI 703	International Financial Management ¹	
POLT 546	Wealth and Politics in Asia ¹	
POLT 561	Introduction to International Political Economy ¹	
GEOG 582	Global Trade and Local Development ¹	
Other 600-level or 700-level course, must be approved by ECON department		
Total Credits		12

¹ Satisfies the requirement of the option, but does not count toward the four-elective requirement of the economics B.A. degree.

Economics Major: Money and Financial Markets Option (B.A.)

<https://paulcollege.unh.edu/economics/program/ba/economics-major-money-financial-markets-option>

Description

The Option in Money and Financial Markets (B.A. degree) explores the complex and interdependent nature of money and financial markets. Students will develop institutional knowledge and analytical skills to understand the role of the financial system in society, fluctuations and risk in asset markets, including those for bonds, stocks, and currency, and how financial derivatives, such as futures, options, and swaps contracts, can be used to hedge risk. Students will also study the conduct and implications of monetary policy, exploring the merits of quantitative easing, macroprudential policy aimed at reducing systemic risk, and other key issues involving the role of the state in the financial system.

The option is designed for students wanting careers in the financial services sector, including commercial and investment banking, financial trading, security analysis, portfolio management, and financial advising, and in the government sector, especially at the Federal Reserve System, Securities and Exchange Commission (SEC), and the U.S. departments of Treasury, Commerce, and State.

Requirements

Economics Major (B.A.)

B.A. economics majors must complete nine courses in economics plus ADMN 420 Business Statistics with a grade of at least C- (1.67) in each Paul College major course and an average grade of 2.0 or better in major courses.

Code	Title	Credits
Freshman Year		
ECON 401	Principles of Economics (Macro)	4
ECON 402	Principles of Economics (Micro)	4
ADMN 403	Computing Essentials for Business	1
PAUL 405	Freshman Academic Experience I	1
PAUL 406	Freshman Academic Experience II	1
MATH 422	Mathematics for Business Applications	4
	or MATH 424A Calculus for Social Sciences	
PHIL 431	Business Ethics	4
Sophomore Year		
ADMN 420	Business Statistics	4
ECON 605	Intermediate Microeconomic Analysis	4
	or ECON 606 Intermediate Microeconomics with Calculus	
ECON 611	Intermediate Macroeconomic Analysis	4
Junior and Senior Years		
ECON 774	Senior Economics Seminar ¹	4
	Select four (4) additional ECON electives ²	16
Total Credits		51

¹ ECON 774 Senior Economics Seminar is the capstone course for the B.A. major and satisfies the capstone requirement of the University Discovery Program.

² Specific electives for the BA Options must be chosen from an approved list of courses.

Coursework in accounting is recommended but not required. B.A. economics majors may choose to focus their major electives to satisfy the requirements of one of the three options defined by the Department of Economics.

Money and Financial Markets Option Requirements

(Note: Some courses may have prerequisites that are not part of the option.)

Code	Title	Credits
Required courses:		
ECON 635	Money and Banking	4
Select two of the following (at least one course must be an ECON course):		8
ECON 633	Microfinance	
ECON 645	International Economics	
ECON 726	Introduction to Econometrics	
ECON 746	International Finance	

ACFI 702	Investments Analysis (ADMN 570 pre-req, by permission only) ¹	
ACFI 703	International Financial Management (ADMN 570 pre-req, by permission only) ¹	
ACFI 705	Financial Institutions (ADMN 570 pre-req, by permission only) ¹	
Other 600-level or 700-level course, must be approved by ECON Dept.		
Total Credits		12

¹ Satisfies the requirement of the option, but does not count toward the four-elective requirement of the economics B.A. degree.

Economics Major: Public Policy and Sustainability Option (B.A.)

<https://paulcollege.unh.edu/economics/program/ba/economics-major-public-policy-sustainability-option>

Description

The Option in Public Policy and Sustainability (B.A. degree) examines the factors that influence economic, social, and environmental outcomes, such as unemployment, poverty, economic inequality, health disparities, technological innovation, and pollution. Students will develop the institutional knowledge and theoretical perspective to understand the impact that decisions of individuals, firms, communities, and governments have on such outcomes. Students will analyze the impact of specific government policies and potential reforms, theoretically and empirically.

This option is designed for students seeking careers in policy analysis and research positions at government agencies; think tanks such as RAND Corporation, Urban Institute, and Mathematica Policy Research; consulting firms such as Abt Associates; and non-governmental organizations.

Requirements

Economics Major (B.A.)

B.A. economics majors must complete nine courses in economics plus ADMN 420 Business Statistics with a grade of at least C- (1.67) in each Paul College major course and an average grade of 2.0 or better in major courses.

Code	Title	Credits
Freshman Year		
ECON 401	Principles of Economics (Macro)	4
ECON 402	Principles of Economics (Micro)	4
ADMN 403	Computing Essentials for Business	1
PAUL 405	Freshman Academic Experience I	1
PAUL 406	Freshman Academic Experience II	1
MATH 422	Mathematics for Business Applications	4
	or MATH 424A Calculus for Social Sciences	
PHIL 431	Business Ethics	4
Sophomore Year		
ADMN 420	Business Statistics	4

ECON 605	Intermediate Microeconomic Analysis	4
or ECON 606	Intermediate Microeconomics with Calculus	
ECON 611	Intermediate Macroeconomic Analysis	4
Junior and Senior Years		
ECON 774	Senior Economics Seminar ¹	4
Select four (4) additional ECON electives ²		16
Total Credits		51

¹ ECON 774 Senior Economics Seminar is the capstone course for the B.A. major and satisfies the capstone requirement of the University Discovery Program.

² Specific electives for the BA Options must be chosen from an approved list of courses.

Coursework in accounting is recommended but not required. B.A. economics majors may choose to focus their major electives to satisfy the requirements of one of the three options defined by the Department of Economics.

Public Policy and Sustainability Option Requirements

Students must complete at least two required courses and at least three courses total. At least two courses must be ECON courses. (Note: Some courses may have prerequisites that are not part of the option.)

Code	Title	Credits
Required courses:		
ECON 653	Law and Economics	4
or ECON 656	Labor Economics	
ECON 706	Economics of Climate Change	4
or EREC 572	Introduction to Natural Resource Economics	
Select one of the following:		4
ECON 625	Economic History of the United States	
ECON 633	Microfinance	
ECON 653	Law and Economics ²	
ECON 654	Industrial Economics and Business Innovation	
ECON 656	Labor Economics ²	
ECON 668	Economic Development	
ECON #669	Women and Economic Development	
ECON 706	Economics of Climate Change ²	
EREC 572	Introduction to Natural Resource Economics ^{1,2}	
EREC 606	Land Economics Perspectives: Uses, Policies, and Taxes ¹	
EREC 627	Community Economics ¹	
EREC 680	Agricultural and Food Policy ¹	
EREC 708	Environmental Economics ¹	
EREC 760	Ecological-Economic Modeling for Decision Making ¹	
GEOG 582	Global Trade and Local Development ¹	
HMP 746	Health Policy ¹	
HMP #748	Health Policy Analysis ¹	
SUST 501	Sustainability Perspectives and Methods ¹	
Other 600-level or 700-level course, with approval from ECON Dept.		
Total Credits		12

¹ Satisfies the requirement of the option, but does not count toward the four-elective requirement of the economics B.A. degree.

² Course may not be used toward the option requirements more than once.

Economics Minor

<https://paulcollege.unh.edu/economics/program/minor/economics>

Description

Economics is a social science that studies how people coordinate their wants and desires, given the decision-making mechanisms, social customs, and political realities of the society. The key words in economics are coordination and incentives.

For business students, a minor in economics provides an understanding of the foundational issues in business such as agency concerns, for liberal arts majors a minor can provide a tool kit for understanding and critically evaluating public policy issues. Economics is an excellent background for many careers including banking and financial services, consulting, public service, NGOs, entrepreneurial ventures and government. It is also excellent preparation for further study in law, business, and international relations.

Requirements

A minor in economics consisting of five courses is available. At least three of these courses must be taken at UNH. For more on the minor and options within the major, consult the Paul College Undergraduate Programs Office.

Code	Title	Credits
Required courses:		
ECON 401	Principles of Economics (Macro)	4
ECON 402	Principles of Economics (Micro)	4
One of the following courses:		4
ECON 605	Intermediate Microeconomic Analysis	
ECON 611	Intermediate Macroeconomic Analysis	
ECON 635	Money and Banking	
Two electives from the following list:		8
ECON 565	Predictive Modeling: Data Driven Economic Analysis	
ECON 605	Intermediate Microeconomic Analysis *	
ECON 611	Intermediate Macroeconomic Analysis *	
ECON 633	Microfinance	
ECON 635	Money and Banking *	
ECON 645	International Economics	
ECON 651	Governmental Regulation of Business	
ECON 653	Law and Economics	
ECON 654	Industrial Economics and Business Innovation	
ECON 698	Topics	
ECON 655	Innovation in the Global Economy	
ECON 656	Labor Economics	
ECON 668	Economic Development	
ECON #669	Women and Economic Development	

ECON 676	Economics of Sports
ECON 706	Economics of Climate Change
ECON 726	Introduction to Econometrics
ECON 746	International Finance
ECON #747	Multinational Enterprises
Any 600 or 700 level ECON course, with the exception of ECON 642:Health Economics	

*ECON 605, 611, 635, may only be applied towards the minor requirements once

- Note that many of the elective courses have ECON 401 and ECON 402 as prerequisites.
- ECON 501: Business and Economic History cannot be used toward the minor
- All transfer courses must be evaluated for equivalency. No more than 2 transfer courses may be applied to the minor
- The ECON minor also follows UNH policy on requirements for minors

Entrepreneurship

- Entrepreneurship Minor (p. 309)

Entrepreneurship Minor

<https://paulcollege.unh.edu/business-administration/program/minor/entrepreneurship>

Description

The **Minor in Entrepreneurship** in the Peter T. Paul College of Business and Economics is for non-business majors. The minor provides non-business students with concepts, tools and techniques to become creative thinkers, conceptualize and articulate problem statements, construct innovative solutions, and explore and seek opportunities. The focus of the minor is not about creating startups, although this may be an ancillary outcome, rather on entrepreneurial thinking that make the students engage in successful careers in their respective disciplines.

The minor consists of three required courses offered by Paul and two courses from a selective list offered by the other UNH Colleges. The three Paul courses are designed to follow a proscribed sequence that take the student through the entrepreneurial process.

Requirements

Entrepreneurship Minor

Code	Title	Credits
Required Entrepreneurship sequence courses:		
MGT 598	Topics (Thinking like an Entrepreneur)	
MKTG 598	Topics in Marketing (Understanding Your Customer)	
DS 598	Topics in Decision Sciences (Realizing the Entrepreneurial Dream)	

Two courses from UNH Colleges (possible selections):

ARTS #699	Museum Studies
HIST 522	Science in the Modern World
HMP 721	Managing Health Care Organizations

HMP 722	Health Care Management II
RMP 775	Entrepreneurial and Commercial Recreation
TECH 750	Intellectual Asset Management for Engineers and Scientists

*For other course options, please see your Academic Advisor or contact the Undergraduate Programs and Advising Office

Please note:

- The remaining two courses can be from Paul College or the student's home college, depending on suitability and availability of the courses as well as a student's interest to specialize in a specific area within the Minor, and subject to approval – please contact Undergraduate Programs and Advising Office.
- Some of the listed courses are “special topics” (or equivalent). Please make sure that the course has the same title (not simply the same number) as the listed course in order for it to count for the minor.
- The Entrepreneurship Minor also follows UNH policy for minors

Hospitality Management (HMGT)

The program in hospitality management is an integral part of the offerings of the Peter T. Paul College. It is one of only a few programs worldwide accredited by the Association to Advance Collegiate Schools of Business (AACSB). The hospitality management program at UNH provides a world-class education, personal attention and support, and real-world and international experience, setting students apart from the competition and ensuring they are well prepared for a successful and meaningful career.

The hospitality management program develops graduates to be senior executives 15 to 20 years from graduation. This is accomplished through personal attention and support, a balanced foundation where students design one-third of their curriculum, training on cutting-edge industry-specific software and technology, career development, mentoring and placement, and the network connection of seasoned alumni in top industry positions. Graduates have accepted management positions in lodging and resorts, food service beverage, event planning and design, software companies, tourism, travel and recreation, among the many potential opportunities.

An important aspect of the program is the required professional development, which includes practical work experiences, career development, mentoring, and placement, preparing students to be more competitive in the job market and for a successful and rewarding career. Employers look for individuals with relevant industry experience, and this is provided through the required 800 hours of an approved work experience, including a 400-hour professional internship.

The hospitality management program offers a wide range of international education options to study abroad. We have partnered with business schools in countries such as Spain, Australia, Croatia, United Kingdom, and Italy.

<https://paulcollege.unh.edu/hospitality-management>

Programs

- Hospitality Management Major (B.S.) (p. 310)
- Hospitality Management Minor (p. 311)

Faculty

<https://paulcollege.unh.edu/directory/all>

Hospitality Management Major (B.S.)

<https://paulcollege.unh.edu/hospitality-management/program/bs/hospitality-management-major>

Description

Hospitality Management is more than an area of study; it's a way of life. At the second-oldest four-year degree program in the country you will study and work using state-of-the art technology and facilities, receiving relevant industry certifications.

The hospitality management program curriculum comprises foundation courses in hospitality management, business administration courses, and a number of University Discovery Program courses. A wide range of elective courses complement the foundation courses. To graduate, students must obtain a 2.3 grade-point average in all major required courses and a minimum grade of C- in each Paul College major course. A student must have a minimum of 800-hours of on-the-job, paid work experience in the hospitality industry; 400 hours must be earned through a structured paid internship. Students may earn up to 6 total credits in internships, independent studies, field experience, and supervised student teaching experiences.

CAREER SPECIALIZATIONS

Students can use their electives to enhance their marketability through carefully designed specializations. Students interested in a specialization should notify the faculty coordinator, or Donna Stickney at donna.stickney@unh.edu, by completing a Specialization Registration and Evaluation Form.

Specializations do not appear on diplomas or transcripts, but students who complete a specialization will receive a certificate from the Hospitality Management Program and can enhance their resume. Specialization requirements are below.

- **Food and Beverage Management**

The Food and Beverage Management specialization will provide students with the necessary competencies to pursue careers in restaurants, hotel and resorts, etc.

- **Lodging and Resort Management**

The lodging and resort management specialization will provide students with the necessary competencies to pursue careers in lodging, casinos, resorts, clubs, cruise lines, etc.

- **Event Management**

The event management specialization will provide students with the necessary competencies to pursue careers in Meeting Planning Management, Convention Sale and Service Management, Meetings and Conventions, etc.

- **Marketing and Sales Management**

The marketing and sales specialization will provide students with the necessary competencies to pursue careers in hospitality market research, sales management, services marketing, etc.

- **Real Estate Finance and Management**

The real estate specialization will provide the foundation skills and necessary competencies to pursue careers in hospitality asset management.

Requirements

A typical plan of study is as follows, showing the requirements of the program. Students complete 16-18 credits per semester, which includes major requirements, electives for the major, Discovery Program requirements, and free electives offered across the college and university.

Code	Title	Credits
Required courses (outside of HMGT):		
ADMN 403	Computing Essentials for Business	1
PAUL 405	Freshman Academic Experience I	1
PAUL 406	Freshman Academic Experience II	1
ADMN 420	Business Statistics	4
MATH 422	Mathematics for Business Applications	4
PHIL 431	Business Ethics	4
ADMN 502	Financial Accounting	4
ECON 401	Principles of Economics (Macro)	4
ECON 402	Principles of Economics (Micro)	4
HMGT required courses:		
HMGT 401	Introduction to the Hospitality Industry	4
HMGT 404	Professional Development I	1
HMGT 405	Introduction to Food and Service Management	4
HMGT 504	Professional Development II	2
HMGT 554	Lodging Operations Management	4
HMGT 600	Hospitality Marketing Management	4
HMGT 604	Professional Development III	2
HMGT 618	Uniform Systems for the Hospitality Industry	4
HMGT 625	Hospitality and Employment Law	4
HMGT 635	Hospitality Human Resource Management	4
HMGT 655	Hospitality Finance and Development	4
HMGT 661	Event Design, Planning, and Management	4
HMGT 667	Adv Food/Bev Operations Mgt	4
HMGT 703	Strategic Management in the Hospitality Industry	4
HMGT 758	Revenue Management and Pricing	4
Three Hospitality Management Electives		12

Note: In addition to the foundation courses above, three elective courses in hospitality management are required for completion of the hospitality management curriculum. Using HMGT and free electives, students may opt to pursue one of the following **HMGT specializations**:

- Food and Beverage Management (faculty coordinator Professor Daniel Remar, Daniel.Remar@unh.edu)
- Lodging and Resort Management (faculty coordinator Professor Anupama Sukhu, Anupama.Sukhu@unh.edu)
- Event Management (faculty coordinator Professor Carl Lindblade, Carl.Lindblade@unh.edu)
- Marketing and Sales Management (faculty coordinator Professor Daniel Innis, dan.innis@unh.edu)
- Real Estate Finance and Management (faculty coordinator Professor E. Hachemi Aliouche Hachemi.Aliouche@unh.edu)

Hospitality Management Minor

<https://paulcollege.unh.edu/hospitality-management/program/minor/hospitality-management>

Description

Hospitality Management Minor is offered as a professional educational opportunity for students as an entree to the world's largest industry, hospitality and tourism. Students pursuing the minor will have opportunities to interview with major hospitality companies for staff and management training positions. In addition, students will be better able to secure meaningful working experiences in the industry during their college career as they progress towards the minor.

The minor is comprised of five required courses. The courses have been selected to ensure all students have a well-rounded learning experience that will strengthen their ability to succeed.

Requirements

Hospitality Management Minor

A minor in hospitality management comprises five courses.

Code	Title	Credits
HMG 401	Introduction to the Hospitality Industry	4
HMG 405	Introduction to Food and Service Management	4
HMG 554	Lodging Operations Management	4
HMG 635	Hospitality Human Resource Management	4
ADMN 502 or ACFI 501	Financial Accounting Survey of Accounting	4
Total Credits		20

Please note:

- Capacity in most of these courses may be limited.
- ACFI 501 is for the minor only; it does not carry credit toward Paul College majors
- The HMG minor also follows UNH policy on minors
- Following University policy, you must complete 20 semester hours with a grade of C- or better and a 2.0 grade point average.
- Courses taken on a Pass/Fail basis may not be used for the minor.
- No more than 8 credits used by the student to satisfy major requirements may be used for the minor.
- No transfer courses may be used toward the minor.

Leadership

- Leadership Minor (p. 311)

Leadership Minor

<https://paulcollege.unh.edu/business-administration/program/minor/leadership>

Description

The Minor in Leadership at Paul College was designed for students motivated by a deep sense of passion and purpose. This program energizes them to mobilize resources which enable people to successfully fulfill their roles and responsibilities in their organizations. The Leadership minor course of study will help you to develop your leadership identity and skills such as effective communicating, inspiring and developing people, and awakening everyone's passion for great accomplishments.

The Leadership program combines coursework from management and social sciences, along with an experiential learning requirement in leadership. The minor also allows students to pursue their leadership passions through the selection of two elective courses.

Requirements

The Minor in Leadership consists of specified courses: two(2) required management courses, one(1) behavior/society course, two(2) elective courses, one(1) leadership experience. Requirements and specified course options to satisfy the minor are listed below.

Leadership Minor

Code	Title	Credits
Two Required Management Courses		
Business Administration Majors Only:		
ADMN 575	Behavior in Organizations	
MGT 713	Leadership Assessment and Development	
Non-Business Administration Majors Only:		
MGT 580	Introduction to Organizational Behavior	
MGT 598	Topics (Developing Leaders for the 21st Century)	
One of the following Behavior/Society courses:		
POLT 550	Comparative Government and Society	
PSYC 552	Social Psychology	
SOC 540	Contemporary Social Problems	
WS 505	Survey in Women's Studies (Leadership for Social Change)	
Two electives from the following courses:		
CEP 415	Community Development Perspectives	
CEP 508	Applied Community Development	
CMN 500	Public Speaking	
CMN 598	Special Topics in Interpersonal Studies (Collaborative Leadership)	
CSL 401	Introduction to Community Service and Leadership	
CSL 405	Communication Within Communities	
KIN 550	Outdoor Education Philosophy and Methods	
KIN 551	Adventure Programming: Backcountry Based Experiences	
or KIN 552	Adventure Programming: Water Based Experiences	
KIN 565	Principles of Coaching	
KIN 765	Advanced Topics in Coaching	
KIN 740	Athletic Administration	
KIN 786	Organization and Administration of Outdoor Education Programs	

LLC 535A	Professional Culture in European Union -- Case Study: Germany
LLC 535B	Professional Culture in Latin America - Case Study: Mexico and Brazil
LLC 535C	Professional Culture in Asia -- Case Study: China and Japan
MGT 598	Topics (Negotiations)
MGT 598	Topics (Human Resource Management)
MGT 614	Organizational Leadership and Structure
PHIL 410	Happiness, Well-Being, and a Good Life
PSYC 553	Personality
RMP 661	Recreation and Event Leadership
RMP 663	Recreation and Event Management
RMP #730	Camp Administration and Leadership
SOC 645	Class, Status and Power
WS 405	Gender, Power and Privilege
WS 796	Advanced Topics (Leadership for Social Change II)
Or, additional Behavior/Society Course from above	
Additional courses by petition	
One required Leadership Experience from the following:	
Leadership Camp ¹	
ADMN 598	Topics (Leadership in Practice)
HHS 798	Special Topics (Student Development Peer Educator)
INCO 505B	Social Innovator's Toolbox
INCO 682	Washington Internship
INCO 795	Washington Center Course
Resident Assistant	
JUST 410	Sexual Harassment and Rape Prevention (SHARPP) Peer Advocacy
PAUL 696	Supervised Student Teaching Experience (Peer Advisor)
Alternative leadership experience by petition	

¹ UNH Leadership camp in January or PAUL Leadership Camp during Spring Break

Please note:

- You are responsible for checking pre-requisites for all courses listed
- All transfer courses must be evaluated for equivalency
- No more than 2 transfer courses may be applied to the minor
- Capacity in courses may be limited
- Several of the listed courses are "special topics" (or equivalent). Please make sure that the course has the same title (not simply the same number) as the listed course in order for it to count for the minor.
- The Leadership Minor also follows UNH policy for minors

Sales

- Sales Minor (p. 312)

Sales Minor

Description

Minor in Sales – The modern sales professional helps customers solve business problems through active listening, insightful questions, deep empathy, domain competency, and the understanding and communicating of value. The Sales Minor will prepare you to start your career journey into sales by teaching you to sell yourself first and giving you the skills and experience to succeed in your first role. More college graduates will go into sales than any other profession. Why not be prepared and differentiate yourself for the best opportunities by earning a sales minor and developing skills that are transferrable to any profession.

Requirements

The **Minor in Sales** is open to both Paul College and Non-Paul College students. Please reference the required courses depending on college. The minor consists of three required courses (marketing, sales level-one, sales level-two), two elective courses, and one sales experience. Please contact the Paul College Undergraduate Advising and Programs Office for an up-to-date list of approved elective courses or sales experiences.

Non-Paul Students – Sales Minor Requirements

Code	Title	Credits
Required Courses:		
MKTG 550	Survey of Marketing	4
MKTG 559	Foundations of Personal Selling	4
PAUL 698	Paul Topics (Advanced Sales)	4
Two Electives from approved list (below)		
One Sales Experience: ¹		
MKTG 598	Topics in Marketing (Topics/Professional Sales Group) ¹	4

Or qualifying sales internship

Paul Student – Sales Minor Requirements

Code	Title	Credits
Required Courses:		
ADMN 585	Marketing	4
or HMG 600	Hospitality Marketing Management	
MKTG 759	The Business of Sales	4
PAUL 698	Paul Topics (Advanced Sales)	4
Two Elective Courses from approved list (below)		
One Sales Experience: ¹		
MKTG 598	Topics in Marketing (Professional Sales Group) ¹	4
or PAUL 795	Internship	

¹ **Sales Experience** (1 required):
MKTG 598 Topics in Marketing minimum of two semesters of the 2-credit course. Or, PAUL 795 Internship (with approval) for credit or not.

Please note:

- You are responsible for checking pre-requisites for all courses listed
- All transfer courses must be evaluated for equivalency
- No more than 2 transfer courses may be applied to the minor
- Capacity in courses may be limited
- Some of the listed courses are "special topics" (or equivalent). Please make sure that the course has the same title (not simply the same number) as the listed course in order for it to count for the minor.
- The Sales Minor also follows UNH policy for minors

Sales Minor – Approved Elective List

Code	Title	Credits
College of Engineering & Physical Sciences		
CS 408	Living in a Networked World: The Good, the Bad, and the Ugly	
CS 501	Professional Ethics and Communication in Technology-related Fields	
IT 403	Introduction to Internet Technologies	
IT 705	Project Management for Information Technology	
TECH 750	Intellectual Asset Management for Engineers and Scientists	
College of Liberal Arts		
ANTH #508	Anthropology of Internet	
ANTH 680		
CMN 500	Public Speaking	
CMN 504	Introduction to Argumentation	
CMN 572	Analysis of Language and Social Interaction	
CMN 588	Analyzing Institutional Interaction	
CMN 666	Conversation Analysis	
CMN 742	Dialogue and Teamwork	
CMN 788	Opening Everyday Interaction	
ENGL 415B	Literature and Business	
ENGL 415E	Literature and Cyberculture	
ENGL 502	Professional and Technical Writing	
ENGL 503	Persuasive Writing	
ENGL 602	Advanced Professional and Technical Writing	
ENGL 712	Multimedia Storytelling	
PHIL 412	Beginning Logic	
PHIL 440	Just Business: The Ethics of Markets and Money	
PHIL 444A	Who Am I? Concepts of Self	
POLT 500	American Public Policy	
POLT 760	Theories of International Relations	
POLT 778	International Organization	
PSYC 513	Cognitive Psychology	
PSYC 552	Social Psychology	
PSYC 553	Personality	
SOC #685	Work and Occupations	
THDA 442	Introduction to the Art of Acting	
THDA 522	Storytelling, Story Theatre, and Involvement Dramatics	
THDA 541	Art and Theatre Administration	
College of Life Sciences		
CEP 672	Fundamentals of Real Estate	
EREC 627	Community Economics	

TOUR 510	Tourism and Global Understanding
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College of Health and Human Services

KIN 444A	Risk and the Human Experience
KIN 560	Sport Psychology
KIN 565	Principles of Coaching
KIN 630	Sport Facility and Event Management
KIN 643	Social Media Marketing in Sport
KIN 743	Sport Marketing
HMP 735	Social Marketing
HMP 740	Health Care Financial Management
HMP 741	Health Care Financial Management II
RMP 559	Program and Event Marketing
RMP 560	Recreational Sport Management
RMP 661	Recreation and Event Leadership
RMP 663	Recreation and Event Management
RMP 680	Festival and Event Planning
RMP 775	Entrepreneurial and Commercial Recreation

Paul College of Business and Economics

ADMN 575	Behavior in Organizations
or MGT 580	Introduction to Organizational Behavior
ECON 605	Intermediate Microeconomic Analysis
HMGY 662	Convention Sales and Service Management
HMGY 758	Revenue Management and Pricing

Military Science

MILT 601	Leading Small Organizations I
MILT 602	Leading Small Organizations II

Additional Course Petitions are subject to review/approval by Sales Minor Coordinator

Tourism Management

- Tourism Management Minor (p. 313)

Tourism Management Minor

Description

"Tourism" is the world's largest and most diverse industry. Tourism is a composite of activities, services, and industries delivering travel experiences through transportation, accommodations, eating and drinking establishments, shops, entertainment, activity facilities (parks, sports, and amusement parks), historic sites, natural resources, among others.

The faculty of Recreation Management and Policy [RMP], Hospitality Management [HMGY], and Natural Resources and the Environment [NRE] Tourism [Tour] have bundled a number of courses for non-majors which, when combined with certain elective courses, can constitute a Minor in Tourism Management. Each of the courses offered for this minor are already offered in each of the three departments. These programs represent the three Colleges of College of Health and Human Services, Peter T. Paul College of Business and Economics, and the College of Life Science and Agriculture.

Questions about the minor may be directed to:

Recreation Management and Policy – Dr. Bob Barcelona,
 Bob.Barcelona@unh.edu (<http://Bob.Barcelona@unh.edu>)
 Tourism Management – Dr. Rob Robertson, Rob.Robertson@unh.edu
 (<http://Rob.Robertson@unh.edu>)
 Hospitality Management – Dr. Nelson A. Barber, nelson.barber@unh.edu
 (<http://nelson.barber@unh.edu>)

Approval of the Minor for Graduation, verification and sign-off must be coordinated with Dr. Rob Robertson.

Requirements

Complete 5 courses, 20 semester hours with a grade of C- or better and a 2.0 grade point average.

Courses taken on a Pass/Fail basis may not be used toward the minor.

No more than 8 credits used by the student to satisfy major requirements may be used for the minor.

No transfer courses may be used toward the minor.

Code	Title	Credits
HMGT 401	Introduction to the Hospitality Industry	4
RMP 490	Recreation and Leisure in Society	4
TOUR 400	Introduction to Tourism	4
Elective		4
Elective		4
Total Credits		20

Special University Programs

- Fellowship Office (p. 315)
- Global Student Success Program (p. 315)
- Hamel Center for Undergraduate Research (p. 315)
- Honors Program (p. 316)
- Pre-law Advising (p. 316)
- Pre-Professional Health Advising (p. 317)
- Reserve Officer Training Corps Programs (ROTC) (p. 317)
- Study Abroad Programs (p. 318)
- Study Away U.S.A. (p. 325)
- Sustainability (p. 326)

Fellowship Office

The UNH Office of National Fellowships provides information, counseling, and editorial support to highly motivated and high-achieving students applying for national and international fellowships and scholarships. The office also assists faculty members who serve as mentors and recommenders, and arranges for members of the faculty to take part in interviews and serve on screening committees.

In recruiting, advising, and supporting students who excel in various areas, the office collaborates campus-wide with other offices and departments of the University, including the Office of Multicultural Student Affairs, the McNair program, the Honors Program, the Global Education Center, and the Hamel Center for Undergraduate Research, in support of the University's Academic Plan.

The services of the Fellowships Office are available to undergraduates, graduate students, and alumni of the University. The Office of National Fellowships holds membership in the National Association of Fellowships Advisors. For more information, please contact Jeanne Sokolowski, director, Office of National Fellowships Office, Conant 118A; (603) 862-0733; e-mail: Jeanne.Sokolowski@unh.edu.

Global Student Success Program

The Undergraduate Global Student Success Program (GSSP) is equivalent to the first year of a bachelor's degree program. The GSSP provides international students with an academic and cultural bridge from their high school experience to studying at the University of New Hampshire. No SAT or ACT scores are needed to apply.

Students who complete the GSSP earn a minimum of 28 credits, and upon successful completion of the program, will move directly into the second year of their undergraduate degree program at the University of New Hampshire.

Undergraduate GSSP course offerings include Business and Economics, Engineering and Physical Sciences and Liberal Arts. Students have to obtain a 3.0 GPA in Business and Economics and Engineering, and a 2.5 GPA in Liberal Arts to progress onto Year 2 of the bachelors program.

Interested international students can view admission criteria and apply online at unhgssp.com (<http://unhgssp.com>)

Should you have any further questions, please contact the UNH GSSP staff directly: admissions@unhgssp.com.

Hamel Center for Undergraduate Research

www.unh.edu/undergrad-research/ (<http://www.unh.edu/undergrad-research/>)

The **Hamel Center for Undergraduate Research** encourages students to design and carry out research, scholarly, or creative projects in collaboration with faculty mentors. To facilitate this, the Hamel Center offers a variety of competitive research grants and fellowships specifically for undergraduate students. Research may take place during the academic year, January term, or over the summer, with a wide range of programs available to suit each student's particular needs:

- Research Experience and Apprenticeship Program (REAP) (<https://www.unh.edu/undergrad-research/research-experience-and-apprenticeship-program-reap>) grants offer Honors students the opportunity to apprentice with a UNH faculty mentor for ten weeks of full-time research in the summer after their first year.
- Undergraduate Research Awards (URAs) (<https://www.unh.edu/undergrad-research/undergraduate-research-awards-ura>) are available each semester (including January Term and summer) for students at all levels: freshman through senior year. The research time commitment is flexible.
- Summer Undergraduate Research Fellowships (SURFs) (<https://www.unh.edu/undergrad-research/summer-undergraduate-research-fellowships-surf>) for the U.S. offer support for ten weeks of full-time research in the summer following sophomore or junior year.
- SURF Abroad (<https://www.unh.edu/undergrad-research/summer-undergraduate-research-fellowships-surf>) and the International Research Opportunities Program (IROP) (<https://www.unh.edu/undergrad-research/international-research-opportunities-program-irop>) offer support for rising seniors to conduct nine weeks of full-time summer research abroad.
- Also, by registering for INCO 590 Student Research Experience or INCO 790 Advanced Research Experience, students at any level can work directly with faculty members while receiving academic credit and support for research expenses.

Once projects are completed, student researchers may receive further support from a Research Presentation Grant (<https://www.unh.edu/undergrad-research/research-presentation-grants>) to present their work at a national or international conference. Students may also publish their research findings in UNH's online undergraduate research journal, *Inquiry* (<https://www.unh.edu/inquiryjournal>) and/or present their research at UNH's Undergraduate Research Conference (URC) (<https://www.unh.edu/undergrad-research/under-grad-research-conference>).

Hamel Center research opportunities are available to students across all disciplines.

By conducting research at the undergraduate level, students gain professional skills, hands-on experience, and the opportunity to present and publish their findings in professional venues. Grants from the Hamel Center for Undergraduate Research open doors on real-world disciplinary practice, graduate school, post-baccalaureate fellowships, and professional careers. For information about undergraduate research grants and programs, the *Inquiry* journal, and the URC, contact the Hamel Center for Undergraduate Research at 118 Conant Hall, (603) 862-4323, or visit the website at www.unh.edu/undergrad-research/ (<http://www.unh.edu/undergrad-research/>).

Honors Program

www.unh.edu/honors-program (<http://www.unh.edu/honors-program>)

The University Honors Program (UHP), established by the Academic Senate in 1983, recognizes the achievements and capabilities of outstanding students. The program enriches undergraduate education by offering a personal, intensive approach to learning through small classes of 25 or fewer students and individualized collaborations with faculty.

There are various categories of Honors recognition awarded at graduation. University Honors students complete a four-year curriculum, as described below. Honors in Major graduates complete a two-year curriculum of enriched work in their departments, excluding the Discovery component of the Honors Program. No award is given for completion of Discovery Honors courses alone; either Honors in Major or Interdisciplinary Honors work is required to graduate with University Honors.

Admissions

The Office of Admissions identifies a number of qualified incoming freshmen to be admitted to the honors program. In addition, Freshmen whose grades are in the top 10% of their college classes are invited to join the program in January. Students may also petition to join the program if they have a GPA of at least 3.5. Admission to Honors in Major is determined by each department, but in most cases does not require an invitation or application.

Required courses and experiences

1. Discovery Honors courses (16 credits)
 - a. One course must be an Honors Inquiry Seminar, with the course number 444.
 - b. [For students entering in or after Fall 2016 only] One course must be an Honors Symposium, with the course number 440.
 - c. At most one course may be a "designated Honors course," in which students create their own Honors course in collaboration with a faculty member.
2. Honors in Major OR Interdisciplinary Honors
 - a. Honors in Major requirements differ by major and can be found at <https://www.unh.edu/honors-program/honors-major>.
 - b. Interdisciplinary Honors requires three approved high-impact experiences. See [honors-program/interdisciplinary-honors](https://www.unh.edu/honors-program/interdisciplinary-honors) (<https://www.unh.edu/honors-program/interdisciplinary-honors>).
3. Honors Thesis of at least 4 credits
 - a. Students must register for an Honors Thesis course of at least 4 credits supervised by a faculty member.
 - b. A grade of B- or better is required for the Honors Thesis.

Registering for Honors Discovery Courses

Honors courses can be found at <https://courses.unh.edu/> by selecting the attribute "Honors Courses." Enrollment in these courses is restricted to members of the University Honors Program. Honors courses are open with special permission to non-honors students with a 3.5 or higher GPA on a space-available basis.

Honors in Major

Currently, there are more than 50 different departments from all five of the University's undergraduate schools and colleges offering departmental honors programs. Academic work for Honors in Major usually requires

a minimum of 16 credits, at least four of which will be devoted to a senior thesis project. Students should familiarize themselves with their department's requirements and should meet with their departmental honors liaison, listed here: <https://www.unh.edu/honors-program/requirements-contacts>.

Interdisciplinary Honors

Students entering in the Fall of 2016 or later have a second option for completing University Honors. In lieu of completing Honors in Major, they may complete three approved high-impact experiences as well as a thesis. Interdisciplinary Honors recognizes students who seek academic experiences that extend beyond their course curricula. At least one experience must be interdisciplinary. An interdisciplinary experience is defined as one that requires the use of two or more disciplines in order to produce a specifically interdisciplinary product or understanding. In other words, the interdisciplinary experience allows for new ideas, questions, products, or solutions that would be unlikely to emerge within a single discipline. Examples of such experiences can be found on the UHP website.

Approved high-impact experiences that count toward Interdisciplinary Honors include:

- Study abroad in a UNH managed, exchange, or approved program of at least 8 weeks
- Completing the application process for a major national fellowship
- An IROP, SURF, or other approved research experience
- Named co-authorship on a publication in a peer-reviewed journal
- A presentation at a regional or national academic conference
- An IMPACT project (interdisciplinary, faculty-led efforts to solve community problems)
- A Social Innovation Summer Internship
- Study away at the Washington Center or Semester in the City
- Other approved high-impact experience (by petition)

Students should consult with Honors Program advisers before the beginning of Junior year to decide which track they will pursue.

GPA minimum

Honors Program members entering before the Fall of 2017 must maintain a GPA of 3.0 in the Freshman year and 3.4 thereafter. Members entering in or after the Fall of 2017 must maintain a GPA of 3.2 in the Freshman year and 3.5 thereafter. Students who do not reach the required GPA by the end of the academic year will be notified and offered an opportunity to petition to remain in the program. Students must meet the required GPA in order to graduate with University Honors.

For more information, contact the University Honors Program at honors.program@unh.edu or (603) 862-3928, or visit the UHP website at www.unh.edu/honors-program (<https://www.unh.edu/honors-program>). The Honors Program is located in Conant Hall, Suite 115.

Pre-law Advising

The faculty and staff advisors of the UNH Pre-law Advising Committee work closely with students and alumni to identify interests and explore opportunities within legal education. The committee helps students undertake the best possible preparation for legal education while also bringing the excitement of law to UNH students. The committee achieves this goal through careful consideration of the American Bar

Association's (ABA) statement on preparation for legal education (found on the web at www.americanbar.org/groups/legal_education/resources/pre_law.html. (https://www.americanbar.org/groups/legal_education/resources/pre_law.html))

In that statement, the ABA explains why no single major or course is required or recommended for students wishing to explore or prepare for legal study. The ABA does, however, describe certain skills and values that are essential to success in law school and to life as a lawyer. These include analytic and problem solving skills, critical reading abilities, writing skills, oral communication and listening abilities, general research skills, task organization and management skills, and the values of serving others and promoting justice.

Pre-law Advising implements the ABA statement by working with student interests and strengths to select UNH courses, internships, leadership opportunities, and experiences that will develop those skills and values. Programmatically, the committee offers individual appointments, sponsors visits to local law schools, and organizes discussions with law school students, admission and financial aid representatives, and with members of the legal community. The committee also provides advising support for LSAT preparation, law school search, writing personal statements, and the application and selection processes.

The Pre-law Advising Office is located in Hood House and can be contacted by phone at (603) 862-2064 or by email at prelaw.advising@unh.edu. Additional information is available at www.unh.edu/uac/prelaw-advising. (<https://www.unh.edu/uac/prelaw-advising>)

Pre-Professional Health Advising

The Pre-Professional Health Programs Advising Office in Hood House provides advising for all students preparing for postgraduate careers in medicine, dentistry, optometry, chiropractic, podiatry, physical therapy, pharmacy, naturopathic medicine, and physician assistant programs. There is no pre-health major at UNH. Health professional graduate programs do not evaluate based on undergraduate major. Interested UNH students should register with the Pre-Professional Health Programs Advising Office online to be added to an email list and be kept informed of important events, opportunities, and deadlines regarding preparation for application.

Identifying as a pre-health student at UNH consists of the following:

1. *Taking the prerequisite courses for admission.* A list of the specific prerequisite courses for each intended health profession can be found on the UNH Pre-Health website.
2. *Gaining volunteer and healthcare experience.* Applicants to health professional programs will be expected to demonstrate a sustained involvement in volunteer and community service. It is also expected that applicants have shadowed healthcare providers. Many students volunteer in various healthcare settings and some students seek out licensure and certificates to provide hands-on patient care. These experiences often include working as an EMT, LNA/CNA, or phlebotomist.
3. *Preparing for entrance exams.* Students applying to medical school are required to take the MCAT exam. Students applying to dental programs are required to take the DAT, and applicants to optometry programs take the OAT. The MCAT, DAT, and OAT are standardized, comprehensive exams that test students' knowledge of biological and physical sciences as well as verbal reasoning and writing skills. Exams are usually once the student has completed prerequisite

coursework. Students applying for physician assistant and physical therapy programs may be required to take the GRE, a more general exam similar to the SAT in structure and content.

Application Process

The Pre-Professional Health Programs Advising Office works with the Pre-Professional Health Advisory Committee, a group of 10-12 UNH faculty members and local healthcare providers, to provide students with comprehensive, confidential evaluation services at the time of application. An application information meeting is held each fall to outline the application process and establish timetables and deadlines. Students should note that the medical and dental school application process begins a full two years before matriculation; e.g., in the fall of a student's junior year if they wish acceptance following graduation. However, a delay of a year or more between graduation and admission is neither unusual nor detrimental, and in many cases, students can use this time to improve their credentials by taking additional courses and/or gaining exposure to the profession.

It is important that students understand that in order to gain admission to a health professional program they must not only satisfy the prerequisite requirements, they must satisfy these requirements at a high level of achievement. The Pre-Professional Health Programs Advising Office can provide students with information on competitive GPA and entrance exam scores for each of the postgraduate health professional programs.

The Pre-Professional Health Programs Advising Office is located in Hood House and can be contacted by phone at (603) 862-7740 or by email at Premed.Advising@unh.edu. The office also has a website at <http://www.unh.edu/uac/premed-advising/advising>.

Reserve Officer Training Corps Programs (ROTC)

Students attending the University of New Hampshire may enroll in the Air Force Reserve Officer Training Corps (AFROTC) or in the Army Reserve Officer Training Corps (AROTC) at the University.

The Army ROTC and Air Force ROTC offer programs leading to a commission as a second lieutenant in their respective services. Students in either ROTC program may pursue any University curriculum that leads to a baccalaureate or higher degree.

Two- and four-year programs are available. The four-year program is open to freshmen, sophomores, and transfer students. The two-year program is open to students who have at least two academic years remaining in their college/university degree program. In addition to on-campus course requirements, students must attend an officer-preparatory training session for a part of one summer.

ROTC scholarships are offered on a competitive basis by both the Army ROTC and Air Force ROTC. Entering freshmen may compete for four-year scholarships during their last year of high school. Additionally, incoming students may compete for scholarships while already in college if they meet specific ROTC requirements. Scholarships may pay up to full tuition, mandatory fees, and required textbooks for college courses. Incoming students with either a four-year or three-year ROTC scholarship may receive a full or partial room and board grant for the entire time they are on an ROTC scholarship. In addition, all scholarship recipients receive a tax-free monthly subsistence allowance. Non-scholarship students in

the last two years of the ROTC program also receive the tax-free monthly subsistence allowance.

Both ROTC programs have administrative and medical requirements, which must be met to qualify for a scholarship and a commission.

More specific information about ROTC programs may be obtained by contacting Army ROTC at (603) 862-1078 or Air Force ROTC at (603) 862-1480.

Study Abroad Programs

<http://www.unh.edu/global/education-abroad>

The University offers opportunities for full-time degree candidates meeting eligibility criteria to pursue a wide variety of education abroad experiences, including study, intern, service and research in many countries around the world. UNH-managed and exchange study programs are described in this section. Students may study abroad in other locations through UNH-approved programs by using the intercollegiate option (INCO). All students who study abroad pay a study abroad administration fee and an international travel insurance fee. For more information, contact the Global Education Center, (603) 862-2398 or visit <http://www.unh.edu/global/education-abroad> or the department identified in the UNH-managed program descriptions.

Belize

UNHM BSCI 620 (M1) - Global Science Exploration

This 4-credits course includes a spring break trip to Belize investigating living organisms in their natural habitat. Students will participate in pre-trip seminars on the country, local flora, fauna and habitats they will visit. Students will design a project to integrate their personal interests and objections with in-country investigation. Post-trip seminar will focus on preparation of project and its presentation. Prereq: BIOL 413 and 414, or BIOL 411 and 412. Permission required. For more information contact the faculty director, Patricia Halpin, Patricia.Halpin@unh.edu.

The UNH Archaeological Field School in Belize

Offered in the summer, the UNH Archaeological Field School in Belize is a four-week program where students excavate ancient Maya sites and are trained in archaeological field and lab techniques. Students register for ANTH 675 Archaeol Field School Belize and earn 8 credit hours. Assisted by program staff, each student chooses a topic of original field research to focus on (e.g., analyses of a particular artifact class, architecture, excavation, or survey results from the project). The program is directed by Eleanor Harrison-Buck, assistant professor of anthropology, who has worked on archaeological projects in Belize and Guatemala since 1992. The program is administered by the COLA Center for Study Abroad. For more information, contact cola.studyabroad@unh.edu, (603) 862-3962, 116 Murkland Hall, or visit [cola.unh.edu/belize-field](http://www.colah.unh.edu/belize-field) (<http://www.colah.unh.edu/belize-field>).

Archaeological Survey and Mapping in Belize

A January-term course, Archaeological Survey and Mapping in Belize (ANTH 674 Archaeological Survey and Mapping in Belize, 4 credits), offers students hands-on training in survey and mapping techniques, as well as digital cartography using ArcGIS mapping software. This program is also administered by the COLA Center for Study Abroad and directed by Eleanor Harrison-Buck. For more information, contact cola.studyabroad@unh.edu, (603) 862-3962, 116 Murkland Hall, or visit [cola.unh.edu/belize-mapping](http://www.colah.unh.edu/belize-mapping) (<http://www.colah.unh.edu/belize-mapping>).

Brazil

University of Sao Paulo Ribeirao Exchange Program

Focused studies in all aspects of music with immersion in Portuguese language and Brazilian culture. This exchange with University of Sao Paulo Ribeirao Preto grew out of collaborations between UNH's and USP-RP's Departments of Music, and offers small group interaction with professors and Brazilian students, and participation in extra-curricular activities, including Filarmonica, Jazz Band, Grupuri (percussion group), and several choirs. This is an ideal exchange for independent students wanting to travel abroad and continue work on their music major. Contact the Global Education Center, (603) 862-2398, email international.exchange@unh.edu or visit <http://www.unh.edu/global/outgoing-international-exchange-students>.

Canada

National Student Exchange

Students may spend one or two semesters at one of ten campuses in Canada, through the National Student Exchange (NSE) program. While having the opportunity to learn in a Canadian environment, participants maintain their status as UNH students, pay UNH tuition, and will be able to graduate from UNH on schedule. The exchange is open to students from all UNH majors. Participants must provide proof of proficiency in French for Francophone campuses in Quebec. Interested students should contact Paula DiNardo, Study Away USA office, Hood House, (603) 862-3485, or visit www.unh.edu/nse (<http://www.unh.edu/nse>).

China

Chengdu Spring Program

Semester study of Chinese language and culture at Chengdu University. Upper-level students in the Chinese language program as well students with little to no background in the Chinese language are able to spend a full semester in China learning Chinese language and culture first-hand. Chengdu has a population of 14 million! It is one of the most advanced metropolises in China's southwest. Students immersed in such a city for a semester will not only improve their language skills but will also gain insights beyond what they could learn in classrooms in the U.S. They will have a chance to see the challenges and opportunities facing Chengdu and to compare and contrast China policies and practices with those in U.S. The program is administered through the COLA Center for Study Abroad, and the faculty director is Yige Wang. For more information, contact cola.studyabroad@unh.edu, (603) 862-3962, 116 Murkland Hall, or visit [cola.unh.edu/china](http://www.colah.unh.edu/china) (<http://www.colah.unh.edu/china>).

Chengdu Summer Program

This summer short-study program (just under three weeks long) includes travel and intensive Chinese language study at both the beginner and advanced levels at Chengdu University in China. The city of Chengdu is the economic hub for China's southwest. It is also the hometown for the giant Pandas. Forbes Magazine recently ranked the city of Chengdu as the No.1 city with the greatest potential. Students also visit the cities of Beijing and Xian. The program typically runs in late May and early June. It is open to all students; however, space is limited. The program is administered through the COLA Center for Study Abroad, and the faculty director is Yige Wang. For more information, contact cola.studyabroad@unh.edu, (603) 862-3962, 116 Murkland Hall, or visit [cola.unh.edu/china-summer](http://www.colah.unh.edu/china-summer) (<http://www.colah.unh.edu/china-summer>).

Chengdu University Exchange Program

Chengdu University in Chengdu, Sichuan Province, China, is UNH's partner in the Confucius Institute, a non-profit educational institution housed in the College of Liberal Arts that offers a full curriculum in Chinese language and culture. Out of this partnership grew an undergraduate exchange program in which UNH students have the opportunity to study Chinese language and culture in an immersive setting by directly enrolling at Chengdu University. Located in the Shiling Historical and Cultural Scenic Area, the large, gated campus is beautifully landscaped with gardens, ponds, and tree-lined passages with easy access to downtown Chengdu. For more information, contact the Global Education Center, (603) 862-2398, e-mail international.exchange@unh.edu or visit <http://www.unh.edu/global/outgoing-international-exchange-students>.

City University Hong Kong Exchange Program

Study abroad in Hong Kong, a vibrant former British colony in southeastern China, famous for its bustling port, tower-studded skyline, and lively food scene. CityU Hong Kong offers professional education that prepares its students for the challenges and exciting opportunities opening up in Hong Kong, the Asia-Pacific region, and throughout the world in business, science and engineering, energy and environment, law, creative media and social sciences. Through its extensive links with relevant industries, CityU provides real-life opportunities for students to work with and learn from professionals in the workplace. CityU is AACSB approved and thus attractive to business majors. Other fields of excellence include political science, engineering, applied social sciences, public policy, and media and communications. Summer study is available. Contact the Global Education Center, (603) 862-2398, email international.exchange@unh.edu or visit <http://www.unh.edu/global/outgoing-international-exchange-students>.

Shanghai International Studies University

Shanghai is the largest city in China and a major economic, financial, trade, and cultural metropolis. SISU is a prestigious institution that offers multinational and multicultural disciplines to train and prepare future global professionals for a wide range of international expertise. Courses available in Chinese language and culture, Business and Global Studies. Contact the Center for International Education and Global Engagement, (603) 862-2398, email international.exchange@unh.edu or visit <http://www.unh.edu/global/outgoing-international-exchange-students>.

Costa Rica

Costa Rica Summer Program (San Joaquin de Flores)

This six-week summer immersion program offers a variety of courses in language and culture taught by the Instituto San Joaquin de Flores. The program combines two Spanish courses, cultural field trips, and weekend trips. Classes meet daily Monday through Friday. Students live with Costa Rican families. Upon the completion of the program, students earn the equivalent of up to 8 credit hours. The program is administered by the COLA Center for Study Abroad, and the faculty director is Lina Lee. For more information, contact cola.studyabroad@unh.edu, (603) 862-3962, 116 Murkland Hall, or visit cola.unh.edu/costa-rica (<http://www.cola.unh.edu/costa-rica>).

SAFS 510 Agriculture and Development in the Neotropics

Course is designed as a three-week immersion into tropical agriculture and Costa Rican ecology and culture. Agriculture plays a pivotal role in Costa Rica's history and in shaping current events. Production of

horticultural and agronomic crops occurs on a variety of scales ranging from large export-based systems, to mid-sized operations for domestic sales, and sustenance-based home gardens. Examples of all systems will be visited and discussions will focus on their overall sustainability. Sustainability is a broad concept and requires consideration of socio-cultural, environmental, and economic factors. Agriculture and agricultural products infuse the culture as seen by large participation in farmers markets and appreciation for a wide variety of fruits and vegetables prepared in myriad ways. An appreciation for nature also infuses the culture and is embodied by the country's extensive system of national parks and protected reserves along with the national philosophy of "Pura Vida." SAFS 510 is open to all UNH students and fulfills elective credit for the Sustainable Agriculture and Food Systems major as well as dual major in Sustainability.

Dominican Republic

Perspectives on the Business Environment in the Dominican Republic (MKTG 598 Topics in Marketing/MKTG 798 Topics)

Offered in January term, MKTG 598 Topics in Marketing/MKTG 798 Topics, Perspectives on the Business Environment in the Dominican Republic, is a 4-credit course open to all UNH students. Students will participate in a 13-day visit to Santo Domingo in the Dominican Republic, one of the commercial hubs of the Caribbean. The course will include two pretrip classes held in the fall, in which the students will learn about the business culture of the country, as well as a brief introduction to its history and current demographics. The group will travel to Santo Domingo where three to four hours of each weekday (32 contact hours) will be devoted to meeting with business owners and managers from a variety of industries who will discuss business practices. Upon return to Durham, a final three-hour class will be held in the spring semester to wrap up, assess the learning outcomes, and conclude the experience. Contact Audrey Ashton-Savage, the instructor for this course, at Audrey.Ashton-Savage@unh.edu.

Social Action in the Dominican Republic: Exploring Culture, Poverty, Human Rights, and Social Justice in a Developing Caribbean Nation (SW 697 Special Topics in Social Welfare/SW 897 Special Topics in Social Work and Social Welfare)

This course examines issues of culture, poverty, social development, and social justice in the Dominican Republic through direct service learning work and preparatory and reflective class sessions and discussions. Students will have the opportunity to examine development issues that have plagued the island nation for years and current efforts to address these concerns. During spring break, students and a UNH faculty member embark on a service learning adventure to work in the bateyes of the Dominican Republic. Past projects have included the building of schools, clinics, community centers, and residential houses. Additionally, students will be working in local schools, orphanages, and child welfare centers. Afternoons and evenings will be spent learning about social services in the DR from community leaders and activists, participating in cross-cultural activities with community members, learning about Dominican life and history, and reflecting upon the days' activities. Students will visit other local Haitian immigrant communities (bateyes), spend an evening in Santo Domingo, spend a night with a local family, and much more. Contact Matthew Toms, matthew.w.toms@gmail.com.

England

Cambridge Program

For six weeks each summer, students from across the United States have the opportunity to participate in the UNH Cambridge Summer Program held at Cambridge University in England. Program participants choose from courses in literature and the humanities taught by faculty from Cambridge University and UNH. Students live and study at Gonville and Caius College, one of the oldest colleges at Cambridge University, and travel on excursions throughout the UK. The program is open to students who have successfully completed at least one year of college. Participation fulfills UNH's Discovery Program requirement in World Cultures. Select courses also satisfy Humanities and Historical Perspectives Discovery Program Requirements. The program is administered by the COLA Center for Study Abroad, and the faculty director is Monica Chiu. For more information, contact cola.studyabroad@unh.edu, (603) 862-3962, 116 Murkland Hall, or visit [cola.unh.edu/cambridge](http://www.cola.unh.edu/cambridge) (<http://www.cola.unh.edu/cambridge>).

Lancaster University Exchange Program

Lancaster University is a comprehensive university similar to UNH in size, setting, and program offerings. The program allows students to spend a semester or a year in Lancaster while still making normal progress toward their UNH degree. Lancaster enjoys a diverse campus and is centrally located for travel to Scotland, Wales, Ireland, and London. Contact the Global Education Center, (603) 862-2398, e-mail international.exchange@unh.edu, or visit <http://www.unh.edu/global/outgoing-international-exchange-students>.

London Program

The London Program offers students the chance to spend the spring semester at Regent's University in the heart of London, choosing from courses in British studies, the arts, humanities, social sciences, business, and a wide range of other basic subjects. Taught by British and American faculty members, many of the courses are specifically concerned with British studies or have a special British emphasis. The program is administered by the COLA Center for Study Abroad, and the faculty director is Sue Hertz. For more information, contact cola.studyabroad@unh.edu, (603) 862-3962, 116 Murkland Hall, or visit [cola.unh.edu/london](http://www.cola.unh.edu/london) (<http://www.cola.unh.edu/london>).

The London Experience

This course provides a wonderful opportunity to learn about one of the greatest cities in the world. Travel to the United Kingdom for nine nights/ten days during the January term. See the many amazing historical and cultural sights and take in some of the best theatre in the English-speaking world. The course offers insight into the politics, society, and culture of London and the United Kingdom as students walk, tube, and double-decker bus their way through 2000 years of history. The 4-credit class fulfills the Fine and Performing Arts Discovery requirement. This program is administered by the COLA Center for Study Abroad, and the faculty director is David Kaye. For more information, contact cola.studyabroad@unh.edu, (603) 862-3962, 116 Murkland Hall, or visit [cola.unh.edu/london-experience](http://www.cola.unh.edu/london-experience) (<http://www.cola.unh.edu/london-experience>).

London Travel Writing

Travel writing is for the adventurous. In three weeks, students will learn to navigate London, one of the world's greatest cities, and craft compelling, vivid essays about what they've discovered. Through curiosity, research, and writing they will transcend from tourist to

traveler, gaining a confidence in their ability to master the unfamiliar as well as pen publishable stories about place. Prerequisite of ENGL 501 Introduction to Creative Nonfiction or permission of instructor. This program is administered by the COLA Center for Study Abroad, and the faculty director is Susan Hertz. For more information, contact cola.studyabroad@unh.edu, (603) 862-3962, 116 Murkland Hall, or visit [cola.unh.edu/london-writing](http://www.cola.unh.edu/london-writing) (<http://www.cola.unh.edu/london-writing>).

France

Dijon Program

The Dijon Program offers students the chance to spend their junior year or a spring semester in Dijon, France. Students enroll directly in the Universite de Bourgogne (University of Burgundy), where they will take courses alongside French students, or at the CIEF (Centre International d'Etudes Francaises), which hosts students from around the world. Students generally live with French families in the heart of this historic city. Credit for all work completed successfully, up to 16 credits, will be automatically transferred to UNH. The program is open to those French majors who have completed:

Code	Title	Credits
FREN 631 & FREN 632	Advanced French: Reading and Writing and Advanced French: Listening and Speaking	8
FREN 651 or FREN 652	Readings in French Literature (or equivalent) Readings in French Literature	4
Total Credits		12

and to French minors who have completed:

Code	Title	Credits
FREN 631 & FREN 632	Advanced French: Reading and Writing and Advanced French: Listening and Speaking	8
FREN 651 or FREN 652	Readings in French Literature (or equivalent) Readings in French Literature	4
Total Credits		12

The program is administered by the COLA Center for Study Abroad, and the faculty director is Nadine Bérenguier. For more information, contact cola.studyabroad@unh.edu, (603) 862-3962, 116 Murkland Hall, or visit [cola.unh.edu/dijon](http://www.cola.unh.edu/dijon) (<http://www.cola.unh.edu/dijon>).

Dijon Summer Program

The Dijon Summer Program provides the opportunity to spend four or eight weeks in Dijon, France, taking the equivalent of one or two of the following courses at the Centre International d'Etudes Francaises (CIEF):

Code	Title	Credits
FREN 503	Intermediate French I	4
FREN 504	Intermediate French II	4
FREN 631	Advanced French: Reading and Writing	4
FREN 632	Advanced French: Listening and Speaking	4

An eight-week summer option is also available in the form of FREN 691 Summer Study in Dijon (8 weeks) to French double majors who cannot spend a semester abroad for documented reasons. The pre-requisites for FREN 691 Summer Study in Dijon (8 weeks) are:

Code	Title	Credits
FREN 631	Advanced French: Reading and Writing	4
FREN 632	Advanced French: Listening and Speaking	4
FREN 651	Readings in French Literature	4
FREN 652	Readings in French Literature	4

This course is worth 8 credits and consists of eight weeks of intensive French literature, culture, and civilization courses at the CIEF at the Universite de Bourgogne in Dijon, France. The program is administered by the COLA Center for Study Abroad, and the faculty director is Nadine Bérenguer. For more information, contact cola.studyabroad@unh.edu, (603) 862-3962, 116 Murkland Hall, or visit cola.unh.edu/dijon (<http://www.cola.unh.edu/dijon>).

German-Speaking Countries

Students may study for a semester or a full year through any approved American study abroad program or, in special cases, by applying directly to universities in Germany, Austria, or Switzerland. Many programs require a minimum grade-point average of 3.0 and a B average in the major. Programs vary greatly in academic focus, size, language of instruction, living arrangements, services, and extra-curricular programming provided, and cost. Study abroad goals and requirements should be discussed with a German adviser as early as freshman year. Program and application materials may be obtained through the Center for International Education in Hood House. For credit in the German major or minor, the program must be conducted in German. After consultation with the major adviser and the study abroad adviser to establish possible UNH course equivalents and fulfillment of major and/or Discovery Program requirements, students submit a planning form indicating the planned course of study abroad. To ensure proper credit transfer, especially if seeking to transfer credits directly from a university abroad without benefit of an American program, students should keep syllabi, course descriptions, and all written work. Students planning study at a university in Germany, Austria, or Switzerland should note major differences in academic calendar (winter semester October-February, summer session April-July), which may be shortened by the American-sponsor university to accommodate U.S. academic calendars.

Berlin Program

The Berlin Summer Program offers students the chance to spend five weeks in Berlin, Germany. Students earn 4 or 8 credits through GERM 586 Study in Berlin, designed to give students an immersion experience in the German language and culture. Students will receive eighty hours of intensive language instruction at the appropriate level (elementary, intermediate, or advanced) at the BSI Private Language School in central Berlin. No prior German language study is required. On designated weekday afternoons, students will gather for cultural excursions and discussions with the on-site UNH faculty member. Students enrolling for 4 credits can receive the UNH German Program language course equivalent of one semester of language study. Students enrolling for 8 credits will receive the UNH German Program language course equivalent of one semester of language study as well as engage in additional UNH faculty-guided cultural study, fulfilling GERM 525 Introduction to German Culture and Civilization (Discovery World Cultures) or other pre-approved courses. Students may fulfill the bachelor of arts language requirement by taking the equivalent of Intermediate German at the BSI Language School or by taking the equivalent of the first semester of Elementary German with the program and then independently continuing language instruction at the BSI for one month beyond the program study period, for a total of 8 weeks. Required pretravel meetings at UNH will prepare

students for the Berlin experience. In line with UNH's goals to educate students to become global citizens, this immersion experience will give students insight into what it means to experience a different culture and language. The program is administered by the COLA Center for Study Abroad, and the faculty director is Charles Vannette. For more information, contact cola.studyabroad@unh.edu, (603) 862-3962, 116 Murkland Hall, or visit cola.unh.edu/berlin (<http://www.cola.unh.edu/berlin>).

Intensive Language Courses through the Goethe Institut

Students needing to advance rapidly in proficiency beginning at any level and at any time of year may enroll at a Goethe Institut center in Germany for courses ranging from eight to 16 weeks and receive UNH equivalent credit depending on level of exam passed upon completion of course. UNH's faculty contact is Charles Vannette, (603) 862-0063, or the Global Education Center, (603) 862-2398, or study.abroad@unh.edu.

German Internship

Students who have completed GERM 504 Intermediate German II or equivalent may apply for a 4-8 credit internship placement in a German-speaking firm or organization. The internship does not alone fulfill the study abroad requirement for the major, but may count toward the minor and may be coupled with academic course work through UNH or any study abroad program to fulfill the major study abroad requirement. The faculty contact person is Charles Vannette, (603) 862-4005.

Ghana

Ghana Program

The Ghana Program is a spring semester program at the University of Ghana, one of West Africa's most prestigious universities. With more than 30,000 students at its campus in Legon, a suburb of Accra, Ghana's capital city, the University of Ghana offers students a broad range of exciting educational and cultural opportunities. Politically stable, safe, and with English as its official language, Ghana provides an excellent vantage point for experiencing sub-Saharan Africa and for a rich and deep study-abroad experience. All courses are taught by University of Ghana faculty in English, and courses are available in a very wide range of fields. The program is administered by the COLA Center for Study Abroad, and the faculty director is Burt Feintuch. For more information, contact cola.studyabroad@unh.edu, (603) 862-3962, 116 Murkland Hall, or visit cola.unh.edu/ghana (<http://www.cola.unh.edu/ghana>).

Global E3 Engineering Exchange Program

Global E3 allows engineering students to enjoy a fulfilling study abroad experience at one of 31 international member institutions. Through participation in the program, Global E3 graduates gain the necessary foreign language ability, cross-cultural skills, and professional experience to excel in the multinational/multicultural business environment of the 21st century. Global E3 students pay tuition at their home institution, and enjoy the benefits of attending an overseas one. Students can study abroad for the fall semester, spring semester, or the entire school year. At some member universities, Global E3 students are able to take on a supplemental internship after their study abroad experience. Member institutions include some of the best universities in Argentina, Australia, Austria, China, Denmark, France, Germany, Indonesia, Italy, Japan, Malaysia, The Netherlands, Singapore, South Korea, Spain, Sweden, and United Kingdom. For more information, contact Caitlin Baldwin, Academic Counselor, caitlin.baldwin@unh.edu, Phone: 603-862-1783.

Greece

UNH in GREECE SUMMER PROGRAM

The UNH-in-Greece Program is open to any undergraduate at UNH who is interested in the long history of civilization in Greece, from the classical period to the present day. Athens is famous as the most important city-state in ancient times and as the site of some of the world's most famous and influential architecture and art, but it is also the vibrant capital of modern Greece (The Hellenic Republic), and that combination of antiquity and modernity, as well as the city's position between West and East, makes it an extraordinary location for on-site, experiential learning. Students earn a total of 10 credits from courses taught by both UNH and Hellenic American University faculty. The program is administered by the COLA Center for Study Abroad, and the faculty director is Stephen Trzaskoma. For more information, contact cola.studyabroad@unh.edu, (603) 862-3962, 116 Murkland Hall, or visit [cola.unh.edu/budapest-humanities](http://www.cola.unh.edu/budapest-humanities) (<http://www.cola.unh.edu/budapest-humanities>).

Hungary

Justice Studies Budapest Program

The Justice Studies Budapest Program, offered in the fall, is designed to introduce students to a broader appreciation of the cross-cultural perspective in justice studies. Each fall, twelve UNH students spend the semester in residence at the Corvinus University of Budapest in Hungary. Hungary offers students an opportunity to witness first-hand the evolution of a criminal justice system within a context of significant cultural, political, economic, and social change with a member of the justice studies faculty. Situated along the Danube in one of central Europe's oldest cities, Corvinus offers a unique educational experience to students interested in the study of criminology, law and society, and the administration of justice. Under the supervision of a UNH faculty member also in residence, students carry a four-course load, two of which are taught by the UNH faculty member. The program satisfies Humanities, Historical Perspectives, and World Cultures Discovery Program Requirements. All courses are taught in English. The program is administered by the COLA Center for Study Abroad, and the faculty director is Sue Siggelakis. For more information, contact cola.studyabroad@unh.edu, (603) 862-3962, 116 Murkland Hall, or visit [cola.unh.edu/budapest-justice](http://www.cola.unh.edu/budapest-justice) (<http://www.cola.unh.edu/budapest-justice>).

Humanities Spring Budapest Program

The Humanities Budapest Program, offered in the spring, is available to any undergraduate at UNH interested in living and studying in the historically rich city of Budapest. The program is designed to provide undergraduates with an intensive study abroad experience focusing on the humanities, and modern Hungarian and Central European history and culture. Students will earn 16 credits in courses taught by Hungarian and University of New Hampshire faculty, and through field trips to cultural sites in and around Budapest as well as other Central European cities. The program satisfies Humanities, Historical Perspectives, Fine and Performing Arts, and World Cultures Discovery Program Requirements. Students will be introduced to Hungary's rich history and culture and to some of the most significant developments of the 20th and early 21st centuries, including the rise and fall of Soviet domination of Central Europe, revolution and democratizing in Hungary, and the significance of Hungary's membership in the European Union. All courses are taught in English. The program is administered by the COLA Center for Study Abroad, and the faculty director is Stephen Trzaskoma. For more information, contact cola.studyabroad@unh.edu, (603) 862-3962,

116 Murkland Hall, or visit cola.unh.edu/budapest-humanities (<http://www.cola.unh.edu/budapest-humanities>).

Ireland

ANSC 510 Integration of Culture and Agriculture in Ireland: Past, Present, and Future

What was the worst natural disaster in 19th century Europe? What characterizes Ireland's agriculture in the 21st century? In this interdisciplinary course, students examine the cultural, historical, political, economic, and religious influences on Ireland's agriculture. The crowning experience of the course, a 10-day study abroad in late May, provides students with a window to the world as they experience the culture, agriculture, and topography of Ireland. Students will immerse themselves in local Irish history and culture as they tour working agricultural farms and significant landmarks. For more information, contact Patty Bedker at pbedker@unh.edu (patty.bedker@unh.edu).

Study Abroad in Athletic Training

This UNH study abroad program is open to athletic training majors who are interested in expanding and enhancing their athletic training education while also gaining an appreciation of a different culture. Students will be taking courses in the bachelor of science (honours) in sports rehabilitation and athletic therapy program at the Institute of Technology at Carlow. The increased emphasis on manual therapy application and skill by therapists in Ireland will provide the visiting UNH student with a unique opportunity to develop abilities far-beyond what they may learn in the U.S. Students may earn up to 16 credits applicable to their UNH graduation requirements. Students pay their normal UNH tuition (in-state or out-of-state as appropriate) as the tuition to study in Ireland. Interested students should contact Daniel Sedory, Dan.Sedory@unh.edu, (603) 862-1831.

Study Abroad: Comparative Social Welfare Systems, SW 785 Study Abroad: Comparative Social Welfare Systems/SW 885 Study Abroad

Students studying abroad on SW 785 Study Abroad: Comparative Social Welfare Systems/SW 885 Study Abroad, examine the historical development of social welfare in another country, including an analysis of the underlying values and attitudes that direct practice and policy decisions. This 4-credit class includes agency site visits, lectures, themed readings, and visits to important cultural sites. Prerequisites are SW 424 Introduction to Social Work and SW 525 Social Welfare Policy: History of Social and Economic Justice. Previous programs have visited Ireland, England, Scotland, and Latvia.

Italy

UNH-in-Italy Program

Semester & Summer Programs. In partnership with the UNH Department of Agriculture, Nutrition & Food Systems, the UNH-in-Italy Program offers students the opportunity to experience living abroad in the medieval city of Ascoli Piceno, for either a four-course, 13-week semester or a two-course, 5-week summer session. The curriculum focuses on the links between food culture, sustainably-focused agriculture, and the policies and issues impacting the food system. Experiential activities, field trips, and group excursions encourage students to immerse themselves in the unique educational opportunity. Students live in apartments in the historic center of the city and take UNH courses taught in English. The program is open to all UNH students and fulfills the International Experience requirement of the EcoGastronomy Dual

major. For more information, please contact Jesse Stabile Morrell at jesse.morrell@unh.edu.

EcoGastronomy International Experience, FALL Semester in ASCOLI PICENO, ITALY

All students who declare the dual major in EcoGastronomy spend a full semester abroad, most likely during their junior year. The table is set fall semester in Ascoli Piceno, Italy, where students will study the links between food cultures, sustainably-focused agriculture, and the policies and issues impacting the food system. EcoGastronomy study abroad programs are open to all UNH students.

Rome J-Term Program

The Rome Program provides the opportunity to take a January term course in Rome, Italy. Students earn 4 credits and the Fine and Performing Arts Discovery requirement through CLAS 510 Building Rome or 4 credits and the World Cultures Discovery requirement through ITAL 510: Rome: The Eternal City in Italian Culture. Experience the history, architecture, and art history of the ancient Romans the way they did—in Rome itself! Six days of study in the eternal city followed by two days in Pompeii and other sites will give students a sense of the majesty and miracle that was the ancient Roman Empire. A five-day online component prepares students for the on-site portion so that they will be ready to soak in the monuments of the past. This course fulfills the Discovery category for Fine and Performing Arts. The program is administered by the COLA Center for Study Abroad, and the faculty director is Scott Smith. For more information, contact cola.studyabroad@unh.edu, (603) 862-3962, 116 Murkland Hall, or visit [cola.unh.edu/rome](http://www.cola.unh.edu/rome) (<http://www.cola.unh.edu/rome>).

Japan

Saitama University Exchange Program

Accelerated Japanese language learning on Saitama University's park-like campus, just outside Tokyo. With its moderate size (9,000 students), generous scholarship opportunities, dynamic student life and recreation facilities, Saitama is an ideal fit for UNH students interested in Japanese language and culture. The university also has a wide variety of courses taught in English, which draws students from around the world. Saitama is known as the "Oasis of Tokyo"—a historic city whose forests were planted centuries ago by peace-loving Samurais who nurtured the land instead of living by the sword. Saitama is the famous backdrop for Japanese animated films. Tokyo is less than an hour away by train. Contact the Global Education Center, (603) 862-2398, email international.exchange@unh.edu or visit <http://www.unh.edu/global/outgoing-international-exchange-students>.

Waseda University Exchange Program

Study abroad at one of Japan's "Ivy League" universities while paying UNH tuition. Spend a semester or academic year studying in central Tokyo, with over 50,000 students, including 5,000 international students from more than 100 countries. UNH students can enroll in a wide range of courses in English in the liberal arts, business, social sciences, political science and economics, and of course, Japanese language and culture. Waseda has a unique volunteer center, which combines lectures with hands-on activities in the field. Contact the Global Education Center, (603) 862-2398, email international.exchange@unh.edu or visit <http://www.unh.edu/global/outgoing-international-exchange-students>.

Nepal

Special Topics: Global Health in Nepal (N794)

Independent Study: Global Health in Nepal (N894)

This 2-credit course provides for an immersive, active learning experience in the Nepali health care system. The course will examine the health status of individuals, families, and communities through the lens of culture and the social determinants of health, in addition to the Western medical model. The course objectives include: understanding the major causes of morbidity and mortality in Nepal; critically examining the health care system in Nepal for its strengths and weaknesses in addressing the major causes of morbidity and mortality; analyzing the influence that culture and the social determinants of health have on the health status of individuals, families, and communities in Nepal; interacting with health care workers in Nepal to understand their clinical challenges and successes. This short-term study away course aims to immerse students in the culture and health care system of Nepal, offering an experiential learning opportunity to meet the course objectives.

The Netherlands

Utrecht University Exchange Program

Open to undergraduate and graduate students in all fields, Utrecht University is one of the top research universities in Europe, with the largest undergraduate population and the largest research budget in the Netherlands. The size, status, and international population of the university ensure that courses in all areas of study are offered in English; these include the humanities, social and behavioral studies, law, economics, governance, and geosciences. Utrecht is the fourth largest city in the Netherlands. It has a classically old-Dutch city center with 17th century buildings, a medieval church, several high-quality museums, and terraced canals that encircle the old city. A university town since the medieval period, Utrecht has long enjoyed a vibrant student culture. Utrecht is easily navigable by foot, bicycle, and bus; the center of the Dutch rail system, it enjoys easy access to other cities in the Netherlands and Europe (Amsterdam is 35 minutes away; Paris three hours; London a day trip by plane). Contact the Global Education Center, (603) 862-2398, e-mail international.exchange@unh.edu, or visit <http://www.unh.edu/global/outgoing-international-exchange-students>.

University College Utrecht Exchange Program

An honors exchange is available at the University College Utrecht (UCU), which is an international Liberal Arts and Sciences Honors College of Utrecht University. UCU's mission is to offer ambitious students an academic environment aimed at transforming their broad academic and social interests and their international orientation into academic excellence, intellectual independence, and world citizenship. UCU specializes in undergraduate education and students choose from courses in humanities, science, and social sciences. Among the special characteristics are the college's small classes and individual attention. Students have access to all academic, social, and recreational facilities that Utrecht University has to offer. Contact the Global Education Center, (603) 862-2398, email international.exchange@unh.edu or visit <http://www.unh.edu/global/outgoing-international-exchange-students>.

New Zealand

UNH-EcoQuest, New Zealand

In partnership with the UNH Department of Natural Resources and the Environment, the EcoQuest Education Foundation offers an intensive program of applied field studies in ecology, resource management,

and environmental policy. New Zealand offers an ideal context for multidisciplinary, field-oriented studies, with its rich cultural traditions, diverse ecosystems, expansive natural areas, and history of innovative approaches to resource management. EcoQuest students engage hands-on in New Zealand's restoration ecology and sustainable resource management initiatives. Semester participants have the opportunity to carry out directed research projects while working closely with a faculty mentor and in association with New Zealand research partners. The rural seaside campus is located about an hour's drive southeast of Auckland. Students travel throughout New Zealand's North and South Islands to learn more about the unique ecosystems and local culture.

Students may choose either a four-course, 15-week fall or spring term for 16 credit hours, or a two-course, five-week summer session for eight credit hours. The UNH-EcoQuest Academic Program Coordinator is Kimberly Babbitt. Contact Donna Dowal, EcoQuest Director of Admissions, at (603) 862-2036 or ecoquest@unh.edu for more information.

Russia

Russia Program

This is a four-week summer program in Russian language, culture, mythology, and propaganda in Moscow, St. Petersburg, and on the Trans-Siberian Railway. Studying in the current and former capitals of Russia and the largest city in Europe gives students a profound image of the country, its language, and culture, as well as an overview of recent and ancient history. It is an opportunity for an intensive dose of authentic Russian culture. Prior to departure, students will work on Blackboard with readings and films. In Moscow and St. Petersburg, there will be field trip classes and special lectures. Upon return, students will complete their work on Blackboard and on a project. Students will earn 8 credits through RUSS #425 Introduction to Russia: Contemporary Society and Culture (Discovery World Cultures) and RUSS 525 Russia: Mythology and Propaganda (Discovery Historical Perspectives). The program is administered by the COLA Center for Study Abroad, and the faculty director is Arna Bronstein. For more information, contact cola.studyabroad@unh.edu, (603) 862-3962, 116 Murkland Hall, or visit [cola.unh.edu/russia](http://www.cola.unh.edu/russia) (<http://www.cola.unh.edu/russia>).

Scotland

Heriot-Watt University Exchange Program

College of Engineering and Physical Sciences students are eligible to participate in a spring semester exchange with Heriot-Watt University in Edinburgh, Scotland. Heriot-Watt is one of the UK's leading universities for business and industry and has a reputation for innovative education, enterprise, and leading-edge research in science, business, engineering, and design. Often referred to as Scotland's international University, a third of on-campus students in Scotland come from outside the UK, there are campuses in Dubai and Malaysia, and 50 international academic learning partners in 30 countries. The current program is designed for civil and environmental engineering majors. Contact the Global Education Center, (603) 862-2398, e-mail international.exchange@unh.edu or visit <http://www.unh.edu/global/outgoing-international-exchange-students>.

South Korea

Pusan National University Hong Kong Exchange Program

Study abroad in Busan, South Korea's beautiful second city, known for its beaches, mountains, and temples. Pusan National University is one of

Korea's leading research universities and provides a full curriculum of 600 courses offered in English for UNH students of most majors. Pusan is particularly well known for business, STEM fields, and global studies, as well as its campus life and extra-curricular opportunities. Summer study is available. Contact the Global Education Center, (603) 862-2398, email international.exchange@unh.edu or visit <http://www.unh.edu/global/outgoing-international-exchange-students>.

Spain

Granada Program

The Granada Program is a spring semester program in Granada, Spain. The program is designed for those who have completed SPAN 631 Advanced Conversation and Composition I or its equivalent and have a B average in Spanish, but may be open to intermediate-level students by petition. Many of the courses taught by professors from the University of Granada fulfill requirements for the Spanish major and minor and UNH Discovery Program requirements. Students generally live with host families and take courses at the Centro de Lenguas Modernas at the Universidad de Granada. The program is administered by the COLA Center for Study Abroad, and the faculty director is Lina Lee. For further information, contact cola.studyabroad@unh.edu, (603) 862-3962, 116 Murkland Hall, or visit [cola.unh.edu/granada](http://www.cola.unh.edu/granada) (<http://www.cola.unh.edu/granada>).

Universidad Carlos III de Madrid Exchange Program

Study abroad in Madrid, Spain's historic and artistic capital that never sleeps. Universidad Carlos III de Madrid, named after a former king of Spain, offers a dynamic campus of 18,000 students and the largest offering of courses taught in English in Spain. Courses are available in the areas of engineering, business (AACSB accredited), finance, accounting, economics, and political science. Contact the Global Education Center, (603) 862-2398, email international.exchange@unh.edu or visit <http://www.unh.edu/global/outgoing-international-exchange-students>.

U.S. Territories (Puerto Rico, U.S. Virgin Islands, and Guam)

NATIONAL STUDENT EXCHANGE

Students may spend one or two semesters at one of 12 campuses in the U.S. Territories of Puerto Rico, U.S. Virgin Islands, and Guam through the National Student Exchange (NSE) program. Participants maintain their status as UNH students, pay UNH tuition, and will be able to graduate from UNH on schedule. The exchange is open to students from all UNH majors. Participants must provide proof of proficiency in Spanish for all campuses in Puerto Rico. For more information contact, Paula DiNardo, Study Away USA office, Hood House, (603) 862-3485, or visit www.unh.edu/nse (<http://www.unh.edu/nse>).

Cruise Ship Management (HMGT 698 Topics)

Offered in January term, this 4-credit course explores through text and on-board experience key areas of cruise ship management: food and beverage, HR, finance, yield management, front office, housekeeping, safety, security, sanitation, and interoperating. Students will participate in a 12-14 day cruise that sails round trip from New York City, after brief class time in Durham during the fall semester. HMGT 698 Topics counts as an elective for majors and minors in hospitality management or any UNH student in proper standing. Students need to commit by the end of September with a deposit to satisfy Cruise Line requirements. For more

information, contact Carl E. Lindblade, affiliate professor, Department of Hospitality Management at Carl.Lindblade@unh.edu.

Wales

Cardiff University Exchange Program

Study abroad at one of the UK's "Ivy League" universities while paying UNH tuition. Founded in 1883, Cardiff University is recognized as one of the leading research and teaching universities in the UK and a member of the Russell Group, the UK's "Ivy League" of world-class universities. Spend a semester or academic year studying at Cardiff and benefit from learning with professors who are pioneers in their fields. Over 27,000 students have been drawn to Cardiff University, coming from Wales, the rest of the UK and more than 100 countries. UNH students can enroll in a wide range of courses and are guaranteed housing in student halls of residence, living among British and other international students. Cardiff is an excellent match for majors in music, computer science, communications, and journalism. The University boasts over one hundred clubs, sporting teams, and societies. Cardiff University is located in the center of the capital of Wales, an exciting and diverse city and the heart of Welsh history, culture, street life, and politics. There is something for everyone in the Welsh capital, with the excitement of the small city campus located just minutes from the beautiful coastlines, hills, walking trails, and green countryside for which Wales is famous. Contact the Global Education Center, (603) 862-2398, email international.exchange@unh.edu or visit <http://www.unh.edu/global/outgoing-international-exchange-students>.

<https://www.unh.edu/global/>

Study Away U.S.A.

National Student Exchange Program

The University offers many opportunities for exchange study with other institutions within the U.S. The National Student Exchange (NSE) program provides an educational experience in a different environment, within North America. It is hoped that students will develop new ways of viewing the country and expand their knowledge of our complex society.

Through the National Student Exchange, UNH students can study at one of more than 160 colleges and universities throughout the United States, U.S. territories (Guam, Puerto Rico, and U.S. Virgin Islands), and Canada. Several historically black colleges and universities are exchange members, and several are members of the Hispanic Association of Colleges and Universities. For a full list of participating campuses, visit www.nse.org (<http://www.nse.org>). In addition, a one-semester or full-year exchange program is available with the University of California, Santa Cruz.

To qualify for exchange study, students must be full-time undergraduate degree candidates in good standing, with a declared major, at least a 2.5 grade-point average, have earned at least 32 credits (16 of which must be from UNH at the baccalaureate level), have declared a major, receive permission from their college dean and academic adviser, and receive permission from the UNH NSE coordinator.

Students in exchange programs are expected to return to UNH to complete their studies. Participation in an exchange program does not disrupt the continuity of a student's educational process. Exchange program participants continue to maintain their status as UNH students, even while temporarily located at another university. Students do not have to withdraw from UNH and later be readmitted. Maintaining UNH

student status also facilitates reentry into classes, on-campus housing, and many other dimensions of University life.

Interested students should contact the Study Away USA office in Hood House, (603) 862-3485, National.Student.Exchange@unh.edu (national.student.exchange@unh.edu), or visit www.unh.edu/nse. (<http://www.unh.edu/nse>)

New Hampshire Consortium (NHCUC) Student Exchange Program

Under the Student Exchange Program of the New Hampshire College and University Council (NHCUC), UNH students may be eligible to enroll for one course per semester, one semester of courses, or a full year of coursework at a member school on a space-available basis. The NHCUC exchange allows matriculated undergraduates to use educational resources that are not available at the home campus and are considered appropriate for their degree programs. This exchange will be used only when academic reasons or other special circumstances warrant it. Approval of the UNH academic adviser and college dean is required, and students must meet all UNH Study Away eligibility standards. Schools in the NHCUC consortium include Colby-Sawyer College, Franklin Pierce University, New England College, New Hampshire Institute of Art, Southern New Hampshire University, Rivier College, Saint Anselm College, UNH Durham, UNH Manchester, Keene State College, and Plymouth State University. Students will remain as degree candidates and continue to pay normal UNH tuition and fees, but must make their own room and board arrangements if they plan to spend a full semester at another consortium school. For more information and application forms, students should contact the Study Away USA office, Hood House, (603) 862-3485.

New England Land-Grant Exchange Program

In order to provide students at the New England land-grant universities with expanded access to unique programs and faculty expertise, the institutions have agreed to encourage student exchanges of one, but not more than two, semesters. To qualify, students must identify a course or combination of courses related to their area of academic interest and not available on their home campus, be degree candidates in good standing with at least a 2.5 grade-point average, be at least first-semester sophomores, and receive permission from the appropriate university exchange authorities at both the home and host institutions. Interested students should contact the Study Away USA office, Hood House, (603) 862-3485.

Semester in the City

Through a joint partnership between the Carsey School of Public Policy and the Center for Social Innovation and Enterprise, UNH offers eligible undergraduate students have the opportunity to spend a semester in Boston in a rigorous 30+ hour per week internship with a leading social change organization (nonprofit, business, or public sector). Students are matched with internships in community development, social justice, health, education, environment, and other areas dedicated to the public good. This 16-credit study away program includes an intensive evening course that examines the theory and practice of various social change approaches, and a series of Friday seminars and reflective workshops, thereby equipping a new generation of leaders who understand both direct and systemic approaches to social and environmental change. Participants pay their UNH tuition, and pay housing costs to the host organization if they utilize their housing.

In order to apply, students must meet all UNH Study Away Eligibility Requirements including but not limited to being full-time undergraduate degree candidates in good standing with at least a 2.5 grade-point average. Interested students should contact the Study Away USA office, Hood House, (603) 862-3485, or visit www.unh.edu/semesterinthecity. (<http://www.unh.edu/social-innovation/semesterinthecity>)

The Washington Center for Internships & Academic Seminars

Since 1976, UNH has affiliated with The Washington Center (TWC), to offer a rigorous full-time internship and academic opportunity in Washington, D.C. Students enroll in 16-credits in fall or spring semester, or 12-credits in summer. Students intern four days per week, enroll in one upper-level evening course and attend a full day professional development seminar on Friday. There are countless internship and networking opportunities for all majors, including in the law, government, media, public policy, international affairs, the environment, health care, law enforcement, and much more. Participants pay their UNH tuition, and pay housing costs to the host organization if they utilize their housing.

In order to apply, students must meet all UNH Study Away Eligibility Requirements including but not limited to being full-time undergraduate degree candidates in good standing with at least a 2.5 grade-point average (above 2.75 is strongly preferred). Interested students should contact the Study Away USA office, Hood House, (603) 862-3485 or visit www.unh.edu/washington (<http://www.unh.edu/washington>).

Sustainability

The field of sustainability explores the ways in which we maximize both environmental and social well-being while solving complex challenges. Solving real-life problems require the skills and perspectives of people from multiple disciplines and backgrounds. A sustainability dual major provides the skills and knowledge needed to understand these systems, identify relevant environmental and social issues, and become agents of change in a complex world.

Students from any UNH college or major can pair the sustainability dual major with the first major. From local to global, you'll learn to analyze, evaluate, critique, and create new ideas and models around sustainability. As a cross-disciplinary field of study and practice, you'll make connections across issues of science and ethics, policy and technology, and culture and history to better understand and take action on pressing issues of our time.

You will learn to:

- Describe and recognize the ecological and social foundations of sustainability
- Examine specific grand challenges of sustainability, such as climate change, agriculture, and energy
- Analyze sustainability case studies at local, regional, and global scales
- Engage with the challenges of sustainability at the UNH campus and surrounding region
- Work in interdisciplinary teams
- Apply a systems perspective towards analyzing sustainability problems
- Explore the role of values and ethics in sustainability

- Learn how to work with partners in defining problems, producing and analyzing data, and developing solutions
- Complete a capstone project in sustainability
- Hone leadership skills and prepare for a career in the expanding sustainability field

<https://sustainableunh.unh.edu/>

Programs

- Sustainability Dual Major (p. 326)

Faculty

<https://sustainableunh.unh.edu/sdm>

Sustainability Dual Major

<https://sustainableunh.unh.edu/sdm>

Description

Students from any UNH college or major can pair the sustainability dual major with the first major. From local to global, you'll learn to analyze, evaluate, critique, and create new ideas and models around sustainability. As a cross-disciplinary field of study and practice, you'll make connections across issues of science and ethics, policy and technology, and culture and history to better understand and take action on pressing issues of our time.

Requirements

Requirements

SUST consists of 32 credits, including core and elective courses, and a capstone experience.

Code	Title	Credits
Complete the following SUST courses (in order):		
SUST 401	Surveying Sustainability	4
SUST 501	Sustainability Perspectives and Methods	4
SUST 750	Sustainability Capstone	4
Select 20 credits of elective courses ¹		20
Total Credits		32

¹ All SUST majors will take at least one (1) elective course from the natural & biological sciences list and at least one (1) elective course from the social science and humanities list.

Approved Electives

Code	Title	Credits
Natural Biological Systems		
BIOL 541	General Ecology	4
CEE 705	Introduction to Sustainable Engineering	3
CEE 706	Environmental Life Cycle Assessment	3
CEE 719	Green Building Design	3
ECOG 401	Introduction to Ecogastronomy	4

ESCI 405	Global Environmental Change	4	RMP 511	Issues of Wilderness and Nature in American Society	4
GEOG 572	Geography of the Natural Environment	4	SOC 444A	Society in the Arctic	4
MEFB 515	Marine Environmental Science and Conservation	4	SOC 565	Environment and Society	4
MEFB 702	Sustainable Marine Fisheries	4	SOC 665	Environmental Sociology	4
NR 435	Contemporary Conservation Issues and Environmental Awareness	4	SOC 730	Communities and the Environment	4
NR 502	Forest Ecosystems and Environmental Change	4	TOUR 767	Social Impact Assessment	4
NR 507	Introduction to our Energy System and Sustainable Energy	4			
NR 650	Principles of Conservation Biology	4			
NR 703	Watershed Water Quality Management	4			
NR 785	Systems Thinking for Sustainable Solutions	4			
NUTR 595	Mediterranean Diet and Culture	4			
NUTR 730	From Seed to Sea: Examining Sustainable Food Systems	4			
SAFS 405	Sustainable Agriculture and Food Production	4			
SAFS 410	A Taste of the Tropics	4			
SAFS 502	Agroecology	4			
SAFS 510	Agriculture and Development in the Neotropics	4			
SAFS 632	Urban Agriculture	4			
SAFS 729	Agricultural Waste Management	4			
Social Systems & Humanities					
ADMN 444	Business for People, Planet, and Profits	4			
ADMN 598	Topics	1-4			
ADMN 798	Topics	1-4			
ANTH 695	Globalization and Global Population Health	4			
CLAS 540A	Environment, Technology and Ancient Society: Sustaining Ancient Rome Ecology and Empire	4			
ECON 698	Topics	4			
ECON 706	Economics of Climate Change	4			
ENGL 521	Nature Writers	4			
ENGL 747	Studies in American Poetry	4			
ENGL 787	English Major Seminar	4			
EREC 444	The New Pirates of the Caribbean	4			
EREC 760	Ecological-Economic Modeling for Decision Making	4			
GEOG 673	Political Ecology	4			
HMP 715	Environmental Health	4			
MGT 798	Topics	4			
NR 602	Natural Resources and Environmental Policy	4			
NR 701	Ecological Sustainability and Values	4			
NR 720	International Environmental Politics and Policies for the 21st Century	4			
NR 784	Sustainable Living - Global Perspectives	4			
NR 787	Advanced Topics in Sustainable Energy	4			
PHIL 450	Environmental Ethics	4			
POLT 444	Politics and Policy in a Warming World	4			
POLT #547	Race and Justice in the Americas: Insights from Film, Literature, and Politics	4			
POLT 548	Drug Wars	4			
POLT 567	Politics of Global Resources	4			
POLT 750	Politics of Poverty	4			
POLT 751	Comparative Environmental Politics and Policy	4			

Thompson School of Applied Science

The Thompson School of Applied Science (TSAS), established in 1895, is an academic unit of the College of Life Sciences and Agriculture (COLSA) offering the associate in applied science degree in three program areas. Curricula comprise a balance of professional, science-related, and general education courses that prepare students to meet the specific demands of a technical or applied profession, continuing education, and the general demands of life.

Imagine a classroom where you will learn—where you will work. The Thompson School of Applied Science offers dedicated professional faculty who deliver a career-relevant education for students who want an associate degree; students who value a college education combining hands-on experiences and academic knowledge in a small learning environment within the campus of the University of New Hampshire.

Thompson School faculty and staff are committed to educate, train, and retain students to be entrepreneurs, to be solid in their knowledge, to be competent in acquired skills and to be aware of the communities they impact. This is accomplished through the development of mentorships with faculty and advisors, business and industry partnerships, unique programs of study with relevant facilities, and excellent job placement.

Thompson School of Applied Science Overview

Faculty members at the Thompson School have significant work experience in industry and business; extensive and up-to-date knowledge of their specialties; ongoing contacts with practicing professionals; dedication to students and to excellence in teaching; and a commitment to practical, science-based education. They work closely with students, providing academic advising, career counseling, and special assistance, even outside the classroom, when needed.

Located at the western entrance to campus, the Thompson School's classrooms, laboratories, and working enterprises are designed for career-related experiences.

Barton Hall contains a brand new veterinary technology clinic and surgical suite (open to qualifying low-income pet owners), several classrooms (two of which are high-tech learning labs), faculty offices, and a student lounge.

Cole Hall includes a 150-seat lecture auditorium, a student study and lounge area, a computer laboratory (which serves as a GIS lab), classrooms, and administrative offices.

Putnam Hall houses two multipurpose geospatial computer labs used for courses in geographic information systems (GIS), computer-aided design (CAD), and building information modeling (BIM); a surveying and mapping lab; an agricultural mechanization shop (welding, engines, and building science); a forestry lab and multiuse classrooms; staff and faculty offices.

More detailed information on our various program areas and concentrations follow.

- From meat to milk, our **Applied Animal Science** program with a concentration in animal agriculture prepares students for a successful career in animal production and management, whether working on a farm or in a related business. Students handle farm animals starting week one, and develop a strong foundation in the science and business of animal agriculture, including breeding,

feeding, health care, law and regulations, housing, and marketing. On-campus facilities include the Thomas P. Fairchild Dairy Teaching and Research Center (<https://colsa.unh.edu/nhaes/fairchild>) and UNH's Organic Dairy Research Farm (<https://colsa.unh.edu/nhaes/odrf>). *Beginning in the 2018-2019 academic year, the Applied Animal Science: Companion Animal Science Concentration and Applied Animal Science: Equine Management Concentration programs will no longer be accepting new students. Current Thompson School students in these programs will continue to have access to the same high-quality education and resources until they graduate in 2019.*

- **Civil Technology:** *Beginning in the 2018-2019 academic year, the Civil Technology: Construction Management Concentration, Civil Technology: Surveying and Mapping Concentration and Civil Technology: Sustainable Energy Management Concentration programs will no longer be accepting new students. Current Thompson School students in these programs will continue to have access to the same high-quality education and resources until they graduate in 2019.*
- **Culinary Arts and Nutrition:** *Beginning in the 2018-2019 academic year, the Culinary Arts and Nutrition: Baking and Pastry Arts Concentration and the Culinary Arts and Nutrition: Culinary Arts Concentration programs will no longer be accepting new students. Current Thompson School students in this program will continue to have access to the same high-quality education and resources until they graduate in 2019.*
- **Forest Technology** students integrate all aspects of forest management as they complete projects on more than 3,000 acres of University land (<http://colsa.unh.edu/woodlands>). Using the school's sawmill and harvesting equipment, they contribute to the sustainable management of UNH lands. In the classroom and the forest, they develop skills and techniques critical to the future ecological and economic health and management of the natural resources of the state and region. Students are expected to enhance class work with an extensive work experience requirement. The educational program in Forest Technology leading to the Associate in Applied Science degree is accredited by the Society of American Foresters (<http://www.eforester.org>) (SAF). The Thompson School's Forest Technology program was the first two-year program in the U.S. to complete the accreditation process.
- **Horticultural Technology:** *Beginning in the 2018-2019 academic year, the Horticulture Technology: Landscape Construction and Management program and Horticulture Technology: Plant Production program will no longer be accepting new students. Current Thompson School students in these programs will continue to have access to the same high-quality education and resources until they graduate in 2019.*
- **Integrated Agriculture Management:** *Beginning in the 2018-2019 academic year, the Integrated Agriculture Management program will no longer be accepting new students. Current Thompson School students in this program will continue to have access to the same high-quality education and resources until they graduate in 2019.*
- **Veterinary Technology** students have the unique opportunity to work with both small and large animals at UNH and have access to professional facilities both on and off campus. On-campus facilities include the Thompson School PAWS Veterinary Clinic, Thomas P. Fairchild Dairy Teaching and Research Center (<https://colsa.unh.edu/nhaes/fairchild>), UNH's Organic Dairy Research Farm (<https://colsa.unh.edu/nhaes/odrf>), and UNH's equine facilities (<https://colsa.unh.edu/facility/equine-facilities>). The program also partners with the New Hampshire SPCA (<http://www.nhspca.org>) (Stratham, N.H.), Cochecho Valley Humane Society (<http://www.cvhsonline.org>) (Dover, N.H.), and Pope Memorial SPCA (<http://www.popememorialsPCA.org>) (Concord, NH). The program is accredited by the American Veterinary Medical Association (<https://>

www.avma.org/Pages/home.aspx (AVMA). Students who graduate from an accredited program are eligible to take the Veterinary Technician National Exam (VTNE) to become a credentialed veterinary technician.

Associate in Applied Science

To graduate with an associate in applied science degree, a student must complete specified coursework in general education, technical concentration, and general electives (see the following section), with an overall grade-point average of no less than 2.0. In addition, students must earn a minimum of 64 credits (more than 64 credits may be required depending on the program of study).

General Education

In addition to curriculum-specific coursework, the associate in applied science degree includes a general education component designed to educate and to enlighten students about the world around them. General education courses develop each student's ability to think and communicate effectively; to better understand the many social, cultural, and environmental issues and challenges of the world; to become problem solvers; and to make positive contributions to society. This is achieved through a combination of coursework in the sciences, including mathematics, arts and humanities, and the social sciences. A minimum of 20 credits are dedicated to this component of the degree.

In this area, a student must complete:

- courses in the sciences, including mathematics (minimum of three credit hours) and technology;
- courses in arts and humanities, to include COM 209 Expository Writing and Reading;
- courses in the social sciences, to include either SSCI 201 Human Relations or SSCI 202 Social Issues.

The remaining nine credits (at least two additional courses) of the minimum 20 needed to fulfill the general education component of the associate in applied science degree must be taken from two of the three named areas. A maximum of eight credits may be double counted as a required course within the student's program area.

Specific Requirements for General Education for the Associate of Applied Science Degree at the Thompson School

Code	Title	Credits
Arts & Humanities, including communication		
COM 209	Expository Writing and Reading	4
Social Sciences		
SSCI 201 or SSCI 202	Human Relations Social Issues	4
Science, including math and technology		
MTH 202 or MTH 203	College Algebra Algebra and Trigonometry	3
Additional 9 credits taken from two of the three named areas above		9
Total Credits		20

Technical Concentration

These are courses designed to develop the necessary scientific knowledge, technical skills, and practical experience required for

employment in a professional discipline. Each student must complete all technical courses specified in the selected program of study.

See the following Programs of Study (p. 331) sections for course requirements and descriptions.

General Electives

This component of the degree program allows the individual to pursue courses of personal or professional interest. In this area, a student may choose a number of courses in each program of study specified as electives. These may be chosen from courses offered by the Thompson School or from other selected University undergraduate courses with advisor and administrative approval. Not all Thompson School programs have room for general electives.

Full-Time and Part-Time Programs

The associate in applied science degree at the Thompson School may be completed by pursuing either a full-time or part-time program of study. Most students enroll in the full-time program. This allows completion of a program of study in four semesters (the traditional two-year period). The sequence of required courses and semester schedules for each program are listed throughout this catalog.

Some students who are unable to attend on a full-time, two-year schedule or who wish to spread the financial investment of a college education over a longer period of time elect the option of part-time study. This allows students to work toward completion of the degree over an extended period, typically two calendar years to five academic years. The schedule may be shortened or lengthened to meet the needs of the individual student. For further information, please contact the Thompson School at (603) 862-1025.

Admissions

The Thompson School welcomes applications from both recent high school graduates and non-traditional (adult) students.

Admission to an associate in applied science degree program is based upon successful completion of a secondary school program of college preparatory coursework or its equivalent. Primary consideration is given to the candidate's academic record, as demonstrated by secondary school course selections and achievement, recommendation, and the results of the SAT and/or ACT exam. Consideration is also given to the applicant's personal motivation, demonstrated interest in a career field, and leadership roles.

For most programs, candidates must, at a minimum, present a solid college preparatory program including at least four years of English, two years of mathematics (one of which must be Algebra I, Geometry, and/or Algebra II), two years of science (biology with a lab, being one of them), and three years of social science. The majority of students are admitted with three years of both college-prep mathematics and science. Some programs have more specific requirements, which are included in the appropriate sections of this catalog.

For a non-traditional student who graduated from high school several years ago, the Office of Admissions will consider not only his or her academic record but also accomplishments since high school. Important factors include professional work and advancement and motivation to succeed in Thompson School courses. In addition, applicants will be considered on the basis of any available test scores such as General Education Development (GED), SAT or ACT, and College Level Examination Program (CLEP) exams; letters of reference; previous college

study; and military record (if applicable). Non-traditional students who have been out of high school for a number of years may request the Office of Admissions waive the SAT requirement.

Transfer students are welcome at the Thompson School. Upon admission to UNH, the Office of Admissions will complete an official credit evaluation and inform the student of the total credits transferred and any general education requirements that have been fulfilled. Please note that it is up to each Thompson School academic department to determine which courses from other institutions will be accepted towards fulfilling major requirements. Transfer students often fulfill program or general education requirements by transferring in credits of unequal value (i.e. transfer in a 3-credit class from elsewhere to meet the requirements of a 4-credit UNH class). Students who do this must pay special attention to ensure they accrue at least the minimum 64 credits overall, meet general education requirements (20 credits), and meet technical concentration, grade point average, and elective requirements for their program.

How to Apply

Most first-year and transfer applicants to UNH's Thompson School of Applied Science must submit the Common Application to be considered for admission. Veterans, non-traditional students, and N.H. community college transfer students have a slightly different application process.

Although UNH will accept the paper-version of the application, students are strongly encouraged to submit the application electronically through the Common Application website, www.commonapp.org (<http://www.commonapp.org>), as this expedites the process (99 percent of students submit their applications electronically). These same options are available to students applying from countries other than the United States.

The electronic version of the Common Application may be submitted from August, once the Common Application opens, through April 1. The Early Action due date is November 15. Notice of admission to the Thompson School will normally be sent within 30 days following receipt of all required information. Housing may not be guaranteed if application is received after February 1. When applying from April 2 through July 15, the PDF (paper) application must be submitted.

Please note that priority due dates for students requesting UNH residential housing are February 1 for the fall semester and November 1 for the spring semester. Housing assignments are handled on a space-available basis. The UNH Financial Aid due date is March 1 for the following academic year.

Campus Visits

Prospective students are encouraged to participate in an interview at the Thompson School, attend an open house, and/or take a tour of the Thompson School and the rest of the UNH campus. Interviews are recommended but not required. An open house/prospective student day is held in the fall. To attend this event or to arrange your visit, please contact the Thompson School at (603) 862-1025 or visit our website at <https://colsa.unh.edu/tsas>

Expenses, Financial Aid, and Scholarships

Costs for students include tuition, fees, room and board, books and supplies, and personal and travel expenses. These costs are the same for any student enrolled at the University of New Hampshire (see Fees and Expenses), and students majoring at the Thompson School have

access to the same student services. (See also Campus Life, Programs and Services for Students, and Health Services.) Required curriculum and lab fees for Thompson School programs are listed with each program area.

Information about scholarships, loans, and work-study is located at <http://financialaid.unh.edu/> or by calling (603) 862-3600. A Free Application for Federal Student Aid (FAFSA) must be processed by the Financial Aid Office by March 1 of each year for a student to be considered for several scholarships for the following academic year. (See also Financial Aid.)

The Thompson School, one of four divisions of the College of Life Sciences and Agriculture (COLSA), informs students of scholarship opportunities, which are primarily for second-year students but do include opportunities for incoming students.

New England Regional Student Program

The Thompson School at UNH participates in the New England Regional Student Program of the New England Board of Higher Education, through which each state university system in New England offers a number of regional curricula to students from other New England states. Under this program, students pay in-state tuition plus 75 percent. See the following table for Thompson School programs that are eligible in 2017-2018. Eligibility under this program may vary from year to year, so it is suggested that you obtain further information by contacting:

The New England Board of Higher Education
45 Temple Place
Boston, MA 02111
(617) 357-9620

You may also contact the UNH Office of Admissions (<http://www.unh.edu/main/admissions>) for more information.

Associate Degree Program	Available to Residents of
Applied Animal Science	MA, ME, RI, VT
Forest Technology	CT, MA, RI, VT
Veterinary Technology	RI

Transfer Opportunities

UNH invites Thompson School graduates to continue their education at the University. Many of the associate degree programs offered by the School have baccalaureate degree counterparts. Specifically, these counterparts include animal science, forestry, and sustainable agriculture and food systems. Many other baccalaureate majors also are available. A final cumulative grade-point average of at least 2.5 is required for transfer to most programs; some UNH baccalaureate programs require a higher cumulative grade-point average. Successful completion of a baccalaureate degree usually requires a minimum of two years of additional study at the University. Other colleges and universities, especially those within the University System of New Hampshire, also welcome graduates from the Thompson School.

<https://colsa.unh.edu/thompson-school-applied-science>

Departments

- Applied Animal Science (p. 331)
- Civil Technology (p. 336)

- Culinary Arts & Nutrition (p. 340)
- Forest Technology (p. 343)
- Horticultural Technology (p. 344)
- Integrated Agriculture Management (p. 347)
- Veterinary Technology (p. 349)

Programs of Study

- Applied Animal Science (AAS) (p. 331)
- Civil Technology (CT) (p. 336)
- Culinary Arts and Nutrition (CAN) (p. 340)
- Forest Technology (FORT) (p. 343)
- Horticultural Technology (HT) (p. 344)
- Integrated Agriculture Management (IAG) (p. 347)
- Veterinary Technology (VTEC) (p. 349)

Applied Animal Science (AAS)

Applied animal science (AAS) provides students with hands-on practical skills combined with knowledge and understanding of the latest technology. The core program offers a solid background in anatomy, physiology, nutrition, health, and animal breeding. The curriculum is focused on animal agriculture and emphasizes decision-making, technologies, and processes that address the realities of modern agriculture.

Practical learning experience is provided at the Thomas P. Fairchild Dairy Teaching and Research Center (<https://www.colsa.unh.edu/nhaes/fairchild>) and the UNH Organic Dairy Farm (<https://colsa.unh.edu/nhaes/odrf>). The Thompson School also operates its own veterinary clinic and biology laboratories. The curriculum has a number of animal-related educational partnerships that include field trips to numerous animal-related businesses.

Beginning in the 2018-2019 academic year, the Applied Animal Science: Companion Animal Science Concentration and Applied Animal Science: Equine Management Concentration programs will no longer be accepting new students. Current Thompson School students in these programs will continue to have access to the same high-quality education and resources until they graduate in 2019.

Admissions Requirements

Applicants to the applied animal science program area must present college preparatory English and at least two years of satisfactory work in both college preparatory mathematics and science (one of the sciences being biology, with a lab). One year of laboratory college preparatory chemistry is highly recommended.

Curriculum Fee

Applied animal science, all concentrations: \$700¹

¹ This one-time curriculum fee is required to cover lab materials, specialized equipment maintenance, and transportation that are unique to the applied nature of the concentration. The curriculum fee covers the entire two-year course of study for one concentration. There may be additional fees for uniforms, specific high-cost courses, and/or professional equipment. Any non-TSAS student may be assessed specific course fees, details of which are included in each semester's Time and Room Schedule. All fees are subject to change.

Applied Animal Science Curriculum Standards

Applied animal science (AAS) students must maintain a minimum 2.0 cumulative grade-point average in AAS classes after two semesters (minimum 26 credits) to take additional AAS classes. Students with AAS averages lower than 2.0 must repeat classes with lower grades and raise their average to the required 2.0 before taking additional AAS classes. Students must have a minimum cumulative 2.0 grade-point average in AAS classes to qualify for graduation from the program.

<https://colsa.unh.edu/thompson-school-applied-science>

Programs

- Applied Animal Science: Animal Agriculture Concentration (A.A.S.) (p. 331)
- Applied Animal Science: Companion Animal Science Concentration (A.A.S.) (p. 333)
- Applied Animal Science: Equine Management Concentration (A.A.S.) (p. 335)

Faculty

<https://colsa.unh.edu/thompson-school-applied-science/people>

Applied Animal Science: Animal Agriculture Concentration (A.A.S.)

<https://colsa.unh.edu/tsas/aas/animal-agriculture>

Description

The production of meat, milk and fiber from animals is expected to continue to grow for decades to come. Students interested in working in the highly technical, rapidly changing field of farm animal production and management, must become well versed in the many species of farm animals, including breeding, feeding, health care, housing and marketing. In the animal agriculture concentration, students apply many of the skills learned in the classroom on farms in the first few weeks of the program. Students learn to work safely with farm livestock and poultry. They visit farms, engage in hands-on activities weekly with their instructors. Students will balance rations, identify and treat diseases, learn to design appropriate buildings, fences, and properly take of the land and environment necessary to support farm animals. Students visit and interact with nearby farms with beef, sheep, goats and swine. Students also have the opportunity to work and study at the University's dairy and equine farms. UNH maintains two modern and well-equipped teaching and research centers, and as an option students interested in dairy cattle can also collaborate to manage the CREAM (Cooperative for Real Education in Agriculture) (<http://colsa.unh.edu/tsas/cream>) herd. All students will also study at the UNH Organic Dairy Research Farm (<http://colsa.unh.edu/article/2012/10/organic-dairy-research-farm>).

Students learn the business of farming through field exercises in land management, forage production, financial management, and computer use on a farm as well as through continued practical experience with

farm livestock, poultry and dairy cattle. The program prepares students to work both on the farm and in related businesses.

The Thompson School's Animal Agriculture program is in a unique position with the baccalaureate animal science major. Students may start with the Thompson School program, obtain their associate in applied science (A.A.S.) degree then transfer to a four-year major and obtain a B.S. in two to two-and-a-half additional years with a full-time course of study. This allows students to receive two degrees in as little as four years or obtain their A.A.S. degree and work in the field to later return for a B.S. Students wishing to follow this course of action need to work closely with their adviser and maintain a grade of C or better in key applied animal science courses.

Career Opportunities

Herd manager, agricultural sales and/or service employee, farm manager, artificial insemination (AI) technician, crop manager, farm owner, or farm-business owner.

Requirements

Candidates for a degree must satisfy all of the Thompson School of Applied Science General Education requirements in addition to satisfying the requirements of the Applied Animal Science Animal Agriculture program. Animal Agriculture students are required to take:

Code	Title	Credits
AAS 423	Dairy Selection	2
AAS 425	Introduction to Dairy Herd Management	4
AAS 428	Anatomy and Physiology of Domestic Animals	3
AAS 428A	Anatomy and Physiology of Domestic Animals Lab for AAS majors	1
AAS 431	Introduction to Animal Science	4
AAS 432	Introduction to Forage and Grassland Management	3
AAS 434	Equipment and Facilities Management	3
AAS 439	Fundamentals of Animal Health	2
AAS 439A	Fundamentals of Animal Health Lab for Applied Animal Science Majors	1
AAS 535	Animal Nutrition	3
AAS 540	Animal Breeding	3
AAS 546	Animal Business Applications	4
AAS 574	Dairy Cattle Disease Seminar	2
or AAS 402	Introduction to Livestock and Poultry Management	
ANSC 698	Cooperative for Real Education in Agricultural Management (CREAM)	4
or ANSC 605	Poultry Production and Health Management	
ANSC 698	Cooperative for Real Education in Agricultural Management (CREAM)	4
or ANSC 625	Diseases of Small Ruminants, Swine, Poultry, and Camelids	
AAS 597	Applied Animal Science Work Experience	0
ABM 404A	Introduction to Business I	2
COM 210	Public Speaking	3
or COM 212	Writing in the Workplace	

Degree Plan

Animal Agriculture Program of Study

Course	Title	Credits
First Year		
Fall		
AAS 425	Introduction to Dairy Herd Management	4
AAS 428	Anatomy and Physiology of Domestic Animals	3
AAS 428A	Anatomy and Physiology of Domestic Animals Lab for AAS majors	1
AAS 431	Introduction to Animal Science	4
COM 209	Expository Writing and Reading	4
Credits		16
Spring		
AAS 423	Dairy Selection	2
AAS 434	Equipment and Facilities Management	3
AAS 439	Fundamentals of Animal Health	2
AAS 439A	Fundamentals of Animal Health Lab for Applied Animal Science Majors	1
ABM 404A	Introduction to Business I	2
COM 210	Public Speaking	3
or COM 212	or Writing in the Workplace	
MTH 202	College Algebra	3
Elective		1-4
Credits		17-20
Second Year		
Fall		
AAS 432	Introduction to Forage and Grassland Management	3
AAS 535	Animal Nutrition	3
AAS 546	Animal Business Applications	4
ANSC 698	Cooperative for Real Education in Agricultural Management (CREAM)	4
or ANSC 605	or Poultry Production and Health Management	
AAS 597	Applied Animal Science Work Experience	0
SSCI 201	Human Relations	4
Credits		18
Spring		
AAS 540	Animal Breeding	3
AAS 574	Dairy Cattle Disease Seminar	2
or AAS 402	or Introduction to Livestock and Poultry Management	
ANSC 698	Cooperative for Real Education in Agricultural Management (CREAM)	4
Any SSCI Course		2-4
Elective(s)		2-4
Credits		13-17
Total Credits		64-71

Applied Animal Science: Companion Animal Science Concentration (A.A.S.)

<https://colsa.unh.edu/tsas/aas/companion-animal-science>

Description

Beginning in the 2018-2019 academic year, the Applied Animal Science: Companion Animal Science Concentration program will no longer be accepting new students. Current Thompson School students in this program will continue to have access to the same high-quality education and resources until they graduate in 2019.

Animal companionship provides millions of people with an oasis in a hectic, impersonal world. Pet owners consistently seek quality professional services for pets that are often considered members of the family. The companion animal science concentration prepares students to work in specialized areas by choosing one of two tracks; Applied Animal Behavior or Veterinary Assisting and Animal Management. Both tracks focus on traditional companion animals such as dogs, cats, along with other domestic species. Actual field and work/volunteer experience takes place the second year along with academic coursework. Through local partnerships, all tracks complete a capstone course supporting the individual care and population management of community shelter animals.

Additionally, each track aligns with professional industry organizations' learning objectives and skills for certification after graduation. Depending on the organization and student, additional applied hours may be required before a certification exam may be taken. Organizations include but are not limited to: Certification Council for Pet Dog Trainers and Behavior Consultants, International Association of Animal Behavior Consultants, International Professional Groomers, and the National Association of Veterinary Technicians in America that provide certification for veterinary assistants.

Companion animal science is a diverse career area that requires specialized knowledge and applied skills. We look forward to guiding students onto the correct career pathway and/or preparing for them to meet future academic goals.

Career Opportunities

Animal control, animal sheltering and rescuing, ownership or management of companion animal businesses, pet groomer, animal training and behavior, veterinary assistant, animal caregiver, animal-assisted activities/therapy volunteer and/or coordinator.

Requirements

Candidates for a degree must satisfy all of the Thompson School of Applied Science General Education requirements in addition to satisfying the requirements of the Applied Animal Science Companion Animal Science program.

Companion Animal Science, Applied Animal Behavior students are required to take:

Code	Title	Credits
AAS 402	Introduction to Livestock and Poultry Management	2
AAS 421	Large Animal Behavior and Handling Techniques	2
AAS 424	Animal Law and Regulations	3
AAS 428	Anatomy and Physiology of Domestic Animals	3
AAS 428A	Anatomy and Physiology of Domestic Animals Lab for AAS majors	1
AAS 430	Small Animal Breeds and Behavior	4
AAS 431	Introduction to Animal Science	4
AAS 436	Equine Show Preparation and Competition	1
AAS 437	Equine Handling and Care Techniques	4
AAS 439	Fundamentals of Animal Health	2
AAS 439A	Fundamentals of Animal Health Lab for Applied Animal Science Majors	1
AAS 451	Human/Animal Bond	4
AAS 525	Canine Learning Theory and Application	4
AAS 535	Animal Nutrition	3
AAS 540	Animal Breeding	3
AAS 553	Equine Competition Management	2
AAS 577	Functional Canine Analysis Practicum	4
AAS 597	Applied Animal Science Work Experience	0
ABM 404A	Introduction to Business I	2
Total Credits		49

Companion Animal Science, Veterinary Assistant track students are required to take:

Code	Title	Credits
AAS 421	Large Animal Behavior and Handling Techniques	2
AAS 422	Small Animal Grooming I	2
AAS 424	Animal Law and Regulations	3
AAS 428	Anatomy and Physiology of Domestic Animals	3
AAS 428A	Anatomy and Physiology of Domestic Animals Lab for AAS majors	1
AAS 430	Small Animal Breeds and Behavior	4
AAS 431	Introduction to Animal Science	4
AAS 439	Fundamentals of Animal Health	2
AAS 439A	Fundamentals of Animal Health Lab for Applied Animal Science Majors	1
AAS 445	Veterinary Assisting Techniques	4
AAS 449	Clinical Animal Nursing Techniques I	3
AAS 451	Human/Animal Bond	4
AAS 535	Animal Nutrition	3
AAS 540	Animal Breeding	3
AAS 546	Animal Business Applications	4
AAS 558	Animal Population Medicine and Management	2
AAS 597	Applied Animal Science Work Experience	0
ABM 404A	Introduction to Business I	2
Veterinary Assistant Track Courses		
AAS 527	Companion Animal Diseases	2
AAS 579	Small Animal Care Practicum	2
VTEC 424	Introduction to Veterinary Technology	2
Total Credits		53

Companion Animal Science, Animal Management track students are required to take:

Code	Title	Credits
AAS 421	Large Animal Behavior and Handling Techniques	2
AAS 422	Small Animal Grooming I	2
AAS 424	Animal Law and Regulations	3
AAS 428	Anatomy and Physiology of Domestic Animals	3
AAS 428A	Anatomy and Physiology of Domestic Animals Lab for AAS majors	1
AAS 430	Small Animal Breeds and Behavior	4
AAS 431	Introduction to Animal Science	4
AAS 439	Fundamentals of Animal Health	2
AAS 439A	Fundamentals of Animal Health Lab for Applied Animal Science Majors	1
AAS 445	Veterinary Assisting Techniques	4
AAS 449	Clinical Animal Nursing Techniques I	3
AAS 451	Human/Animal Bond	4
AAS 535	Animal Nutrition	3
AAS 540	Animal Breeding	3
AAS 546	Animal Business Applications	4
AAS 558	Animal Population Medicine and Management	2
AAS 597	Applied Animal Science Work Experience	0
ABM 404A	Introduction to Business I	2
Animal Management Track Courses		
AAS 433	Small Animal Grooming II	2
AAS 563	Small Animal Grooming III	1
Total Credits		50

Degree Plan

Companion Animal Science / Applied Animal Behavior Program of Study

Course	Title	Credits
First Year		
Fall		
AAS 428	Anatomy and Physiology of Domestic Animals	3
AAS 428A	Anatomy and Physiology of Domestic Animals Lab for AAS majors	1
AAS 430	Small Animal Breeds and Behavior	4
AAS 431	Introduction to Animal Science	4
AAS 437	Equine Handling and Care Techniques	4
Credits		16
Spring		
AAS 439	Fundamentals of Animal Health	2
AAS 439A	Fundamentals of Animal Health Lab for Applied Animal Science Majors	1
AAS 436	Equine Show Preparation and Competition	1
COM 209	Expository Writing and Reading	4
SSCI 201	Human Relations	4
ABM 404A	Introduction to Business I	2

MTH 202	College Algebra	3
Credits		17
Second Year		
Fall		
AAS 421	Large Animal Behavior and Handling Techniques	2
AAS 451	Human/Animal Bond	4
AAS 525	Canine Learning Theory and Application	4
AAS 535	Animal Nutrition	3
AAS 597	Applied Animal Science Work Experience	0
COM 210	Public Speaking	3
Credits		16
Spring		
AAS 402	Introduction to Livestock and Poultry Management	2
AAS 424	Animal Law and Regulations	3
AAS 540	Animal Breeding	3
AAS 553	Equine Competition Management	2
AAS 577	Functional Canine Analysis Practicum	4
Elective (if needed)		1
Credits		15
Total Credits		64

Companion Animal Science / Veterinary Assistant and Animal Management Track Program of Study

Course	Title	Credits
First Year		
Fall		
AAS 421	Large Animal Behavior and Handling Techniques	2
AAS 428	Anatomy and Physiology of Domestic Animals	3
AAS 428A	Anatomy and Physiology of Domestic Animals Lab for AAS majors	1
AAS 430	Small Animal Breeds and Behavior	4
AAS 431	Introduction to Animal Science	4
COM 209	Expository Writing and Reading	4
Credits		18
Spring		
AAS 439	Fundamentals of Animal Health	2
AAS 439A	Fundamentals of Animal Health Lab for Applied Animal Science Majors	1
AAS 449	Clinical Animal Nursing Techniques I	3
AAS 422	Small Animal Grooming I	2
AAS 445	Veterinary Assisting Techniques	4
ABM 404A	Introduction to Business I	2
MTH 202	College Algebra	3
Credits		17
Second Year		
Fall		
AAS 451	Human/Animal Bond	4

AAS 535	Animal Nutrition	3
AAS 597	Applied Animal Science Work Experience	0
SSCI 201 or SSCI 202	Human Relations or Social Issues	4
Choose one option based on track		2-4
Animal Management Track		
AAS 433	Small Animal Grooming II	
Veterinary Assistant Track		
AAS 579	Small Animal Care Practicum	
AAS 527	Companion Animal Diseases	
Credits		13-15
Spring		
AAS 424	Animal Law and Regulations	3
AAS 540	Animal Breeding	3
AAS 546	Animal Business Applications	4
AAS 558	Animal Population Medicine and Management	2
COM 210 or COM 212	Public Speaking or Writing in the Workplace	3
Choose one option based on track		1-2
Animal Management Track		
AAS 563	Small Animal Grooming III	
Veterinary Assistant Track		
VTEC 424	Introduction to Veterinary Technology	
Credits		16-17
Total Credits		64-67

Applied Animal Science: Equine Management Concentration (A.A.S.)

<https://colsa.unh.edu/tsas/aas/equine-management>

Description

Beginning in the 2018-2019 academic year, the Applied Animal Science: Equine Management Concentration program will no longer be accepting new students. Current Thompson School students in this program will continue to have access to the same high-quality education and resources until they graduate in 2019.

The equine industry in New England encompasses many different types of facilities and disciplines. Students in the equine management concentration combine courses utilizing the most recent technical information with related practical experience. They gain hands-on experience in bandaging, selection, ration-balancing by computer, fitting and care of equipment, and farm and barn analysis. They also acquire decision-making and managerial skills through the organization and running of a combined test competition each spring. Graduates have a solid foundation to pursue either employment or additional educational opportunities upon completion of the program.

The riding focus at UNH is balance seat with schooling in dressage, cross country, and stadium jumping. Thompson School students in horsemanship classes ride in the UNH program and have the opportunity to try out for the award-winning Intercollegiate Horse

Show Association (IHSA) (<http://colsa.unh.edu/ihsa>) or Intercollegiate Dressage Association (IDA) (<http://colsa.unh.edu/ida>) teams.

Students who plan to continue their college education in a four-year major are encouraged to express their interest to their advisor. Together, student and adviser can develop a sequence of courses that will assist with the transition from the two-year to four-year degree program.

Career Opportunities (directly out of the associate degree program)

Horse and farm manager, sales (tack shops, grain companies, among other industries), horse show manager, veterinary assistant/equine practice, or riding instructor (with additional studies), and several graduates have been employed in the insurance industry.

Graduates have become animal control officers, have worked with mounted police units, and have worked at the NHSPCA.

Several graduates have gone on and earned their Bachelor degrees in several different majors, and others have earned their Masters degrees.

Several have dual majored in education and have become agricultural vocational educational teachers.

Requirements

Candidates for a degree must satisfy all of the Thompson School of Applied Science General Education requirements in addition to satisfying the requirements of the Applied Animal Science Equine Management program. Equine Management students are required to take:

Code	Title	Credits
AAS 428	Anatomy and Physiology of Domestic Animals	3
AAS 428A	Anatomy and Physiology of Domestic Animals Lab for AAS majors	1
or AAS 428B	Anatomy and Physiology of Domestic Animals Lab for VTEC majors	
AAS 426	Equine Conformation and Lameness	4
AAS 431	Introduction to Animal Science	4
AAS 432	Introduction to Forage and Grassland Management	3
AAS 434	Equipment and Facilities Management	3
AAS 436	Equine Show Preparation and Competition	1
AAS 437	Equine Handling and Care Techniques	4
AAS 439	Fundamentals of Animal Health	2
AAS 439A	Fundamentals of Animal Health Lab for Applied Animal Science Majors	1
or AAS 439B	Fundamentals of Animal Health Lab for Veterinary Technology Majors	
AAS 535	Animal Nutrition	3
AAS 538	Equine Handling/Longeing	1
AAS 540	Animal Breeding	3
AAS 546	Animal Business Applications	4
AAS 552	Equine Health Management	4
AAS 553	Equine Competition Management	2
AAS 547	Applied Equine Management	3
AAS 597	Applied Animal Science Work Experience	0
ANSC 402	Horsemanship	3

ANSC 411	Freshman Seminar in Equine Science	1
ABM 404A	Introduction to Business I	2
COM 212	Writing in the Workplace	3
or COM 210	Public Speaking	
Total Credits		55

Any General Education Class	2-4
Credits	17-19
Total Credits	68-70

Degree Plan

Equine Management Program of Study

Course	Title	Credits
First Year		
Fall		
AAS 428	Anatomy and Physiology of Domestic Animals	3
AAS 428A or AAS 428B	Anatomy and Physiology of Domestic Animals Lab for AAS majors or Anatomy and Physiology of Domestic Animals Lab for VTEC majors	1
AAS 431	Introduction to Animal Science	4
AAS 437	Equine Handling and Care Techniques	4
ANSC 411	Freshman Seminar in Equine Science	1
COM 209	Expository Writing and Reading	4
Credits		17
Spring		
AAS 426	Equine Conformation and Lameness	4
AAS 436	Equine Show Preparation and Competition	1
AAS 439	Fundamentals of Animal Health	2
AAS 439A or AAS 439B	Fundamentals of Animal Health Lab for Applied Animal Science Majors or Fundamentals of Animal Health Lab for Veterinary Technology Majors	1
ABM 404A	Introduction to Business I	2
COM 212	Writing in the Workplace or Public Speaking	3
MTH 202	College Algebra	3
Credits		16
Second Year		
Fall		
AAS 432	Introduction to Forage and Grassland Management	3
AAS 535	Animal Nutrition	3
AAS 538	Equine Handling/Longeing	1
AAS 546	Animal Business Applications	4
AAS 547	Applied Equine Management	3
AAS 597	Applied Animal Science Work Experience	0
SSCI 201	Human Relations	4
Credits		18
Spring		
AAS 434	Equipment and Facilities Management	3
AAS 540	Animal Breeding	3
AAS 552	Equine Health Management	4
AAS 553	Equine Competition Management	2
ANSC 402	Horsemanship	3

Additional course options (when offered)

Code	Title	Credits
AAS 572	Comparative Equine Operations	2
AAS 593	Equine Field Operations	1-3
AAS 548	Applied Animal Business: Concepts and Practices	4

Civil Technology (CT)

Beginning in the 2018-2019 academic year, the Civil Technology: Construction Management Concentration, Civil Technology: Surveying and Mapping Concentration and Civil Technology: Sustainable Energy Management Concentration programs will no longer be accepting new students. Current Thompson School students in these programs will continue to have access to the same high-quality education and resources until they graduate in 2019.

Civil technology is a dynamic educational opportunity offering skill-based learning through classroom instruction, extensive hands-on laboratory experience and fieldwork, as well as opportunities to develop a strong portfolio. Students choose from one or more of the following concentrations: Construction Management, Surveying and Mapping, or Sustainable Energy Management.

The cornerstone of the educational experience is instruction in computer-aided design (CAD) and parametric modeling using the Thompson School's state-of-the-art CAD/GIS/BIM (building information management) labs. Students in surveying use the latest GPS and surveying equipment, and students studying geographical information systems (GIS) use the new GIS Instructional Lab. Additional coursework covers building science, building mechanical and electrical systems, construction contracting, materials, soils and foundation design, and methodologies of professional practice in the concentrations.

Admissions Requirements

Applicants to the construction management, surveying and mapping, and sustainable energy management concentrations must present college preparatory English and at least two years of satisfactory work in college preparatory mathematics.

Curriculum Fee

Civil technology, all concentrations: \$102¹

¹ This one-time curriculum fee is required to cover lab materials, specialized equipment maintenance, and transportation that are unique to the applied nature of the concentration. The curriculum fee covers the entire two-year course of study for one concentration. Any non-TSAS student may be assessed specific course fees, details of which are included in each semester's Time and Room Schedule. All fees are subject to change.

<https://colsa.unh.edu/thompson-school-applied-science>

Programs

- Civil Technology: Construction Management Concentration (A.A.S.) (p. 337)
- Civil Technology: Surveying and Mapping Concentration (A.A.S.) (p. 338)
- Civil Technology: Sustainable Energy Management Concentration (A.A.S.) (p. 339)

Faculty

<https://colsa.unh.edu/thompson-school-applied-science/people>

Civil Technology: Construction Management Concentration (A.A.S.)

<https://colsa.unh.edu/thompson-school-applied-science/program/aas/civil-technology-construction-management-concentration>

Description

Beginning in the 2018-2019 academic year, the Civil Technology: Construction Management Concentration program will no longer be accepting new students. Current Thompson School students in this program will continue to have access to the same high-quality education and resources until they graduate in 2019.

In the Construction Management concentration, students prepare for careers in land development, construction contracting and management, and land-use planning. Students learn not only how to build well but how to build wisely. They study construction and its related technologies, dealing with material selection and design, and design of foundation and drainage systems. They also examine environmental and land development issues by studying residential and commercial septic, waste disposal, and municipal environmental systems, recycling, and effective energy management. Some graduates elect to continue their education in Bachelor of Science programs in civil engineering or community development.

Graduates of the construction management concentration find employment in a variety of building industry-related positions.

Career Opportunities

Construction supervisor, project manager, cost estimator, public-works employee, contractor, code-enforcement officer, construction-material tester, land-development planning employee, site evaluator for building components, construction product manufacturer, product representative, or DOT engineering technician.

Requirements

Candidates for a degree must satisfy all of the Thompson School of Applied Science General Education requirements in addition to satisfying the requirements of the Civil Technology Construction Management program. Construction Management students are required to take:

Code	Title	Credits
CT 423	Introduction to Surveying and Mapping	3
CT 425	Surveying and Mapping Lab	2
CT 427	2D Computer Aided Design	4
CT 428	3D Design, Modeling and Visualization	4
CT 432	Applied Environmental Technology	4
CT 442	Construction Surveying	4
CT 483	Mechanical and Electrical Systems	4
CT 551	Statics and Materials	4
CT 538	Construction Contracting	4
CT 554	Soils and Foundations	4
CT 557	Land Design and Regulations	4
CT 576	Building Science/Residential Construction	4
CT 597	Work Experience	0
TSAS 405A & TSAS 405B	Computers in the Workplace/Focus on Software Applications and Computers in the Workplace II/Focus on Hardware, Internet, Applications and Security	4
Program Elective - Choose one of the following as offered (in conjunction with CT Advisor)		3-4
AM 451	Welding/Fabrication Technology	
AM 461	Internal Combustion Engines I	
CEP 672	Fundamentals of Real Estate	
CEP 673	Green Real Estate	
FORT 581	Applied Geographic Information Systems (GIS) Techniques	
NR 435	Contemporary Conservation Issues and Environmental Awareness	
THDA 459	Stagecraft	
Other options with approval of CT Advisor		
Total Credits		52-53

Degree Plan

Construction Management Program of Study

Course	Title	Credits
First Year		
Fall		
CT 423	Introduction to Surveying and Mapping	3
CT 425	Surveying and Mapping Lab	2
CT 427	2D Computer Aided Design	4
MTH 203	Algebra and Trigonometry	3
TSAS 405A & TSAS 405B	Computers in the Workplace/Focus on Software Applications and Computers in the Workplace II/Focus on Hardware, Internet, Applications and Security	4
Credits		16
Spring		
COM 212	Writing in the Workplace	3
CT 428	3D Design, Modeling and Visualization	4
CT 432	Applied Environmental Technology	4

CT 442	Construction Surveying	4
SSCI 202	Social Issues	4
Credits		19
Second Year		
Fall		
COM 209	Expository Writing and Reading	4
CT 483	Mechanical and Electrical Systems	4
CT 551	Statics and Materials	4
CT 557	Land Design and Regulations	4
CT 597	Work Experience	0
Credits		16
Spring		
CT 576	Building Science/Residential Construction	4
CT 538	Construction Contracting	4
CT 554	Soils and Foundations	4
Program Elective - Choose one of the following as offered (in conjunction with CT Advisor)		3-4
AM 451	Welding/Fabrication Technology	
AM 461	Internal Combustion Engines I	
CEP 672	Fundamentals of Real Estate	
CEP 673	Green Real Estate	
NR 435	Contemporary Conservation Issues and Environmental Awareness	
THDA 459	Stagecraft	
Other options with approval of CT Advisor		
Credits		15-16
Total Credits		66-67

Civil Technology: Surveying and Mapping Concentration (A.A.S.)

<https://colsa.unh.edu/tsas/ct/surveying-and-mapping>

Description

Beginning in the 2018-2019 academic year, the Civil Technology: Surveying and Mapping Concentration program will no longer be accepting new students. Current Thompson School students in this program will continue to have access to the same high-quality education and resources until they graduate in 2019.

As land values increase and the need to use our natural resources efficiently while protecting our environment becomes more critical, the role of surveyors is expanding. The Surveying and Mapping concentration contains a core sequence of six courses (from Introductory Surveying to the Legal Aspects of Surveying) that continuously challenge students to improve their technical knowledge, computer skills, and field competency. Using electronic field measuring equipment, computers to create and plot maps, satellite positioning technology, and laser scanning, the surveyors and mappers of today are at the forefront of acquiring, analyzing, and managing land information. Graduates are prepared to sit for the Fundamentals of Surveying exam (<http://ncees.org/surveying/fs>) as a first step in getting licensed as a land surveyor in New Hampshire.

Career Opportunities

Licensed land surveyor, DOT engineering technician, GIS technician, land-development planner, construction surveyor, or GPS technician.

Requirements

Candidates for a degree must satisfy all of the Thompson School of Applied Science General Education requirements in addition to satisfying the requirements of the Civil Technology Surveying and Mapping program. Surveying and Mapping students are required to take:

Code	Title	Credits
CT 423	Introduction to Surveying and Mapping	3
CT 425	Surveying and Mapping Lab	2
CT 427	2D Computer Aided Design	4
CT 428	3D Design, Modeling and Visualization	4
CT 432	Applied Environmental Technology	4
CT 442	Construction Surveying	4
Program Elective - Choose one of the following as offered (in conjunction with CT Advisor)		3-4
AM 451	Welding/Fabrication Technology	
AM 461	Internal Combustion Engines I	
CEP 672	Fundamentals of Real Estate	
CEP 673	Green Real Estate	
NR 435	Contemporary Conservation Issues and Environmental Awareness	
THDA 459	Stagecraft	
Other options with approval of CT Advisor		
CT 538	Construction Contracting	4
CT 541	Legal Aspects of Surveying	4
CT 543	Advanced Surveying and Mapping	4
CT 548	Advanced Surveying Computation	4
CT 557	Land Design and Regulations	4
CT 597	Work Experience	0
FORT 581	Applied Geographic Information Systems (GIS) Techniques	4
TSAS 405A & TSAS 405B	Computers in the Workplace/Focus on Software Applications and Computers in the Workplace II/Focus on Hardware, Internet, Applications and Security	4
Total Credits		52-53

Degree Plan

Surveying and Mapping Program of Study

Course	Title	Credits
First Year		
Fall		
CT 423	Introduction to Surveying and Mapping	3
CT 425	Surveying and Mapping Lab	2
CT 427	2D Computer Aided Design	4
MTH 203	Algebra and Trigonometry	3

TSAS 405A & TSAS 405B	Computers in the Workplace/Focus on Software Applications and Computers in the Workplace II/Focus on Hardware, Internet, Applications and Security	4
Credits		16
Spring		
COM 212	Writing in the Workplace	3
CT 428	3D Design, Modeling and Visualization	4
CT 432	Applied Environmental Technology	4
CT 442	Construction Surveying	4
SSCI 202	Social Issues	4
Credits		19
Second Year		
Fall		
COM 209	Expository Writing and Reading	4
CT 543	Advanced Surveying and Mapping	4
CT 557	Land Design and Regulations	4
CT 597	Work Experience	0
FORT 581	Applied Geographic Information Systems (GIS) Techniques	4
Credits		16
Spring		
CT 538	Construction Contracting	4
CT 541	Legal Aspects of Surveying	4
CT 548	Advanced Surveying Computation	4
Program Elective - Choose one of the following as offered (in conjunction with CT Advisor)		3-4
AM 451	Welding/Fabrication Technology	
AM 461	Internal Combustion Engines I	
CEP 672	Fundamentals of Real Estate	
CEP 673	Green Real Estate	
NR 435	Contemporary Conservation Issues and Environmental Awareness	
THDA 459	Stagecraft	
Other options with approval of CT Advisor		
Credits		15-16
Total Credits		66-67

and renewable energy sources, relevant energy management principles in the construction industry, minimizing our environmental impact, and the proper implementation of these energy options. Students will start with foundation courses to build a broad, interdisciplinary base of knowledge and skills in science, engineering, technology, design, analysis, and communication. From the first semester, students have access to state-of-the-art mapping and surveying gear, advanced CAD, GIS, and 3D modeling software, as well as significant facilities and equipment used in traditional construction. In keeping with the Thompson School's heavy emphasis on experiential and field work, the program offers numerous hands-on experiences to apply concepts learned in the classroom. Graduates of the Sustainable Energy Management concentration will have the necessary skills and experience to fill the green energy jobs of the future.

Career Opportunities

Residential/commercial energy auditor, solar/wind/geothermal/biomass energy system sales, designer, installation and service technician, sustainable energy advocate, green building project manager

Requirements

Candidates for a degree must satisfy all of the Thompson School of Applied Science General Education requirements in addition to satisfying the requirements of the Civil Technology Sustainable Energy Management program. Sustainable Energy Management students are required to take:

Code	Title	Credits
CT 427	2D Computer Aided Design	4
CT 428	3D Design, Modeling and Visualization	4
CT 432	Applied Environmental Technology	4
CT 483	Mechanical and Electrical Systems	4
CT 538	Construction Contracting	4
CT 576	Building Science/Residential Construction	4
CT 597	Work Experience	0
CT XXX - Energy Use In Buildings		4
CT XXX - Renewable Energy Systems		4
CT XXX - Green Building Rating Systems		4
Program Elective - CT Internship or choose one of the following as offered (in conjunction with CT Advisor)		3-4
AM 451	Welding/Fabrication Technology	
AM 461	Internal Combustion Engines I	
ARTS 525	Introductory Woodworking	
CEP 672	Fundamentals of Real Estate	
CEP 673	Green Real Estate	
CT 551	Statics and Materials	
CT 554	Soils and Foundations	
CT 557	Land Design and Regulations	
FORT 581	Applied Geographic Information Systems (GIS) Techniques	
NR 435	Contemporary Conservation Issues and Environmental Awareness	
COM 212	Writing in the Workplace	3
NR 403	Introduction to Environmental Science	4

Civil Technology: Sustainable Energy Management Concentration (A.A.S.)

<https://colsa.unh.edu/tsas/ct/sustainable-energy-management>

Description

Beginning in the 2018-2019 academic year, the Civil Technology: Sustainable Energy Management Concentration program will no longer be accepting new students. Current Thompson School students in this program will continue to have access to the same high-quality education and resources until they graduate in 2019.

Energy efficiency and renewable/sustainable energy sources are topics at the forefront of today's society. In the Sustainable Energy Management concentration, students learn the basics of sustainable

NR 507	Introduction to our Energy System and Sustainable Energy	4
TSAS 405A	Computers in the Workplace/Focus on Software Applications	2
TSAS 405B	Computers in the Workplace II/Focus on Hardware, Internet, Applications and Security	2

Degree Plan

Sustainable Energy Management Concentration Program of Study

Course	Title	Credits
First Year		
Fall		
CT 427	2D Computer Aided Design	4
NR 403	Introduction to Environmental Science	4
COM 209	Expository Writing and Reading	4
TSAS 405A	Computers in the Workplace/Focus on Software Applications	2
TSAS 405B	Computers in the Workplace II/Focus on Hardware, Internet, Applications and Security	2
MTH 203	Algebra and Trigonometry	3
	Credits	19
Spring		
CT 428	3D Design, Modeling and Visualization	4
CT 432	Applied Environmental Technology	4
CT 576	Building Science/Residential Construction	4
COM 212	Writing in the Workplace	3
SSCI 202	Social Issues	4
	Credits	19
Second Year		
Fall		
CT 483	Mechanical and Electrical Systems	4
CT 597	Work Experience	0
CT XXX - Energy Use In Buildings (course in development)		4
CT XXX - Renewable Energy Systems (course in development)		4
Program Elective - Choose one of the following as offered (in conjunction with CT Advisor)		4
AM 461	Internal Combustion Engines I	
AM #462	Internal Combustion Engines II	
ARTS 525	Introductory Woodworking	
CEP 672	Fundamentals of Real Estate	
CEP 673	Green Real Estate	
CT 551	Statics and Materials	
CT 554	Soils and Foundations	
CT 557	Land Design and Regulations	
FORT 581	Applied Geographic Information Systems (GIS) Techniques	
NR 435	Contemporary Conservation Issues and Environmental Awareness	
	Credits	16

Spring

CT XXX - Green Building Rating Systems (course in development)		4
NR 507	Introduction to our Energy System and Sustainable Energy	4
CT 538	Construction Contracting	4
Program Elective - CT Internship or choose one of the following as offered (in conjunction with CT Advisor)		4
AM 451	Welding/Fabrication Technology	
AM #462	Internal Combustion Engines II	
ARTS 525	Introductory Woodworking	
CEP 672	Fundamentals of Real Estate	
CEP 673	Green Real Estate	
CT 551	Statics and Materials	
CT 554	Soils and Foundations	
CT 557	Land Design and Regulations	
FORT 581	Applied Geographic Information Systems (GIS) Techniques	
NR 435	Contemporary Conservation Issues and Environmental Awareness	
	Credits	16
	Total Credits	70

Culinary Arts and Nutrition (CAN)

Beginning in the 2018-2019 academic year, the Culinary Arts and Nutrition: Baking and Pastry Arts Concentration and the Culinary Arts and Nutrition: Culinary Arts Concentration programs will no longer be accepting new students. Current Thompson School students in this program will continue to have access to the same high-quality education and resources until they graduate in 2019.

The culinary arts and nutrition (CAN) program offers concentrations in culinary arts and baking and pastry arts. The culinary arts program is accredited by the American Culinary Federation Education Foundation Accrediting Commission (ACFEFAC).

Admissions Requirements

Applicants to culinary arts must present college preparatory English and a minimum of two years of satisfactory work in college preparatory mathematics.

Curriculum Fee

Culinary arts and nutrition, culinary arts: \$588¹

¹ This one-time curriculum fee is required to cover lab materials, specialized equipment maintenance, and transportation that are unique to the applied nature of the concentration. The curriculum fee covers the entire two-year course of study for one concentration. Any non-TSAS student may be assessed specific course fees, details of which are included in each semester's Time and Room Schedule. All fees are subject to change.

<https://colsa.unh.edu/thompson-school-applied-science>

Programs

- Culinary Arts and Nutrition: Baking and Pastry Arts Concentration (A.A.S.) (p. 341)
- Culinary Arts and Nutrition: Culinary Arts Concentration (A.A.S.) (p. 342)

Faculty

<https://colsa.unh.edu/thompson-school-applied-science/people>

Culinary Arts and Nutrition: Baking and Pastry Arts Concentration (A.A.S.)

<https://colsa.unh.edu/tsas/can/baking-pastry-arts>

Description

Beginning in the 2018-2019 academic year, the Culinary Arts and Nutrition: Baking and Pastry Arts Concentration program will no longer be accepting new students. Current Thompson School students in this program will continue to have access to the same high-quality education and resources until they graduate in 2019.

Educated consumers are building demand for real foods, moving away from processed, commercially prepared industrial baked foods into appreciation and recognition of artisan and skillfully prepared baked goods made using fresh, local products. This trend fits right into the renewed emphasis of farm to table and locally-sourced foods at the Thompson School. In addition, the increase in food allergies among consumers requires today's chefs and bakers to be skilled in the ability to substitute ingredients in order to meet these specific dietary needs. The Baking and Pastry Arts concentration starts with foundation courses to build a broad base of knowledge and skills in food science, nutrition, culinary arts, team work, and communication. Coursework offers ample opportunity for hands-on experiences, especially in the lab courses. Working collaboratively with culinary arts concentration students, baking and pastry arts students will prepare baked goods that will be served in 180 Blue and Stacey's Express, the Thompson School's two on-campus restaurants run by students. Additionally, students will apply their skills in the baking and pastry arts field with a required work experience and in externship to gain valuable real-world experience valued by employers.

Career Opportunities

Baker in diverse environments including commercial, retail, restaurants, hotels, catering operations, and entrepreneurs in small businesses.

Requirements

Candidates for a degree must satisfy all of the Thompson School of Applied Science General Education requirements in addition to satisfying the requirements of the Culinary Arts and Nutrition program. Baking and Pastry Arts students are required to take:

Code	Title	Credits
CAN 401	Food Preparation Fundamentals	2
CAN 403	Culinary Arts and Baking Skills Development	4
CAN 404	Baking and Pastry Fundamentals	4
CAN 405	Retail Baking and Merchandising	4
CAN 407	Hospitality Sanitation and Safety	1
CAN 422	Cuisine and Culture	4
CAN 504	Intermediate Baking	4
CAN 506	Food and Beverage Cost Control	4
CAN 507	Advanced Baking	4
CAN 508	Baking and Pastry Externship	5
CAN 528	Culinary Nutrition	2
CAN 598	Work Experience	0
ABM 404A	Introduction to Business I	2
ABM 506	Human Resource Management	4
COM 210	Public Speaking	3
TSAS 405A	Computers in the Workplace/Focus on Software Applications	2

Degree Plan

Baking and Pastry Arts Concentration Program of Study

Course	Title	Credits
First Year		
Fall		
CAN 401	Food Preparation Fundamentals	2
CAN 403	Culinary Arts and Baking Skills Development	4
CAN 407	Hospitality Sanitation and Safety	1
COM 209	Expository Writing and Reading	4
MTH 202	College Algebra	3
TSAS 405A	Computers in the Workplace/Focus on Software Applications	2
Credits		16
Spring		
CAN 404	Baking and Pastry Fundamentals	4
CAN 405	Retail Baking and Merchandising	4
CAN 422	Cuisine and Culture	4
COM 210	Public Speaking	3
ABM 404A	Introduction to Business I	2
Credits		17
Second Year		
Fall		
CAN 504	Intermediate Baking	4
CAN 506	Food and Beverage Cost Control	4
CAN 528	Culinary Nutrition	2
CAN 598	Work Experience	0
Elective		4
Credits		14
Spring		
ABM 506	Human Resource Management	4

CAN 507	Advanced Baking	4
CAN 508	Baking and Pastry Externship	5
SSCI 202	Social Issues	4
	Credits	17
	Total Credits	64

Culinary Arts and Nutrition: Culinary Arts Concentration (A.A.S)

<https://colsa.unh.edu/tsas/can/culinary-arts>

Description

Beginning in the 2018-2019 academic year, the Culinary Arts and Nutrition: Culinary Arts Concentration program will no longer be accepting new students. Current Thompson School students in this program will continue to have access to the same high-quality education and resources until they graduate in 2019.

Students who complete the requirements for the culinary arts concentration are prepared for a variety of positions working as chefs in the hospitality industry. In a program that combines classroom work with practical experience, students learn and explore career opportunities, menu development, cost control, food safety, baking, nutrition, management skills, and general education. Culinary arts students manage and operate two on-campus restaurants that are open to the public. 180 Blue (<https://colsa.unh.edu/tsas/180-blue>), a fine dining restaurant, and Stacey's Express (<https://colsa.unh.edu/tsas/staceys-express>), a lunchtime casual dining experience, serve as lab settings where students round out their culinary experience and build their skills as culinarians. Through a unique partnership with University Hospitality Services, students complete rotations in state-of-the-art production kitchens on campus at Holloway Commons. These rotations provide opportunities to develop proficiency in contemporary and classical culinary techniques and cooking methods related to a la carte, banquet, and quantity food production and service. The culinary arts concentration is annually reviewed by its own advisory committee of industry professionals, program faculty, and chef-instructors who revise the curriculum to meet changing industry needs. The culinary arts program is accredited by the American Culinary Federation Education Foundation Accrediting Commission (ACFEFAC). Students who join the American Culinary Federation become certified culinarians after graduating from the Culinary Arts and Nutrition program.

Career Opportunities

Chef in restaurants, hotels, private clubs, theme parks, catering and banquet facilities, destination resorts, cruise ships, corporate chains, and health care facilities.

Requirements

Candidates for a degree must satisfy all of the Thompson School of Applied Science General Education requirements in addition to satisfying the requirements of the Culinary Arts and Nutrition program. Culinary Arts students are required to take:

Code	Title	Credits
CAN 401	Food Preparation Fundamentals	2
CAN 403	Culinary Arts and Baking Skills Development	4
CAN 404	Baking and Pastry Fundamentals	4
CAN 407	Hospitality Sanitation and Safety	1
CAN 422	Cuisine and Culture	4
CAN 426	Dining Room Practicum	3
CAN 443	Quantity Food Production and Display Cooking	4
CAN 506	Food and Beverage Cost Control	4
CAN 525	American and Regional Cuisine	5
CAN 528	Culinary Nutrition	2
CAN 535	International Cuisine	5
CAN 544	Catering and Garde Manger	4
ABM 506	Human Resource Management	4
TSAS 405A	Computers in the Workplace/Focus on Software Applications	2
COM 210	Public Speaking	3
	Choose one of the following:	2-5
	CAN 597 Culinary Arts Internship ¹	
	CAN 598 Work Experience (plus additional 2 credits of elective coursework)	
	Total Credits	53-56

¹ CAN 597 is by invitation only

Degree Plan

Culinary Arts Concentration Program of Study

Course	Title	Credits
First Year		
Fall		
CAN 401	Food Preparation Fundamentals	2
CAN 403	Culinary Arts and Baking Skills Development	4
CAN 407	Hospitality Sanitation and Safety	1
COM 209	Expository Writing and Reading	4
MTH 202	College Algebra	3
TSAS 405A	Computers in the Workplace/Focus on Software Applications	2
	Credits	16
Spring		
CAN 404	Baking and Pastry Fundamentals	4
CAN 422	Cuisine and Culture	4
CAN 426	Dining Room Practicum	3
CAN 443	Quantity Food Production and Display Cooking	4
COM 210	Public Speaking	3
	Credits	18
Second Year		
Fall		
CAN 506	Food and Beverage Cost Control	4

CAN 525	American and Regional Cuisine	5
CAN 528	Culinary Nutrition	2
Select one of the following:		2-5
CAN 597	Culinary Arts Internship ¹	
CAN 598	Work Experience (plus additional 2 credits of elective coursework)	
Credits		13-16
Spring		
ABM 506	Human Resource Management	4
CAN 535	International Cuisine	5
CAN 544	Catering and Garde Manger	4
SSCI 202	Social Issues	4
Credits		17
Total Credits		64-67

¹ CAN 597 Culinary Arts Internship is by invitation only

Forest Technology (FORT)

Students in the forest technology (FORT) program are uniquely prepared for careers in forest industries and natural resource management in New Hampshire and New England. Classroom lecture is supported by practical field work in each of the subject areas. The educational program in Forest Technology leading to the Associate in Applied Science degree is accredited by the Society of American Foresters (SAF) (<https://www.eforester.org>) (the first two-year program in the U.S. to complete the accreditation application process) and reviewed by an advisory committee representing the full spectrum of forestry organizations in the region. There is a strong emphasis on leadership, safety, communication skills, accuracy of field work, data collection, and professional presentation. Unique facilities for teaching and learning include centrally located classroom and shop facilities; 3,000+ acres of University-owned forest land (<http://colsa.unh.edu/woodlands>); a new sawmill and Forest Industries Training Center (FITC) (<http://colsa.unh.edu/tsas/thompson-school-unh-sawmill>); logging equipment; technologically advanced navigation, data collection, and analysis equipment; and a faculty with vast field experience in the subject areas dedicated to teaching.

Admissions Requirements

As stated in the Thompson School admissions requirements (p. 328), applicants to the forest technology program area must present four years of college preparatory English and a minimum of two years of college preparatory science (one science being biology with a lab). Forest Technology applicants are required to have taken at least two years of college preparatory mathematics, but three years are preferred.

Curriculum Fee

Forest technology: \$736¹

¹ This one-time curriculum fee is required to cover lab materials, specialized equipment maintenance, and transportation that are unique to the applied nature of the concentration. The curriculum fee covers the entire two-year course of study for one concentration. Any non-TSAS student may be assessed specific course fees, details of which are included in each semester's Time and Room Schedule. All fees are subject to change.

<https://colsa.unh.edu/thompson-school-applied-science>

Programs

- Forest Technology (A.A.S.) (p. 343)

Faculty

<https://colsa.unh.edu/thompson-school-applied-science/people>

Forest Technology (A.A.S.)

<https://colsa.unh.edu/thompson-school-applied-science/program/aas/forest-technology>

Description

Forest technicians help plan, direct, and operate forestry enterprises. Students in the forest technician concentration experience a breadth and depth of instruction. They are exposed to the theory and practice of planting, thinning, and other silvicultural operations, including harvesting supervision. They learn how to design, lay out, and construct roads and trails; how to map and survey property; how to manage woodlands to improve timber quality and wildlife habitat; how to inventory natural resources and develop a plan for their future management; how to identify and deal with forest health issues; and how to conserve soil, water, and other natural resources. Graduates work in wood products-related industries, in public forestland management agencies, with forestry consulting firms, urban tree care companies, and with a range of conservation organizations. Graduates can become licensed in New Hampshire to practice forestry on private lands.

Career Opportunities

Forestry consultant, forest fire control and use technician, mapping technician, geographic information systems/global positioning systems (GIS/GPS) technician, timber and log buyer, log scaler, lumber grader, sawmill technician, arborist, urban tree care specialist, timber cruiser/forest inventory technician, or forestry equipment/products sales representative.

Requirements

Candidates for a degree must satisfy all of the Thompson School of Applied Science General Education requirements in addition to satisfying the requirements of the Forest Technology program. Forest Technology students are required to take:

Code	Title	Credits
NR 425	Field Dendrology	4
FORT 463	Forest Ecology	3
FORT 465	Forest Orientation Seminar	1
FORT 466	Forest Surveying and Mapping	4
FORT 470	Applied Silviculture	4
FORT 475	Forestry Field Practice	1
FORT 567	Leadership, Supervision & Safety	2
FORT 569	Wildlife Ecology & Conservation	3
FORT 572	Mensuration	4

FORT 573	Management Operation&Analysis	3
FORT 574	Industrial Forest Management Tour	1
FORT 576	Forest Products	4
FORT 577	Forest Harvesting Systems	4
FORT 578	Forest Insects & Diseases	2
FORT 579	Forest Fire Control and Use	2
FORT 581	Applied Geographic Information Systems (GIS) Techniques	4
FORT 597	Work Experience	0
ABM 404A	Introduction to Business I	2
ABM 404B	Introduction to Business II	2
TSAS 405A	Computers in the Workplace/Focus on Software Applications	2
Total Credits		52

FORT 573	Management Operation&Analysis	3
FORT 574	Industrial Forest Management Tour	1
FORT 576	Forest Products	4
FORT 578	Forest Insects & Diseases	2
FORT 579	Forest Fire Control and Use	2
Credits		18
Total Credits		66

Horticultural Technology (HT)

Beginning in the 2018-2019 academic year, the Horticulture Technology: Landscape Construction and Management program and Horticulture Technology: Plant Production program will no longer be accepting new students. Current Thompson School students in these programs will continue to have access to the same high-quality education and resources until they graduate in 2019.

Horticultural technology (HT) students study applied plant science, preparing for environmentally attuned careers in "the green industry." Rigorous first-year foundation courses in plant materials, plant growth and development, and soils support second-year concentrations in landscape construction management or plant production. Courses unique to the program include "pond-less" water features, lighting design/installation, rain harvesting, and hydroponics/aquaponics. Employment opportunities in these areas continue to be excellent. Graduates enter a rapidly expanding job market in plant production, nursery and garden center management, fruit and vegetable production, parks and grounds management, landscape construction and management. Many recent graduates have established their own horticulture enterprises, and others continue their education toward a four-year degree in areas such as environmental horticulture, greenhouse production, or landscape architecture.

Admissions Requirements

Applicants to the horticultural technology program area must present college preparatory English and at least two years of satisfactory work in both college preparatory mathematics and science (one science being biology, with a lab).

Curriculum Fee

Horticultural technology, both concentrations: \$831¹

¹ This one-time curriculum fee is required to cover lab materials, specialized equipment maintenance, and transportation that are unique to the applied nature of the concentration. The curriculum fee covers the entire two-year course of study for one concentration. Any non-TSAS student may be assessed specific course fees, details of which are included in each semester's Time and Room Schedule. All fees are subject to change.

<https://colsa.unh.edu/thompson-school-applied-science>

Programs

- Horticultural Technology: Landscape Construction and Management Concentration (A.A.S.) (p. 345)
- Horticulture Technology: Plant Production Concentration (A.A.S.) (p. 346)

Degree Plan

Forest Technician Program of Study

Course	Title	Credits
First Year		
Fall		
COM 209	Expository Writing and Reading	4
NR 425	Field Dendrology	4
FORT 463	Forest Ecology	3
FORT 465	Forest Orientation Seminar	1
MTH 203	Algebra and Trigonometry	3
TSAS 405A	Computers in the Workplace/Focus on Software Applications	2
Credits		17
Spring		
COM 210	Public Speaking	3
FORT 466	Forest Surveying and Mapping	4
FORT 470	Applied Silviculture	4
FORT 475	Forestry Field Practice	1
SSCI 202	Social Issues	4
Credits		16
Second Year		
Fall		
FORT 569	Wildlife Ecology & Conservation	3
FORT 572	Mensuration	4
FORT 577	Forest Harvesting Systems	4
FORT 581	Applied Geographic Information Systems (GIS) Techniques	4
FORT 597	Work Experience	0
Optional Coursework		
FORT 564	Arboriculture	
OR Optional Elective		
Credits		15
Spring		
ABM 404A & ABM 404B	Introduction to Business I and Introduction to Business II	4
FORT 567	Leadership, Supervision & Safety	2

Faculty

<https://colsa.unh.edu/thompson-school-applied-science/people>

Horticultural Technology: Landscape Construction and Management Concentration (A.A.S.)

<https://colsa.unh.edu/tsas/hort/landscape-construction-management>

Description

Beginning in the 2018-2019 academic year, the Horticulture Technology: Landscape Construction and Management program will no longer be accepting new students. Current Thompson School students in this program will continue to have access to the same high-quality education and resources until they graduate in 2019.

Landscape construction and management has been projected to be one of the fastest growing service industries of the coming decade. It is a field that also offers unparalleled aesthetic satisfaction and meaningful reward. To succeed in the landscape industry increasingly requires a degree of technical and scientific expertise, as well as creativity, artistry, and problem-solving skills. Students in the landscape operation concentration gain a solid foundation by completing core requirements in the fundamentals of plant growth and development, soils, plant identification, pruning, and plant health care. They then complete a series of landscape maintenance, construction, and business courses. This combination prepares them to become successful members of the landscape industry. In their classes, students meld theory and practice, and then apply what they learn in weekly lab periods and on-site visits to area operations.

Career Opportunities

Landscape construction specialist, garden center/nursery sales, or maintenance/management for golf courses, schools and parks, private and public grounds.

Requirements

Candidates for a degree must satisfy all of the Thompson School of Applied Science General Education requirements in addition to satisfying the requirements of the Horticultural Technology Landscape Construction Management program. Landscape Construction Management students are required to take:

Code	Title	Credits
HT 407	Plant Structure and Function	4
HT 415	Soils and Land Use	2
HT 416	Soils and Plant Nutrition	2
HT 454	Irrigation Design	3
HT 460	Sustainable Plant Management	4
HT 553	"Pond-less" Water Feature Design and Installation	2
HT 554	Sustainable Irrigation and Rain Harvesting	3
HT 555	Landscape Lighting Design and Installation	2

HT 559	Plants in the Horticulture Industry: Identification and Culture	4
HT 563	Landscape Construction	4
HT 565	Turf Management	4
HT 572	Landscape Design Studio	4
HT 597	Horticultural Work Experience	0
AM #462	Internal Combustion Engines II	4
ABM 404A	Introduction to Business I	2
ABM 404B	Introduction to Business II	2
FORT 564	Arboriculture	3
FORT 578	Forest Insects & Diseases	2
Choose one of the following:		
ABM 508	Managerial Accounting	
ABM 514	Applied Sales	
ABM 532	Small Business Law	
TSAS 405A	Computers in the Workplace/Focus on Software Applications	2
TSAS 405B	Computers in the Workplace II/Focus on Hardware, Internet, Applications and Security	2
SSCI 403	Environmental Issues & Society	2
Total Credits		57

Degree Plan

Landscape Operations Concentration Program of Study

Course	Title	Credits
First Year		
Fall		
COM 210	Public Speaking	3
HT 407	Plant Structure and Function	4
HT 415	Soils and Land Use (Half-term I)	2
HT 416	Soils and Plant Nutrition ((Half-term II))	2
HT 553	"Pond-less" Water Feature Design and Installation	2
HT 555	Landscape Lighting Design and Installation	2
TSAS 405A	Computers in the Workplace/Focus on Software Applications	2
TSAS 405B	Computers in the Workplace II/Focus on Hardware, Internet, Applications and Security	2
Credits		19
Spring		
COM 209	Expository Writing and Reading	4
FORT 578	Forest Insects & Diseases	2
HT 460	Sustainable Plant Management	4
HT 454	Irrigation Design	3
MTH 202	College Algebra	3
Credits		16
Second Year		
Fall		
FORT 564	Arboriculture	3

HT 559	Plants in the Horticulture Industry: Identification and Culture	4
HT 563	Landscape Construction	4
HT 565	Turf Management	4
HT 597	Horticultural Work Experience	0
SSCI 201 or SSCI 202	Human Relations or Social Issues	4
Credits		19
Spring		
ABM 404A & ABM 404B	Introduction to Business I and Introduction to Business II	4
AM #462	Internal Combustion Engines II	4
HT 554	Sustainable Irrigation and Rain Harvesting	3
HT 572	Landscape Design Studio	4
Choose one of the following:		4
ABM 508	Managerial Accounting	
ABM 514	Applied Sales	
ABM 532	Small Business Law	
Credits		19
Total Credits		73

Horticulture Technology: Plant Production Concentration (A.A.S.)

<https://colsa.unh.edu/tsas/hort/plant-production>

Description

Beginning in the 2018-2019 academic year, the Horticulture Technology: Plant Production program will no longer be accepting new students. Current Thompson School students in this program will continue to have access to the same high-quality education and resources until they graduate in 2019.

Ornamental, food, and medicinal crop production, whether hydroponics or conventional field agriculture, are areas of great growth potential and life satisfaction. In the Horticultural Technology Plant Production Concentration, students will learn all aspects of plant crop production in controlled environments and in field production systems.

After learning the fundamentals of soil and plant science, students will develop an understanding of crop production in soil, soil-less and hydroponic systems. Other areas of study include crop scheduling, crop care, crop health management, plant production business operation, pricing and costing. Students will also learn about greenhouse design, construction, operation and management.

In addition to comprehensive classroom and field trip studies, students in this concentration will learn extensively by producing crops in the Thompson School's fully functional greenhouse facility and potentially working in the College of Life Science and Agriculture's high tunnel production system.

Career Opportunities

Greenhouse grower, manager, operator and owner. Controlled environment farmer. Hydroponics grower. Retail garden center manager and owner. Medicinal and recreational cannabis grow operation manager,

grower, owner. Field grown and high tunnel farm crop grower, owner, manager.

Requirements

Candidates for a degree must satisfy all of the Thompson School of Applied Science General Education requirements in addition to satisfying the requirements of the Horticultural Technology Plant Production concentration. Plant Production students are required to take:

Code	Title	Credits
HT 404	Plant Propagation	4
HT 407	Plant Structure and Function	4
HT 415	Soils and Land Use	2
HT 416	Soils and Plant Nutrition	2
HT 427	Greenhouse Operation and Design	2
HT 428	Plant Production Techniques (II)	2
HT 529	Horticultural Facilities Mgmt (Greenhouse Practicum and Capstone I)	2
HT 530	Horticultural Facilities Mgmt (Greenhouse Practicum and Capstone I)	2
HT 559	Plants in the Horticulture Industry: Identification and Culture	4
HT 575	Hydroponics	2
HT 576	Greenhouse Crop Production	2
HT 585	Fruit and Vegetable Production	3
HT 597	Horticultural Work Experience	0
ABM 404A	Introduction to Business I	2
ABM 404B	Introduction to Business II	2
COM 210	Public Speaking	3
FORT 578	Forest Insects & Diseases	2
SAFS 679	Food Production Field Experience I	4
SAFS 680	Food Production Field Experience II	4
TSAS 405A	Computers in the Workplace/Focus on Software Applications	2
TSAS 405B	Computers in the Workplace II/Focus on Hardware, Internet, Applications and Security	2
Choose one of the following:		4
ABM 508	Managerial Accounting	
ABM 514	Applied Sales	
ABM 532	Small Business Law	
Total Credits		56

Degree Plan

Plant Production Concentration Program of Study

Course	Title	Credits
First Year		
Fall		
HT 407	Plant Structure and Function	4
HT 415	Soils and Land Use ((1/2 term))	2
HT 416	Soils and Plant Nutrition	2

HT 427	Greenhouse Operation and Design	2
MTH 202	College Algebra	3
TSAS 405A	Computers in the Workplace/Focus on Software Applications	2
TSAS 405B	Computers in the Workplace II/Focus on Hardware, Internet, Applications and Security	2
Credits		17
Spring		
COM 209	Expository Writing and Reading	4
FORT 578	Forest Insects & Diseases	2
HT 404	Plant Propagation	4
HT 428	Plant Production Techniques (II)	2
SAFS 679	Food Production Field Experience I	4
Credits		16
Second Year		
Fall		
HT 529	Horticultural Facilities Mgmt (Greenhouse Practicum and Capstone I)	2
HT 559	Plants in the Horticulture Industry: Identification and Culture	4
HT 575	Hydroponics	2
HT 585	Fruit and Vegetable Production	3
HT 597	Horticultural Work Experience	0
SAFS 680	Food Production Field Experience II	4
Credits		15
Spring		
ABM 404A & ABM 404B	Introduction to Business I and Introduction to Business II	4
HT 530	Horticultural Facilities Mgmt (Greenhouse Practicum and Capstone II)	2
HT 576	Greenhouse Crop Production	2
SSCI 201 or SSCI 202	Human Relations or Social Issues	4
Choose one of the following:		4
ABM 508	Managerial Accounting	
ABM 514	Applied Sales	
ABM 532	Small Business Law	
Credits		16
Total Credits		64

Integrated Agriculture Management (IAG)

Beginning in the 2018-2019 academic year, the Integrated Agriculture Management program will no longer be accepting new students. Current Thompson School students in this program will continue to have access to the same high-quality education and resources until they graduate in 2019.

The course of study in integrated agriculture management addresses the critical importance of understanding the relationships among agriculture, forestry, business management and marketing, nutrition, food systems, the environment, and community. We live in a world where everything is connected. No one piece can be managed without some understanding of the other pieces and their connections. We also live in a world in

which diversification—whether in biology or in business—is a necessary ingredient for rapid adaptation and continued survival.

Integrated agriculture management (IAG) guides students to examine ecological and cultural relationships, and to assemble a collection of coursework in a focus area while attending the Thompson School. The IAG program is truly interdisciplinary, drawing upon diverse course offerings across several of the academic programs at the Thompson School.

Graduates of IAG will be able to choose from a large number of opportunities across an array of fields, including sustainable agriculture, fruit and vegetable production, livestock production, community-supported agriculture (CSA), value-added agricultural products, sustainable forest management, soil/water/forest conservation, cooperative extension, organic certification, and diversified farm management, or in more specific areas such as greenhouse production, sustainable landscape construction and maintenance, forest technician, dairy management, and others. A number of current students plan to return to family farms with new information and insight to help determine the future of their lands and enterprises as the world changes.

Graduates are also encouraged to consider transferring into UNH's baccalaureate program in sustainable agriculture and food systems.

Admissions Requirements

Applicants to integrated agriculture management must present at least two years each of satisfactory work in college preparatory mathematics and sciences. One of the science courses should be biology with a lab.

Curriculum Fee

Integrated agriculture management: \$831¹

¹ This one-time curriculum fee is required to cover lab materials, specialized equipment maintenance, and transportation that are unique to the applied nature of the program. The curriculum fee covers the entire two-year course of study. There may be additional fees for uniforms, specific high-cost courses, and/or professional equipment. Any non-TSAS student may be assessed specific course fees, details of which are included in each semester's Time and Room Schedule. All fees are subject to change.

Career Opportunities

- Working on diversified farms where forestry, horticulture, and/or livestock and dairy might be a component
- Working for non-profit farm and forest education centers
- Managing New England farms based on dairy, horticulture, livestock, forestry, etc.
- Technicians working in pest control for commercial greenhouses, dairy and livestock farms, or forest operations
- Technicians for the Natural Resource Conservation Service
- Marketing farm products for New England farmers
- Operating community-supported agriculture (CSA) and farm stands
- Producing unique, local and/or organic products for direct marketing to consumers
- Partnering with horticultural growers and dairy producers to create high-end market opportunities

<https://colsa.unh.edu/thompson-school-applied-science>

Programs

- Integrated Agriculture Management (A.A.S.) (p. 348)

Faculty

<https://colsa.unh.edu/thompson-school-applied-science/people>

Integrated Agriculture Management (A.A.S.)

<https://colsa.unh.edu/tsas/iag/integrated-agriculture-management>

Description

Beginning in the 2018-2019 academic year, the Integrated Agriculture Management program will no longer be accepting new students. Current Thompson School students in this program will continue to have access to the same high-quality education and resources until they graduate in 2019.

First-year students in IAG take a core of courses covering the basics of soils, plants, and animals. This provides a strong foundation for second-year study, during which the student may either specialize in one or two areas or take courses across the breadth of programs in horticultural technology, applied animal science, forest technology, civil technology, and culinary arts and nutrition. Working closely with a faculty advisor, and benefitting from a wide array of flexible concentration courses, the student in integrated agriculture management designs the path of study that aligns with his or her particular talents and interests.

Requirements

Candidates for a degree must satisfy all of the Thompson School of Applied Science General Education requirements in addition to satisfying the requirements of the Integrated Agriculture Management (IAG) program. IAG students are required to take:

Required Program Courses

Code	Title	Credits
AAS 425 or AAS 431	Introduction to Dairy Herd Management Introduction to Animal Science	4
Choose one of the following:		3-4
FORT 461	Dendrology	
HT 559	Plants in the Horticulture Industry: Identification and Culture	4
HT 585	Fruit and Vegetable Production	
FORT 581	Applied Geographic Information Systems (GIS) Techniques	4
IAG 408	Foundations for Living Sustainably in New England	4
AAS 432	Introduction to Forage and Grassland Management	3
HT 415	Soils and Land Use	2
HT 416	Soils and Plant Nutrition	2
IAG 597	Integrated Agriculture Management Work Experience	0

ABM 404A	Introduction to Business I	2
ABM 404B	Introduction to Business II	2
IAG 490	Integrated Agriculture Management Capstone	2
Flexible Concentration Courses From The Following		20
Horticultural Technology		
HT 404	Plant Propagation	
HT 407	Plant Structure and Function	
HT 428	Plant Production Techniques	
HT 454	Irrigation Design	
HT 575	Hydroponics	
HT 576	Greenhouse Crop Production	
Technical Practices		
CT 423	Introduction to Surveying and Mapping	
CT 425	Surveying and Mapping Lab	
CT 557	Land Design and Regulations	
CT 576	Building Science/Residential Construction	
AM 451	Welding/Fabrication Technology	
AM 461	Internal Combustion Engines I	
AM #462	Internal Combustion Engines II	
Culinary Arts and Nutrition		
CAN 401	Food Preparation Fundamentals	
CAN 404	Baking and Pastry Fundamentals	
CAN 407	Hospitality Sanitation and Safety	
CAN 422	Cuisine and Culture	
CAN 528	Culinary Nutrition	
Applied Animal Science		
AAS 402	Introduction to Livestock and Poultry Management	
AAS 421	Large Animal Behavior and Handling Techniques	
AAS 423	Dairy Selection	
AAS 434	Equipment and Facilities Management	
AAS 439	Fundamentals of Animal Health	
AAS 535	Animal Nutrition	
AAS 540	Animal Breeding	
AAS 546	Animal Business Applications	
AAS 574	Dairy Cattle Disease Seminar	
Experiential Courses		
AAS 575	Cooperative for Real Education in Agriculture Management (CREAM)	
AAS 591	Studies	
AAS 592	Studies	
AM 591	Studies in Agricultural Mechanization	
AM 592	Studies in Agricultural Mechanization	
HT 494	Field Operations	
HT 591	Studies	
HT 592	Studies	
IAG 597	Integrated Agriculture Management Work Experience	
Forest Technology		
FORT 461	Dendrology	
FORT 463	Forest Ecology	
FORT 466	Forest Surveying and Mapping	
FORT 470	Applied Silviculture	

FORT 490	NH Sustainable Forest Resource	
FORT 564	Arboriculture	
FORT 569	Wildlife Ecology & Conservation	
FORT 576	Forest Products	
FORT 577	Forest Harvesting Systems	
FORT 579	Forest Fire Control and Use	
FORT 581	Applied Geographic Information Systems (GIS) Techniques	
Total Credits		52-53

Degree Plan

Integrated Agriculture Management Program of Study

The curriculum checklist (or roadmap to the degree) that follows is the recommended sequence of courses for IAG students. However, the sequence of when courses are taken can be modified in consultation with the student's faculty adviser.

Course	Title	Credits
First Year		
Fall		
Required Core Courses:		
AAS 425 or AAS 431	Introduction to Dairy Herd Management or Introduction to Animal Science	4
Choose one of the following:		3-4
FORT 461	Dendrology	
HT 559	Plants in the Horticulture Industry: Identification and Culture	
HT 585	Fruit and Vegetable Production	3
General Education Courses:		
COM 209	Expository Writing and Reading	4
Flexible Concentration Course ¹		2-4
Credits		16-19
Spring		
Required Core Courses:		
FORT 581	Applied Geographic Information Systems (GIS) Techniques	4
IAG 408	Foundations for Living Sustainably in New England	4
General Education Courses:		
MTH 202	College Algebra	3
Flexible Concentration Course ¹		5-8
Credits		16-19
Second Year		
Fall		
Required Core Courses:		
AAS 432	Introduction to Forage and Grassland Management	3
HT 415	Soils and Land Use	2
HT 416	Soils and Plant Nutrition	2
IAG 597	Integrated Agriculture Management Work Experience	0

General Education Courses:

SSCI 201 or SSCI 202	Human Relations or Social Issues	4
Flexible Concentration Courses ¹		5-8
Credits		16-19

Spring

Required Courses:

ABM 404A & ABM 404B	Introduction to Business I and Introduction to Business II	4
IAG 490	Integrated Agriculture Management Capstone	2

General Education Courses:

Any TSAS General Education Course		2-4
Flexible Concentration Courses ¹		8-10
Credits		16-20
Total Credits		64-77

¹ Flexible Concentration Courses: Students select 20 credits from approved courses in the following program areas: horticultural technology, applied animal science, forest technology, civil technology, culinary arts and nutrition, technical practices, or applied business management by working with their faculty adviser. Refer to the Requirements section for a list of approved courses.

Veterinary Technology (VTEC)

Program Mission Statement

The program provides veterinary technology students with a broad understanding of veterinary medicine and the role of animals in society. Students are instructed in the methods and knowledge of veterinary technology such that they become veterinary technicians who are strong advocates for animals, capable of compassionate and accurate animal care; professional in their actions and judgments; and have a desire for lifelong learning and self-improvement.

The primary goal of the veterinary technology program is to provide students with exceptional technical and clinical reasoning skills and knowledge in veterinary technology such that graduates will be prepared to pass the Veterinary Technician National Exam (VTNE) and to be immediate and valuable members of a veterinary medical team. Additionally, the program aims to develop a firm foundation in both farm animal and companion animal veterinary practices. Courses in the program cover basic sciences, veterinary nursing, and veterinary practice management, with a strong focus on hands-on practical knowledge throughout the curriculum. Students gain basic knowledge and skills for the major domestic animal species (dog, cat, horse, and cow). Integration of knowledge in communication, veterinary ethical and legal issues, veterinary practice management, clinical reasoning skills, and hands-on technical skills allow students to become complete veterinary technicians, capable of providing high-quality, compassionate, and expert care to animals both small and large.

Practical learning experience is provided at the brand new Veterinary Teaching Clinic, the UNH equine facilities (<https://colsa.unh.edu/facility/equine-facilities>) and the Thomas P. Fairchild Dairy Teaching and Research Center (<https://colsa.unh.edu/nhaes/fairchild>) and the UNH Organic Dairy Research Farm (<https://colsa.unh.edu/nhaes/odrf>). The program has a number of animal-related educational partnerships, including those with the New Hampshire SPCA (<http://>

www.nhspca.org) in Stratham, N.H., the Cocheco Valley Humane Society (<http://www.cvhsonline.org>) in Dover, N.H., and the Pope Memorial SPCA (<http://www.popememorialsPCA.org>) in Concord, NH.. The veterinary technology curriculum also includes a service learning course where students provide wellness services to local pets in need.

The program is accredited by the AVMA (<https://www.avma.org/Pages/home.aspx>). Students who graduate from an accredited program are eligible to take the Veterinary Technician National Exam (VTNE) (<https://www.aavsb.org/vtne>) and pursue credentialing.

Admissions Requirements

Applicants to veterinary technology must present four years of college preparatory English, a minimum of three years of social sciences, a minimum of two years of satisfactory work in college preparatory mathematics (three years is strongly suggested, through Algebra 2), and three years of college prep sciences. Two of the three should be college preparatory biology and chemistry with labs. It is recommended that applicants have some experience with animals in a professional setting, and applicants should include a statement in the student application describing their experience. Successful applicants have an overall minimum GPA of 3.0 on a weighted 4.0 scale as well as solid SAT/ACT scores.

Curriculum Fee

Veterinary technology: \$744¹

¹ This one-time curriculum fee is required to cover lab materials, specialized equipment maintenance, and transportation that are unique to the applied nature of the program. The curriculum fee covers the entire two-year course of study. There may be additional fees for uniforms, specific high-cost courses, and/or professional equipment. Any non-TSAS student may be assessed specific course fees, details of which are included in each semester's Time and Room Schedule. All fees are subject to change.

<https://colsa.unh.edu/thompson-school-applied-science>

Programs

- Veterinary Technology (A.A.S.) (p. 350)

Faculty

<https://colsa.unh.edu/thompson-school-applied-science/people>

Veterinary Technology (A.A.S.)

<https://colsa.unh.edu/thompson-school-applied-science/program/aas/veterinary-technology>

Description

Veterinary Technology Curriculum Requirements

Students must demonstrate all of the following for retention in and graduation from the veterinary technology program:

1. A minimum grade of C+ in all AAS and VTEC courses, plus TSAS 235 (Chemistry) and MTH 202 (College Algebra).
2. A cumulative GPA of 2.5 in the courses listed above.

Students may repeat a major course only one time before dismissal from the major. Courses must be completed in proper sequence, according to prerequisites as listed in the course catalog.

All coursework in the veterinary technology curriculum should be completed within five years of matriculating into the program. If this cannot be accomplished, the student may be required to retake major courses where AVMA essential skills have changed significantly.

Students must successfully complete all *required* skills listed in the Veterinary Technology Essential and Recommended Skills List developed by the Committee on Veterinary Technician Education and Activities (CVTEA) of the American Veterinary Medical Association (AVMA), the accrediting body for this program.

Students must show proof of pre-exposure rabies immunization or adequate rabies titer prior to enrollment in practicum and internship coursework. Transportation is provided to students for practicum coursework. Students are responsible for providing their own transportation during internship experiences.

Career Opportunities

Credentialed veterinary technicians can work in private veterinary hospitals, biomedical research laboratories, humane societies, zoos, and wildlife centers, and can specialize in areas such as anesthesia and surgical assisting, behavior, and emergency medicine.

Requirements

Candidates for a degree must satisfy all of the Thompson School of Applied Science General Education requirements in addition to satisfying the requirements of the Veterinary Technology program. Veterinary Technology students are required to take:

Required Program Courses

Code	Title	Credits
AAS 421	Large Animal Behavior and Handling Techniques	2
AAS 428	Anatomy and Physiology of Domestic Animals	3
AAS 428B	Anatomy and Physiology of Domestic Animals Lab for VTEC majors	1
AAS 430	Small Animal Breeds and Behavior	4
AAS 439	Fundamentals of Animal Health	2
AAS 439B	Fundamentals of Animal Health Lab for Veterinary Technology Majors	2
AAS 451	Human/Animal Bond	4
AAS 550	Clinical Animal Nursing Techniques II	4
AAS 579	Small Animal Care Practicum	2
COM 210	Public Speaking	3
TSAS 235	Introductory Chemistry	3
VTEC 424	Introduction to Veterinary Technology	2
VTEC 497	Veterinary Technology Work Experience	0
VTEC 565	Pharmacology for Veterinary Technicians	4
VTEC 575	Veterinary Anesthesia and Surgical Assisting	4
VTEC 579	Small Animal Practicum for Veterinary Technicians	2

VTEC 582	Pet Access to Wellness Services (P.A.W.S.)	1
VTEC 583	Large Animal Practicum	2
VTEC 595	Veterinary Technology Internship	3
VTEC 599	Comprehensive VTNE Review	4
Total Credits		52

VTEC 599	Comprehensive VTNE Review	4
Credits		16
Total Credits		67

Degree Plan

Veterinary Technology Program of Study

Course	Title	Credits
First Year		
Fall		
AAS 421	Large Animal Behavior and Handling Techniques	2
AAS 428	Anatomy and Physiology of Domestic Animals	3
AAS 428B	Anatomy and Physiology of Domestic Animals Lab for VTEC majors	1
AAS 430	Small Animal Breeds and Behavior	4
COM 209	Expository Writing and Reading	4
MTH 202	College Algebra	3
Credits		17
Spring		
AAS 439	Fundamentals of Animal Health	2
AAS 439B	Fundamentals of Animal Health Lab for Veterinary Technology Majors	2
AAS 449	Clinical Animal Nursing Techniques I	3
TSAS 235	Introductory Chemistry	3
SSCI 201 or SSCI 202	Human Relations or Social Issues	4
VTEC 424	Introduction to Veterinary Technology	2
Credits		16
Second Year		
Fall		
COM 210	Public Speaking	3
AAS 451	Human/Animal Bond	4
AAS 550	Clinical Animal Nursing Techniques II	4
AAS 579	Small Animal Care Practicum	2
VTEC 497	Veterinary Technology Work Experience	0
VTEC 565	Pharmacology for Veterinary Technicians	4
VTEC 582	Pet Access to Wellness Services (P.A.W.S.)	1
Credits		18
Spring		
VTEC 575	Veterinary Anesthesia and Surgical Assisting	4
VTEC 579	Small Animal Practicum for Veterinary Technicians	2
VTEC 582	Pet Access to Wellness Services (P.A.W.S.)	1
VTEC 583	Large Animal Practicum	2
VTEC 595	Veterinary Technology Internship	3

University of New Hampshire at Manchester

Michael P. Decelle, Dean

Kimberly M. DeRego, Associate Dean

Daniel W. Reagan, Associate Dean

Ann E. Donahue, Interim Assistant Dean

Welcome to the University of New Hampshire at Manchester—the university’s campus in the heart of Merrimack Valley. Our mission is to provide the world-class UNH education and diploma to students in southern New Hampshire. We offer an affordable avenue to earn a UNH degree, with smaller classes held at times that accommodate the schedules of students who are also working.

At UNH Manchester, we capitalize on our location in the revitalized millyard of New Hampshire’s largest city. Our campus on the banks of the Merrimack River is a few blocks from the heart of the state’s financial and corporate center and home to many of the region’s non-profit and government offices. Led by faculty who are experts in their fields, our programs prepare students for the opportunities of tomorrow in the region’s business, education, government, non-profit, service, and technology sectors.

UNH Manchester is uniquely equipped to support regional economic development, creating a campus environment in which students, faculty, business/industry, government, and non-profits collaborate on mutually beneficial projects and initiatives. As a community partner, we have a commitment to the region’s economic vitality, respond to educational and economic opportunities, and support innovation and student access to programs designed and delivered for the future.

Bringing together career-driven programs, faculty talent and a focus on experiential learning, UNH Manchester prepares students for success in their chosen field — and connects them to the wealth of opportunities in the region.

Accreditation

The University of New Hampshire at Manchester was established in 1985 as the sixth undergraduate college of the University of New Hampshire. The University of New Hampshire is accredited by the New England Commission of Higher Education (formerly the Commission on Institutions of Higher Education of the New England Association of Schools and Colleges, Inc.), which accredits schools and colleges in the six New England states. Accreditation by the association indicates that the institution has been carefully reviewed and found to meet or exceed standards agreed upon by nationally recognized educators.

Faculty

The UNH Manchester faculty is its greatest asset. Residential faculty members have earned reputations for excellent teaching, scholarly achievement in their fields, and service to the community. They are recognized scholars and have acquired national and international reputations. Adjunct faculty members bring applied experience and a commitment to teaching to the classroom. Most importantly, UNH Manchester’s dedicated faculty members are outstanding teachers who care about each individual student. Faculty members work closely with students as advisers and help students define their goals, plan career objectives, and develop an individualized program of study within each major.

<https://manchester.unh.edu/>

Programs of Study

- Analytics and Data Science (p. 352)
- Art (p. 354)
- ASL/English Interpreting (p. 354)
- Biological Sciences (p. 355)
- Biotechnology (p. 358)
- Business (p. 359)
- Communication Arts (p. 364)
- Computer Information Systems (p. 369)
- Computer Science (p. 371)
- Digital Language Arts (p. 372)
- Education (p. 374)
- Engineering Technology (p. 374)
- English Teaching (p. 376)
- General Studies (p. 378)
- Global Studies (p. 379)
- History (p. 380)
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- Humanities (p. 383)
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- Literary Studies (p. 384)
- Neuropsychology (p. 386)
- Philosophy (p. 387)
- Professional and Technical Communications (p. 387)
- Psychology (p. 388)
- Public Service and Nonprofit Leadership (p. 390)

Analytics and Data Science

<https://manchester.unh.edu/academics/degree-programs/analytics>

Shaping the next generation of data revolutionaries

With an explosion of big data initiatives in organizations worldwide, the demand for data-savvy individuals has never been higher. Fully available on both campuses - Durham and Manchester, our Analytics and Data Science program is the only on-campus degree of its kind in the region, specifically designed to prepare the next generation of innovative data scientists and analysts.

You’ll learn the cutting-edge technical skills you need to manage, distill, and interpret data for industries from finance to healthcare to marketing and advertising. You’ll master programming languages like Python and R so you can derive actionable information from data.

Through hands-on learning and real-world experience, you’ll get cutting-edge technical skills and a competitive advantage in a rapidly growing field.

Programs

- Analytics and Data Science Major: Analytics Option (B.S.) (UNHM) (p. 353)

Faculty

Analytics and Data Science Faculty (<http://manchester.unh.edu/academics/degree-programs/analytics/#unhstyleCollapsePane2768>)

Analytics and Data Science Major: Analytics Option (B.S.) (UNHM)

Description

<https://manchester.unh.edu/academics/degree-programs/analytics>

The option in Analytics is intended for students interested in either heading into industry immediately upon graduation, or pursuing graduate work in a professionally oriented program such as the Master of Science in Analytics at UNH. The option in Analytics places its emphasis on applications of data science in industry.

Program Objectives

This program has been designed to prepare students for professional careers working with data, with an emphasis on the extraction of meaning from data. The program is not targeted to any one industry; rather, it provides a flexible, practical skillset that can be applied widely. This skillset includes elements of computer science, applied mathematics and statistics, communication skills, and business savvy. Graduates of the bachelor of science in analytics and data science program are expected to have:

- An understanding of the role of data in guiding decision-making in industry
- An understanding of how data is generated, stored, and accessed
- An understanding of data security
- An understanding of the ethical use of data
- An understanding of structured vs. unstructured data
- An understanding of the methods, statistical and other, used to derive actionable information from data
- Experience with multiple programming languages
- Experience with multiple statistical and data analysis software programs
- The ability to communicate detailed, technical information to a variety of audiences clearly and concisely, without the use of jargon
- The ability to work effectively, both as an individual or as a member of a team
- The ability to successfully lead a team
- The ability to adapt to a dynamic, rapidly changing work environment
- Completed projects and other work experiences on a larger scale than is typical in a bachelor's degree program.

During the course of the program, students will demonstrate their acquisition of these skills by successfully completing their program coursework, their internship experience, and their capstone project.

Requirements

Successful completion of the program entails earning at least 128 credits, meeting the requirements of the University's Discovery program, completing all of the 20 required courses in the major as listed below, including the capstone course, the internship preparedness course, and a three-credit internship. In all major courses, the minimum allowable grade is a C-. The minimum overall GPA for graduation is 2.0. Transfer students may transfer up to a maximum of 32 credits to satisfy major requirements (not counting those courses used to satisfy Discovery requirements).

Program Requirements

Code	Title	Credits
Mathematics		
MATH 425	Calculus I	4
MATH 426	Calculus II	4
MATH 545	Introduction to Linear Algebra	4
or MATH 645	Linear Algebra for Applications	
MATH 739	Applied Regression Analysis	4
Computer Science		
COMP 425	Introduction to Programming	4
COMP 430	Systems Fundamentals	4
COMP 490	Statistics in Computing and Engineering	4
COMP 520	Database Design and Development	4
COMP 525	Data Structures Fundamentals	4
Business		
BUS 400	Introduction to Business	4
BUS 453	Leadership for Managers	4
BUS 620	Organizational Behavior	4
English		
ENGL 502	Professional and Technical Writing	4
Analytics Courses		
DATA 557	Introduction to Data Science and Analytics	4
DATA 674	Predictive and Prescriptive Analytics I	4
DATA 675	Predictive and Prescriptive Analytics II	4
DATA 757	Big Data	4
DATA 790	Capstone Project	4
Professional Development Courses		
UMST 599	Special Topics ¹	1
DATA 690	Internship Experience	3
Total Credits		76

¹ Must be related to internship and career planning

For additional information about the Analytics and Data Science: Analytics Option, contact Jeremiah Johnson, program coordinator, (603) 641-4127, jeremiah.johnson@unh.edu or contact the UNH Manchester Office of Admissions, (603) 641-4150, unhm.admissions@unh.edu.

Art

Programs

- Art Minor (UNHM) (p. 354)

Art Minor (UNHM)

<http://manchester.unh.edu/academics/degree-programs/arts-minor>

Description

The art minor is an appropriate option for students wanting to take a combination of studio and art history courses or for those wishing to concentrate on a single medium.

Requirements

The minor in art consists of five courses (20 credits) chosen from the offerings of the department, two of which must be at the 500-level or above. Courses can be all studio art, all art history, or a combination of both. Studio art courses are taught at the New Hampshire Institute of Art through a partnership with UNH Manchester.

A maximum of two courses (8 credits) may be transferred from another accredited institution, provided UNH has accepted them as transfer credits. Transfer courses must be a minimum of three credits. Students with three credit transfers must make up the credit shortage.

For more information, contact the Academic Advising Office (unhm.advising@unh.edu) at (603) 641-4170.

ASL/English Interpreting

Preparing skillful interpreters through interaction and immersion

In the nation's first accredited interpreting program and one of only 14 accredited programs in the country, you'll learn American Sign Language and the foundation of ASL/English interpreting from distinguished faculty, all of whom are native ASL signers and/or certified interpreters.

The demand for skilled interpreters is on the rise, with the Bureau of Labor Statistics (<http://www.bls.gov/ooh>) projecting 29 percent growth in the interpreting field between 2014 and 2024. Our program prepares you to work with the Deaf community by teaching you the intricacies of American Sign Language and Deaf culture, as well as the skills you need to pursue a career as an ASL/English interpreter.

Students are integrated with the Deaf community inside and outside the classroom, which is a very unique feature of our ASL/English Interpreting program. During your senior year internship, you will be paired with a nationally certified mentor and use your interpretation and ASL skills within organizations throughout the state.

Our graduates have pursued careers in ASL/English interpreting, deaf education, rehabilitation, healthcare, audiology, social work, counseling and the media. From medicine to law, education to performing arts — your career opportunities as a bilingual and bicultural graduate are vast.

<https://manchester.unh.edu/academics/degree-programs/asl-english-interpreting>

Programs

- American Sign Language and Deaf Studies Minor (p. 354)
- ASL/English Interpreting Major (B.S.) (p. 354)

Faculty

ASL/English Interpreting Faculty (<http://manchester.unh.edu/academics/degree-programs/asl-english-interpreting/#unhstyleCollapsePane2684>)

American Sign Language and Deaf Studies Minor

<https://manchester.unh.edu/academics/degree-programs/american-sign-language-deaf-studies-minor>

Description

To earn a minor in American Sign Language and Deaf Studies, students must complete 24 credits, with no individual grade lower than C-.

Requirements

Code	Title	Credits
Required Courses		
ASL 435	American Sign Language I	4
ASL 436	American Sign Language II	4
INTR 438	A Socio-cultural Perspective on the Deaf Community	4
Electives		
Select three courses from the following:		12
ASL 531	American Sign Language III	
ASL 532	American Sign Language IV	
INTR 539	Comparative Linguistic Analysis for Interpreters	
ASL 599	Special Topics in American Sign Language/Deaf Studies	
ASL 621	Advanced American Sign Language Discourse I	
ASL 622	Advanced American Sign Language Discourse II	
Total Credits		24

For more information, contact Jack Hoza, program coordinator, at (603) 641-4143 or jack.hoza@unh.edu.

ASL/English Interpreting Major (B.S.)

<https://manchester.unh.edu/academics/degree-programs/asl-english-interpreting>

Description

The American Sign Language (ASL)/English interpreting program at UNH Manchester is a specialized, in-depth program with a national reputation

for quality and has been recognized three times at the national level. In 1999, the program became the first interpreting program in the country to be found in compliance with the National Interpreter Education Standards of the Conference of Interpreter Trainers (CIT). In 2007, the program became the first interpreting program in the nation to be accredited by the Commission on Collegiate Interpreter Education (CCIE), and, in 2017, the program became the first program to be re-accredited by CCIE. UNH Manchester also houses one of northern New England's most comprehensive collections of books and media materials on ASL/English Interpreting.

The program is guided by the premise that deaf people, as a linguistic minority, possess their own cultural values, literature, history, traditions, and social conventions. Interpretation requires bilingual and bicultural competence in spoken English and American Sign Language. The ASL/English interpreting program at UNH Manchester provides students with a strong theoretical foundation as generalists in ASL/English interpreting and helps prepare students for either state-level interpreter screening or national Registry of Interpreters for the Deaf (RID) interpreter certification, depending on students' skill level and experience.

Graduates may go on to pursue specialty areas in interpretation or related fields of study.

Students who complete the bachelor of science degree in ASL/English interpreting graduate with a varied and flexible academic base. Interpreting requires skills such as sustained powers of concentration, versatility in dealing with a variety of people and content areas, fast-thinking and excellent communication skills in the respective languages. Students seeking to become interpreters receive a foundation in American Sign Language, Deaf culture, and the interpreting process, and their programs of study often include elective courses in linguistics, sociology, communication, and psychology. Students also gain a thorough grounding in the liberal arts through the University's Discovery program.

Graduates of the ASL/English interpreting program may pursue careers in ASL/English interpreting, deaf education, rehabilitation, health care, audiology, social work, counseling, and the media. The program provides students with a varied and flexible academic base. Graduates are prepared for further study in such fields as psychology, communication, linguistics, sociology, and anthropology.

Requirements

Students must complete 64 credits in the major, 40 credits in the University's Discovery program, and 24 credits in elective courses. Students must complete 64 credits in the major with a grade of C or better. Students who earn less than a C on a particular course may repeat that course only once. Students must achieve a GPA of 2.5 or better in major courses and must pass both ASL 532 American Sign Language IV and INTR 630 Consecutive Interpretation I with at least a B- (or successfully demonstrate competence in American Sign Language and consecutive interpretation, respectively). Transfer students must complete a minimum of eight ASL/English interpreting courses at UNH Manchester.

Required Courses

Code	Title	Credits
Language Courses		
ASL 435	American Sign Language I	4

ASL 436	American Sign Language II	4
ASL 531	American Sign Language III	4
ASL 532	American Sign Language IV	4
ASL 621	Advanced American Sign Language Discourse I	4
ASL 622	Advanced American Sign Language Discourse II	4
Culture and Linguistics Courses		
INTR 438	A Socio-cultural Perspective on the Deaf Community ¹	4
INTR 539	Comparative Linguistic Analysis for Interpreters	4
Interpreting Courses		
INTR 430	Introduction to Interpretation	4
INTR 439	Ethics and Professional Standards for Interpreters	4
INTR 540	Translation	4
INTR 630	Consecutive Interpretation I	4
INTR 636	Consecutive Interpretation II	4
INTR 732	Simultaneous Interpretation	4
INTR 734	Field Experience and Seminar I	4
INTR 735	Field Experience and Seminar II	4
Total Credits		64

¹ ASL/English Interpreting majors cannot use this course to fulfill the SS Discovery requirement.

Capstone Experience

The capstone experience in the bachelor of science degree program in ASL/English interpreting is met by INTR 735 Field Experience and Seminar II, which is a senior-level course and the last in the sequence of courses required for the major. This course meets the following two criteria of the capstone experience for this major:

1. the capstone synthesizes and applies disciplinary knowledge and skills,
2. the capstone demonstrates emerging professional competencies.

For more information, contact Jack Hoza, program director, (603) 641-4143, jack.hoza@unh.edu or the Office of Admissions (unhm.admissions@unh.edu) at (603) 641-4150.

Biological Sciences

Explore the living world through hands-on experience in the lab and in the field

Discover the inner workings of living organisms from molecules to ecosystems in our Biological Sciences program. As our largest and most popular major, the Biological Sciences program is designed to give you the degree you want — through self-designed concentrations, independent study, research projects, internships, job shadows, study abroad, and more.

You'll work with faculty mentors to customize your degree around your interests, allowing you to focus your learning in these diverse areas of study:

- Biology Teaching
- Ecology
- Microbiology
- Pre-Dental

- Pre-Med
- Pre-Optometry
- Pre-Pharmacy
- Pre-Physician Assistant Studies
- Pre-Veterinary

Research is central to this program, empowering you to explore, question and invent. Side-by-side with your classmates and professors, you'll conduct experiments in our seven state-of-the-art labs: general biology, advanced biology, microbiology, general chemistry and organic chemistry, as well as the cell culture research lab and microbiology research lab. Take a virtual tour of our biology labs. (<http://youvis.it/zLIFcr>)

You'll also have the opportunity to apply your skills in the real world through a robust job shadow at the Elliot Hospital Laboratory, an internship at Manchester Water Works, a summer research course at Shoals Marine Laboratory—and so much more.

Through diverse areas of study, faculty experts and hands-on experience, you'll be prepared for success in graduate, medical or professional studies, and careers in industries from healthcare to agriculture to education.

<https://manchester.unh.edu/academics/degree-programs/biological-sciences>

Programs

- Biological Sciences (A.S.) (p. 356)
- Biological Sciences Major (B.A.) (p. 356)

Faculty

Biological Sciences Faculty (<http://manchester.unh.edu/academics/degree-programs/biological-sciences/#unhstyleCollapsePane73>)

Biological Sciences (A.S.)

<https://manchester.unh.edu/academics/degree-programs/biological-sciences-associate>

Description

Biology is the study of living organisms in both laboratory and field conditions. It concerns itself with questions of understanding the living world, its complex interrelationships, and the role of human beings within it.

The associate of science in biological sciences program at UNH Manchester is designed to serve either as a terminal degree or as a springboard for students interested in the life sciences, which include majors in biology, microbiology, zoology, plant biology, wildlife management, environmental conservation, biochemistry, and animal sciences. Employment opportunities in the public and private sectors include education; food, water, wastewater and other industrial laboratories; clinical laboratories; biotechnology; environmental research and monitoring; and animal behavior.

Requirements

Students must complete a minimum of 64 credits to graduate. There are two tracks in the A.S. degree program at UNH Manchester: biology and microbiology.

Biology Track Requirements

Code	Title	Credits
MATH 425	Calculus I	4
	or MATH 424B Calculus for Life Sciences	
PSYC 402	Statistics in Psychology ¹	4
BIOL 413	Principles of Biology I	4
BIOL 414	Principles of Biology II	4
CHEM 403	General Chemistry I	4
CHEM 404	General Chemistry II	4
BMS 503 & BMS 504	General Microbiology and General Microbiology Laboratory	5
CHEM 545 & CHEM 546	Organic Chemistry and Organic Chemistry Laboratory	5
BMCB 658 & BMCB 659	General Biochemistry and General Biochemistry Lab	5
BIOL 541	General Ecology	4
GEN 604	Principles of Genetics	4
Total Credits		47

¹ Other statistics courses such as BIOL 528 Applied Biostatistics I or BUS 430 Introduction to Business Statistics may be used to satisfy this requirement.

Microbiology Track Requirements

Students opting for the microbiology track must complete all courses listed in the biological sciences program with the exception of BIOL 541 General Ecology. In addition, students must complete the following courses.

Code	Title	Credits
BMS 602 & BMS 603	Pathogenic Microbiology and Pathogenic Microbiology Laboratory	5
BMS 601	Bacteriology of Food	5
Total Credits		10

Note: Students preparing for professional or graduate programs may need to complete: CHEM 651 Organic Chemistry I-CHEM 652 Organic Chemistry II and CHEM 653 Organic Chemistry Laboratory-CHEM 654 Organic Chemistry Laboratory. These courses may substitute for CHEM 545 Organic Chemistry/CHEM 546 Organic Chemistry Laboratory and BMCB 658 General Biochemistry-BMCB 659 General Biochemistry Lab. Please consult your academic advisor.

For more information, contact Stephen Pugh, program coordinator, at Stephen.Pugh@unh.edu; or contact the Office of Admissions (unhm.admissions@unh.edu), (603) 641-4150.

Biological Sciences Major (B.A.)

<https://manchester.unh.edu/academics/degree-programs/biological-sciences>

Description

Biology is the study of living organisms in both laboratory and field conditions. It concerns itself with questions of understanding the living world, its complex interrelationships, and the role of human beings within it.

The B.A. in biological sciences at UNH Manchester is designed to:

1. allow students to earn a baccalaureate degree in biology at UNH Manchester;
2. allow students to combine study in biology with other programs and disciplines by completing a second major, a minor, or a self-designed set of elective courses along with their biology degree;
3. allow students to complete a major in biology while taking required courses in education in preparation for the five-year M.A.T. or M.Ed. programs and state certification in secondary science education; or alternative state certification pathway;
4. provide an opportunity for students to complete a baccalaureate degree in biology while completing the required courses for admission to medical, dental, veterinary, physician assistant, pharmacy, physical therapy, optometry, and other professional or graduate programs.

Employment opportunities in the public and private sectors include education; industrial, clinical, and research laboratories; biotechnology; and environmental field research.

Requirements

Students must complete a minimum of 128 credits and satisfy the University's Discovery Program and foreign language requirements. Each course required in the major must be completed with a minimum grade of C-. Students must attain a minimum GPA in the major of 2.0. Transfer students must complete at least 24 credits in the major at UNH. BIOL 413 Principles of Biology I, BIOL 414 Principles of Biology II may be used to satisfy the biological sciences Discovery requirement and CHEM 403 General Chemistry I, CHEM 404 General Chemistry II may be used to satisfy the Physical Sciences Discovery requirement. PSYC 402 Statistics in Psychology may be used to satisfy the Quantitative Reasoning Discovery requirement; however, students interested in graduate or professional programs are encouraged to take MATH 425 Calculus I, or MATH 424B Calculus for Life Sciences, to satisfy the Quantitative Reasoning requirement.

The UNH Manchester B.A. in biological sciences program is structured with three levels of coursework.

Biology Core Curriculum

Code	Title	Credits
Biology Courses		
BIOL 413 & BIOL 414	Principles of Biology I and Principles of Biology II	8
BMS 503 & BMS 504	General Microbiology and General Microbiology Laboratory	5
BIOL 541	General Ecology	4
GEN 604	Principles of Genetics	4
Chemistry Courses		

CHEM 403 & CHEM 404	General Chemistry I and General Chemistry II	8
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Mathematics Courses		
Select one of the following:		
MATH 418	Analysis and Applications of Functions	4
MATH 425	Calculus I	
MATH 424B	Calculus for Life Sciences	
Statistics Course		
PSYC 402	Statistics in Psychology ¹	4
Total Credits		37

¹ Other statistics courses such as BIOL 528 Applied Biostatistics I or BUS 430 Introduction to Business Statistics may be used to satisfy this requirement.

Depending on their specific academic and career goals, in particular, students preparing for professional or graduate programs, may, in consultation with their adviser, elect to take additional supporting science courses such as:

Code	Title	Credits
CHEM 545 & CHEM 546	Organic Chemistry and Organic Chemistry Laboratory (one semester)	5
CHEM 651 & CHEM 653	Organic Chemistry I and Organic Chemistry Laboratory (two semesters)	5
CHEM 652 & CHEM 654	Organic Chemistry II and Organic Chemistry Laboratory (two semesters)	5
BMCB 658 & BMCB 659	General Biochemistry and General Biochemistry Lab	5
MATH 426	Calculus II	4
PHYS 401	Introduction to Physics I	4
PHYS 402	Introduction to Physics II	4

These courses are often required for admission to medical, professional, and other graduate programs.

Self-Designed Concentration in Biology

Students will select, in consultation with their adviser, four biology courses at the 600-700 level to be taken at UNH Manchester or UNH Durham.

Capstone Experience

Code	Title	Credits
BSCI 701	Senior Seminar I (during either semester of senior year)	1
In consultation with your academic advisor, select a capstone experience, such as the following:		4
BSCI 792	Research	
BSCI 793	Internship	
BSCI 794	Clinical Microbiology Internship	
BSCI 795	Independent Study	
Total Credits		5

Senior Seminar will meet weekly during either semester of the senior year in a seminar format. Students will share information about capstone

experiences, listen to presentations on timely issues in biology, develop career preparation skills, and provide training in poster production. Other methods of oral presentation and scientific writing are explored as students prepare to present the results of their capstone activities at the Undergraduate Research Conference or other venues.

In addition, all students will take elective courses to fulfill the 128-credit requirement for a B.A. degree. These elective courses could fulfill the requirements for a major or minor in another program or they could fulfill a self-designed interdisciplinary concentration. They could include some of the supporting science courses listed above. These courses would be selected in consultation with the adviser and the appropriate faculty adviser in another program.

For more information, contact Stephen Pugh, Program coordinator, at Stephen.Pugh@unh.edu or contact the Office of Admissions (unhm.admissions@unh.edu), (603) 641-4150.

Biotechnology

Channeling scientific curiosity to fuel discovery and innovation

You're a scientist at heart — curious about how everything works, right down to the smallest detail. Exploring topics like biochemistry, molecular biology and genetics, our Biotechnology program puts you at the heart of one of the newest and fastest-growing scientific fields.

Whatever your scientific passion, studying biotechnology can bring you to its doorstep — preparing you to create advancements that can change lives and improve the world around you.

<https://manchester.unh.edu/academics/degree-programs/biotechnology>

Programs

- Biotechnology Major (B.S.) (p. 358)

Faculty

Biotechnology Faculty (<http://manchester.unh.edu/academics/degree-programs/biotechnology/#unhstyleCollapsePane73>)

Biotechnology Major (B.S.)

<https://manchester.unh.edu/academics/degree-programs/biotechnology>

Description

Biotechnology is the use of living organisms, biological systems, and small chemicals and biomolecules in technology. Biotechnology has applications in the treatment of diseases, the production of food, the protection of ecosystems, and the generation of energy, as well as in the basic science study of many biological questions.

The B.S. in biotechnology at UNH Manchester is designed to:

1. allow students to earn a baccalaureate degree in biotechnology at UNH;

2. allow students to combine study in biotechnology with other programs and disciplines by completing a minor, or a self-designed set of elective courses along with their biotechnology degree;
3. allow students to complete a major in biotechnology while taking required courses in education in preparation for the five-year M.A.T. or M.Ed. programs and state certification in secondary science education; or alternative state certification pathway;
4. provide an opportunity for students to complete a baccalaureate degree in biotechnology while completing the required courses for admission to medical, dental, veterinary, physician assistant, pharmacy, physical therapy, optometry, and other professional or graduate programs.
5. allow students to complete a baccalaureate degree in biotechnology while completing the required courses for admission to graduate research programs (M.S. or Ph.D.) in the life sciences and related fields.

Employment opportunities in the public and private sectors include education; research laboratories; clinical laboratories; forensic laboratories; jobs in diverse areas from research to quality control to sales in the pharmaceutical industry; industrial positions in the food industry; water and wastewater laboratories and facilities; and environmental research and monitoring.

Requirements

Students must complete a minimum of 128 credits and satisfy the University's Discovery Program and writing requirement. Each course required in the major must be completed with a minimum grade of C-. Students must attain a minimum GPA in the major of 2.0. Transfer students must complete at least 24 credits in the major at UNH.

BIOL 413 Principles of Biology I, BIOL 414 Principles of Biology II can be used to satisfy the biological sciences Discovery requirement and CHEM 403 General Chemistry I, CHEM 404 General Chemistry II may be used to satisfy the Physical Sciences Discovery requirement. PSYC 402 Statistics in Psychology or MATH 424B Calculus for Life Sciences/MATH 425 Calculus I may be used to satisfy the Quantitative Reasoning Discovery requirement.

The UNH Manchester B.S. in biotechnology program is structured with three levels of coursework.

Code	Title	Credits
Core Courses		
BIOL 413 & BIOL 414	Principles of Biology I and Principles of Biology II	8
BMS 503 & BMS 504	General Microbiology and General Microbiology Laboratory	5
GEN 604	Principles of Genetics	4
BSCI 501	Ethical Issues in Biology	4
CHEM 403 & CHEM 404	General Chemistry I and General Chemistry II	8
CHEM 651 & CHEM 653	Organic Chemistry I and Organic Chemistry Laboratory	5
CHEM 652 & CHEM 654	Organic Chemistry II and Organic Chemistry Laboratory	5
BMCB 658 & BMCB 659	General Biochemistry and General Biochemistry Lab	5
PHYS 401	Introduction to Physics I	4

or PHYS 407	General Physics I	
PSYC 402	Statistics in Psychology	4
MATH 424B	Calculus for Life Sciences	4
or MATH 425	Calculus I	
Advanced Biology Courses (600/700 level)		
Select five courses (at least one course from each of the three categories)		20
I. Advanced Biology courses		
GEN 711W	Genomics and Bioinformatics	
GEN 714	Personal Genomics	
GEN 771	Molecular Genetics	
BMS 702	Endocrinology	
BMS 705	Immunology ¹	
or BMS 705 & BMS 715	Immunology and Immunology Laboratory	
BSCI 620	Global Science Exploration	
BSCI 670	Clinical Pathophysiology	
BSCI 680	Pharmacology	
BSCI 692	Evolutionary Medicine	
BSCI 695	Exploring Biology Teaching (1-4 credits)	
BSCI 735	Cell Biology	
BSCI 750	Cancer Biology: From Benchtop Research to Therapeutic Interventions	
II. Laboratory Techniques courses		
BMCB 753	Cell Culture	
BSCI #765	Nucleic Acid Techniques	
BSCI 766	Protein and Immunologic Techniques	
BSCI 777	Molecular Biology and Biotechnology	
CHE 651	Biotech Experience/Biomufacturing (BTEC 220 GBCC)	
ZOOL 625 & ZOOL 626	Principles of Animal Physiology and Animal Physiology Laboratory	
III. Advanced Microbiology courses		
BMS 601	Bacteriology of Food	
BMS 602 & BMS 603	Pathogenic Microbiology and Pathogenic Microbiology Laboratory	
BMS 706 & BMS 708	Virology and Virology Laboratory	
BSCI 737	Microbial Genomics	
BSCI 740	Aquatic Microbiology	
Total Credits		76

¹ BMS 705 Immunology, may optionally be taken with or without BMS 715 Immunology Laboratory.

Depending on their specific academic and career goals and in consultation with their adviser, students may elect to take additional supporting science courses and a full year of physics (adding PHYS 402 Introduction to Physics II to PHYS 401 Introduction to Physics I listed above). These courses are often required for admission to medical, veterinary, and other professional and graduate programs.

Code	Title	Credits
Capstone Experience		
BSCI 701	Senior Seminar I (during either semester of the senior year)	1
Select a capstone experience, such as the following:		4
BSCI 792	Research	
BSCI 793	Internship	
BSCI 794	Clinical Microbiology Internship	
BSCI 795	Independent Study	
Total Credits		5

Senior Seminar will meet weekly during either semester of the senior year in a seminar format. Students will share information about capstone experiences, listen to presentations on timely issues in biology, develop career preparation skills, and provide training in poster production. Other methods of oral presentation and scientific writing are explored as students prepare to present the results of their capstone activities at the Undergraduate Research Conference or other venues.

In addition, all students will take elective courses to fulfill the 128-credit requirement for a B.S. degree. These elective courses could fulfill the requirements for a major or minor in another program or they could fulfill a self-designed interdisciplinary concentration. These courses would be selected in consultation with the adviser and the appropriate faculty adviser in another program.

For more information, contact , Stephen Pugh, program coordinator, at Stephen.Pugh@unh.edu; or contact the Office of Admissions (unhm.admissions@unh.edu), (603) 641-4150.

Business

Leadership Through Innovation, Collaboration and Real-World Experience.

Located in the economic heart of New Hampshire, our Business program gives you the skills, resources and connections to become a successful, innovative leader. Small class sizes offer you individualized attention from faculty, while our vast network of business partners gets you the practical experience employers want.

Our faculty members bring years of industry experience to the classroom, and their flipped-classroom approach means you'll apply concepts and theories to real, hands-on work. Senior capstone experience brings your learning to life through: an internship or project at a local business, case studies, business ethics study, and developing your professional self. Another internship is expected to be taken junior or senior year to support career decision making.

This highly interdisciplinary program is designed to explore your interests and prepare you for a lucrative career, offering areas of focus in:

- accounting & finance
- business economics
- management and human resources
- marketing and sales

Working hand-in-hand with local businesses through internships, capstone experience or involvement in our award-winning Enactus program (<http://manchester.unh.edu/current-students/enactus>), you'll

get the real-world experience and leadership skills that today's employers look for.

<https://manchester.unh.edu/academics/degree-programs/business>

Programs

- Business Administration (A.S.) UNHM (p. 360)
- Business Major (B.A.) UNHM (p. 360)
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- Business Minor (UNHM) (p. 362)
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- Forensic Accounting Minor (p. 363)

Faculty

Business Faculty (<http://manchester.unh.edu/academics/degree-programs/business/#unhstyleCollapsePane73>)

Business Administration (A.S.) UNHM

<https://manchester.unh.edu/academics/degree-programs/business-administration>

Description

Our Associate in Science degree in Business Administration is designed to provide students with a stepping stone to a career. Graduates of the program are prepared for entry-level employment opportunities, or to continue their education at the baccalaureate level.

Requirements

Students must complete a minimum of 64 credits to graduate with an associate of science degree in business administration. A minimum cumulative GPA of 2.0 is required for graduation. In addition to completing eight Discovery Program courses and one Inquiry or Inquiry-attribute course within their first 48 earned credits, students must complete six courses (24 credits) in the major and one elective course.

Code	Title	Credits
Required Courses		
BUS 400	Introduction to Business	4
ECN 412	Introduction to Microeconomic Principles	4
BUS 532	Introduction to Financial Accounting	4
BUS 533	Introduction to Managerial Accounting	4
Business Administration Electives		
Select two of the following courses: ^{1,2}		8
BUS 430	Introduction to Business Statistics	
BUS 601	Financial Management	
BUS 610	Marketing Principles and Applications	
BUS 620	Organizational Behavior	
COMP 405	Introduction to Internet and Web Authoring	
COMP #515	Multimedia: Introduction and Applications	

CMN 457	Introduction to Language and Social Interaction
CA 450	Introduction to Public Speaking
ECN 411	Introduction to Macroeconomic Principles
ECN 635	Money, Banking and Macroeconomic Activity
ECN 640	Business Law and Economics
ECN 650	Economics for Managers
Other 600-level ECN or BUS courses by permission of instructor	

Electives

Select one elective	4
Total Credits	28

- ¹ Students may select electives from 600-level ECN or BUS courses with adviser permission.
- ² Students planning to pursue the B.A. in business should select BUS 430 Introduction to Business Statistics, and ECN 411 Introduction to Macroeconomic Principles.

For more information, contact Bill Troy (bill.troy@unh.edu), program coordinator, at (603) 641-4345, or contact the Office of Admissions (unh.admissions@unh.edu), (603) 641-4150.

Business Major (B.A.) UNHM

<http://manchester.unh.edu/academics/degree-programs/business>

Description

The bachelor of arts in business has a strong interdisciplinary focus. The curriculum adheres to a philosophy that effective decision making requires a broad understanding of the institutional and cultural climate within which businesses are operating. The program uses the resources of Manchester's business community and its economic strengths to provide students with skills, knowledge, and opportunities.

The business program offers areas of focus in accounting, business economics, management (including human resources), and marketing/sales. Students with a unique interest can create a self-designed concentration with approval of their adviser and the coordinator of the business program.

A culminating capstone experience enables students to apply their knowledge in the form of an internship, applied senior project, or special topics seminar. Because this is a bachelor of arts program, students fulfill the foreign language requirement. Students have the opportunity to enhance fluency through community experiences and internships. Graduates of UNH Manchester's business program are in demand because they offer future employers a portfolio of practical skills and theoretical knowledge, coupled with applied experiences through internships, leading to effective communication and leadership.

Requirements

Students must complete 128 credits to graduate. Each required course must be completed with a minimum grade of C-. Students must attain a minimum GPA of 2.0 in major courses required for graduation. Majors cannot use BUS 430 Introduction to Business Statistics, ECN 411 Introduction to Macroeconomic Principles, or ECN 412 Introduction to Microeconomic Principles to satisfy both Discovery Program and major requirements. Transfer students must complete at least half of

their credits in the major and the 8-credit capstone experience (BUS 705 Business Ethics and either BUS 750 Business Internship Seminar or BUS 760 Applied Senior Project) in residence at UNH Manchester.

Code	Title	Credits
Introductory Business Core Courses		
ENGL 401	First-Year Writing	4
ENGL 595	Literary Topics (Business Communications) ¹	4
BUS 400	Introduction to Business	4
BUS 430	Introduction to Business Statistics	4
BUS 532	Introduction to Financial Accounting	4
BUS 533	Introduction to Managerial Accounting	4
BUS 675	Special Topics in Business Administration (Microsoft Business Applications)	4
ECN 411	Introduction to Macroeconomic Principles	4
ECN 412	Introduction to Microeconomic Principles	4
MATH 420	Finite Mathematics	4
	or MATH 425 Calculus I	
Select one of the following:		4
COMP 405	Introduction to Internet and Web Authoring	
COMP 415	Mobile Computing First and For Most	
COMP 425	Introduction to Programming	
COMP 430	Systems Fundamentals	
Intermediate Business Core		
BUS 601	Financial Management	4
BUS 610	Marketing Principles and Applications	4
BUS 620	Organizational Behavior	4
BUS 690	Business Program Internship ²	1-4
Capstone		
BUS 705	Business Ethics ³	4
BUS 750	Business Internship Seminar ³	4
	or BUS 760 Applied Senior Project	
Area of Study		
Select an area of study		16
Total Credits		81-84

¹ Prerequisite is ENGL 401 First-Year Writing or equivalent

² Experiential learning is required prior to the last semester at the University. BUS 690 Business Program Internship as an internship course satisfies this requirement. Most students will take two internships at UNH Manchester - (BUS 690 Business Program Internship and BUS 750 Business Internship Seminar.)

³ Business Capstone Experience (two courses: BUS 705 Business Ethics and one senior business seminar [BUS 750 Business Internship Seminar or BUS 760 Applied Senior Project], fulfills the Discovery Program capstone requirement for business majors and is taken during the senior year).

Note: Because this is a bachelor of arts program, students must fulfill a language requirement. Efforts will be made to enhance fluency through subsequent courses and community experiences.

Areas of Study

Business Economics

Code	Title	Credits
Select four of the following courses (including at least one course at 600 level or above):		16

ECN 635	Money, Banking and Macroeconomic Activity	
ECN 650	Economics for Managers	
ECN 640	Business Law and Economics	
DATA 557	Introduction to Data Science and Analytics	
BUS 690	Business Program Internship	
BUS 635	Entrepreneurial Application through Enactus	
BUS 695	Independent Study in Business	
Total Credits		16

Management

Code	Title	Credits
Select four of the following courses:		16
BUS 453	Leadership for Managers	
BUS 455	Management of Human Resources Management	
BUS 520	Training and Development	
BUS #630	International Management	
BUS 640	Business Communication and Conflict	
BUS 663	Services Marketing and Operations Management	
ECN 640	Business Law and Economics	
ECN 650	Economics for Managers	
BUS 690	Business Program Internship	
BUS 695	Independent Study in Business	
Total Credits		16

Marketing

Code	Title	Credits
Select three of the following courses:		12
BUS 565	Selling and Sales Management	
BUS 661	Integrated Marketing Communication	
BUS 663	Services Marketing and Operations Management	
BUS #665	International Marketing Strategy Management	
Select one of the following courses or one course not taken from the list above:		4
BUS 675	Special Topics in Business Administration	
BUS 685	Applications in Business Management	
BUS 695	Independent Study in Business (Marketing/Communication Project)	
BUS 690	Business Program Internship (in Marketing or Communication)	
COMP 405	Introduction to Internet and Web Authoring	
COMP 415	Mobile Computing First and For Most	
Total Credits		16

Self Designed

Code	Title	Credits
Select four courses (or 16 credit hours) with faculty approval, including at least one course at 500 level or above		16
Total Credits		16

For more information, contact Bill Troy, program coordinator, at (603) 641-4345 or Bill.Troy@unh.edu, or contact the Office of Admissions (unhm.admissions@unh.edu), (603) 641-4150.

Business Major: Accounting Option (B.A.) UNHM

<https://manchester.unh.edu/academics/degree-programs/business/accounting-option>

Description

The Accounting Option is offered in response to the growing demand for Accounting graduates in public accounting firms as well as in industry. Many local public accounting firms have expressed that with an expected high retirement rate among "baby boomers", there appears to be a need for graduates with robust accounting credentials. Representatives from well-known CPA exam prep course firms expressed the opinion that accountants are in high demand and the unemployment rate in this industry is very low.

The Accounting Option offers students the necessary courses to enable them to sit for the CPA exam, which is one of the major steps in obtaining a CPA license.

The requirements for sitting for the CPA exam in the State of New Hampshire are a bachelor's degree, 24 credits in business subjects, and 30 credits in accounting subjects. The Accounting Option within the Business program provides these required courses.

Requirements

Students must complete 128 credits to graduate. Each required course must be completed with a minimum grade of C-. Students must attain a minimum GPA of 2.0 in major courses required for graduation. Majors cannot use BUS 430 Introduction to Business Statistics, ECN 411 Introduction to Macroeconomic Principles, or ECN 412 Introduction to Microeconomic Principles to satisfy both Discovery Program and major requirements. Transfer students must complete at least half of their credits in the major and the 8-credit capstone experience (BUS 705 Business Ethics and either BUS 750 Business Internship Seminar or BUS 760 Applied Senior Project) in-residence at UNH Manchester.

Code	Title	Credits
Introductory Business Core Courses		
ENGL 401	First-Year Writing	4
ENGL 595	Literary Topics (Business Communications) ¹	4
BUS 400	Introduction to Business	4
BUS 430	Introduction to Business Statistics	4
BUS 532	Introduction to Financial Accounting	4
BUS 533	Introduction to Managerial Accounting	4
BUS 675	Special Topics in Business Administration (Microsoft Business Applications)	4
ECN 411	Introduction to Macroeconomic Principles	4
ECN 412	Introduction to Microeconomic Principles	4
MATH 420	Finite Mathematics	4
or MATH 425	Calculus I	
Select one of the following:		
COMP 405	Introduction to Internet and Web Authoring	4
COMP 415	Mobile Computing First and For Most	
COMP 425	Introduction to Programming	

COMP 430	Systems Fundamentals	
Intermediate Business Core		
BUS 601	Financial Management	4
BUS 610	Marketing Principles and Applications	4
BUS 620	Organizational Behavior	4
BUS 690	Business Program Internship ²	1-4
or BUS 691	VITA Internship	
Capstone		
BUS 705	Business Ethics ³	4
BUS 750	Business Internship Seminar ³	4
or BUS 760	Applied Senior Project	
Total Credits		65-68

¹ Prerequisite is ENGL 401 First-Year Writing or equivalent.

² Experiential learning is required prior to the last semester at the University. BUS 690 Business Program Internship or BUS 691 VITA Internship satisfy this experiential learning requirement.

³ Business Capstone Experience (two courses: BUS 705 Business Ethics and one senior business seminar [BUS 750 Business Internship Seminar or BUS 760 Applied Senior Project]), fulfills the Discovery Program capstone requirement for business majors and is taken during the senior year).

Note: Because this is a bachelor of arts program, students must fulfill a language requirement. Efforts will be made to enhance fluency through subsequent courses and community experiences.

Requirements - Accounting Option

Code	Title	Credits
BUS 535	Federal Taxation	4
BUS 603	Intermediate Financial Accounting I	4
BUS 615	Intermediate Financial Accounting II	4
BUS 720	Auditing	4
Select two of the following courses:		8
BUS 629	Adv Managerial Accounting	
BUS 715	Forensic Accounting/Fraud Examination	
BUS 725	Financial Statement Analysis	
Total Credits		24

For more information, contact Bill Troy, program coordinator, at (603) 641-4345 or Bill.Troy@unh.edu, or contact the Office of Admissions (unhm.admissions@unh.edu), (603) 641-4150.

Business Minor (UNHM)

<https://manchester.unh.edu/academics/degree-programs/business-minor>

Description

The minor in business allows students to pursue their interests in the liberal arts and sciences while building a foundation of business skills and adding a valuable credential to their portfolio and resume. The minor in business requires successful completion of five business courses or 20 credit hours from the courses listed below.

Requirements

Students must complete five courses (20 credits) with a cumulative minimum grade point average of 2.0 and with no grade below a C- grade. Transfer course approval for the minor is limited to at most, two relevant courses successfully completed at another accredited institution, subject to syllabi review and approval. Students must complete a minimum of 20 credits for the minor, with a maximum of 8 credits transferred from accredited institutions and a minimum of 12 credits completed in residence at UNH.

Code	Title	Credits
Required Courses		
BUS 400	Introduction to Business	4
BUS 532	Introduction to Financial Accounting	4
ECN 412	Introduction to Microeconomic Principles	4
or ECN 411	Introduction to Macroeconomic Principles	
Electives		
Select two of the following (at least one of which must be at the 600 level or above):		8
BUS 430	Introduction to Business Statistics	
BUS 533	Introduction to Managerial Accounting	
BUS 601	Financial Management	
BUS 610	Marketing Principles and Applications	
BUS 620	Organizational Behavior	
Total Credits		20

Other 600- or 700-level courses in business (BUS) or economics (ECN) may be substituted for courses listed above with permission of the business program coordinator. This may include an Internship course (BUS 690 Business Program Internship), Special Topics courses (BUS 675 Special Topics in Business Administration/BUS 685 Applications in Business Management), or an Independent Study in Business (BUS 695 Independent Study in Business).

For more information, contact Bill Troy, program coordinator and minor supervisor, at (603) 641-4345 or Bill.Troy@unh.edu.

Entrepreneurship Minor (UNHM)

<https://manchester.unh.edu/academics/degree-programs/entrepreneurship-minor>

Description

The entrepreneurship minor is designed for those students who are interested in starting their own business or enhancing a business in which they are currently working.

The course content of the minor is designed to meet the objective of developing the mindset, skills, competencies, and experiential learning that enable students to function as entrepreneurs or as productive members of emerging, entrepreneurial firms.

The entrepreneurship program integrates the knowledge and experiences gained in other disciplines, as well as from the field of entrepreneurship, into an understanding of the process of new venture creation and the management of entrepreneurial businesses. With the minor presenting entrepreneurial concepts from a generalist perspective, students will

acquire knowledge to conceive, develop, and launch new ventures and to turn innovative ideas into products that can be brought to market. Emphasis is placed on the managerial, legal, and marketing aspects of start-up businesses. The program culminates with a juried business plan competition for financial backing and start-up funding support.

Ethical and legal—In addition to exploring legal issues associated with a small business, students will examine their own personal values and aspirations to help guide their entrepreneurial careers.

Knowing the numbers—Entrepreneurs must be intimately familiar with the financial health of their businesses, particularly in regard to cash flow and other limited resource management and forecasting.

Business model—Students will be expected to develop a full understanding of how to create and utilize a business model and transform it into a fundable business plan.

Selling the idea—Students must not only understand how to identify and evaluate potential investors, but also how to sell their business idea when the opportunity presents itself.

Managing growth in entrepreneurial companies—Students will learn the unique set of leadership and communication skills necessary to guide a company through its most perilous time period: rapid growth.

Requirements

Code	Title	Credits
Courses		
BUS 410	Introduction to Entrepreneurship	4
BUS 453	Leadership for Managers	4
BUS 565	Selling and Sales Management	4
BUS 600	New Venture Creation	4
ECN 640	Business Law and Economics	4
Total Credits		20

Entrepreneurship minors are strongly encouraged to become active members in the ENACTUS program (<http://manchester.unh.edu/current-students/enactus>), which focuses on helping entrepreneurs in the Manchester community. Students will also be encouraged to take advantage of internship opportunities through the Internship & Career Planning Office.

For more information, contact Bill Troy, program coordinator and minor supervisor, at (603) 641-4345 or Bill.Troy@unh.edu.

Forensic Accounting Minor

Description

<https://manchester.unh.edu/academics/degree-programs/forensic-accounting-minor>

Opportunities for growth in the field of Forensic Accounting continue at an impressive rate. Career options for students who add the minor in Forensic Accounting can include investigative and litigation support to accounting firms, banks, police departments, government agencies and other organizations. The knowledge attained in this minor can help a homeland security expert or accountant investigate the rampant fraud

that is often tied to homeland security or business threats, including non-accounting fraud issues.

In addition to following the knowledge content of the Certified Fraud Examiner (CFE) certification exam offered by the Association of Certified Fraud Examiners, the skills attained in the Forensic Accounting minor will augment the students' potential in a variety of career opportunities in homeland security and fraud investigation. The CFE consists of four parts: Fraud Prevention and Deterrence, Financial Transactions and Fraud Schemes, Investigation, and Law. This credential is highly regarded in the security industry, corporate risk management, law offices, and in government agencies such as the Federal Bureau of Investigation.

The Forensic Accounting minor will appeal to students who would like to add specialized skills to their Homeland Security degree. In addition, the Forensic Accounting minor can be used as a minor in other degree paths (except for the B.A. in Business, Accounting option). While it is not training students to pursue the CPA or careers more focused in traditional accounting, it can be used to expose students to the field of accounting.

Requirements

All five courses applied to the Forensic Accounting minor must be completed with a minimum grade of C- and an overall GPA of 2.0. Students must take at least three 500-level or above courses to complete the minor.

Code	Title	Credits
The following five courses are required for the Forensic Accounting minor:		
BUS 532 or ADMN 502	Introduction to Financial Accounting Financial Accounting	4
ECN 640 or HLS 520	Business Law and Economics ¹ Homeland Security Law and Policy	4
BUS 460		4
HLS 615	Introduction to Fraud Investigation	4
BUS (600 level) course in Forensic Accounting for Non-Accountants		4
Total Credits		20

¹ ECN 640 Business Law and Economics for Business majors;
HLS 520 Homeland Security Law and Policy for Homeland Security majors

For more information, contact Yvette Lazdowski, minor supervisor, at Yvette.Lazdowski@unh.edu (yvette.lazdowski@unh.edu).

Communication Arts

Shaping skilled communicators through creativity, technology and hands-on experience

With expert faculty, state-of-the-art studios and a vast network of internship opportunities, our Communication Arts program gives you the skills and experience to turn your passion into a profession. Our highly interdisciplinary program opens doors to limitless career possibilities – shaping the next generation of filmmakers, journalists, HR specialists, marketers and beyond.

Recent data from the American Academy of Arts & Sciences shows that Communication Arts is the largest and most popular of the humanities disciplines. Part of this interest is because we live in a world where communication is a vital part of daily life, regardless of career or industry. But another part, potentially even more important, is the inherent flexibility that students find – not only during college, but in the job market after graduation.

Your interests inspire what you study, allowing you to focus your degree in areas like Advertising and Public Relations, (<https://manchester.unh.edu/academics/degree-programs/communication-arts/advertising-and-public-relations-option>) Cinema and Media Arts (<http://manchester.unh.edu/academics/degree-programs/communication-arts/cinema-media-arts-option>), Digital Media (<http://manchester.unh.edu/academics/degree-programs/communication-arts/digital-media-option>), Human Relations (<http://manchester.unh.edu/academics/degree-programs/communication-arts/human-relations-option>), or Media History and Cultural Studies. Students can also take courses in graphic design, advertising design and typography through our partnership with the New Hampshire Institute of Art.

Through hands-on learning in our classrooms, in the field and in our audio, video and editing studios, you'll shape the interpersonal and technical communication skills you need for success in industries from media to business, healthcare, education and more.

<https://manchester.unh.edu/academics/degree-programs/communication-arts>

Programs

- Communication Arts Major (B.A.) (p. 364)
- Communication Arts Major: Advertising and Public Relations Option (B.A.) (p. 366)
- Communication Arts Major: Cinema and Media Arts Option (B.A.) (p. 367)
- Communication Arts Major: Digital Media Option (B.A.) (p. 367)
- Communication Arts Major: Human Relations Option (B.A.) (p. 368)
- Communication Arts Minor (p. 369)

Faculty

Communication Arts Faculty (<http://manchester.unh.edu/academics/degree-programs/communication-arts/#unhstyleCollapsePane73>)

Communication Arts Major (B.A.)

<https://manchester.unh.edu/academics/degree-programs/communication-arts>

Description

Communication Arts majors explore the creativity, artistry, and impact of human communication. The program offers a rich variety of learning experiences, including:

- Working with cutting-edge digital media in state-of-the-art sound and video production studios and a high-definition editing suite with full Adobe creative cloud access.

- Discovering how communication theories and practices shape personal identity, social skills, professional relationships, and human relations.
- Enhancing your media writing, social media, public relations, and strategic communication skills.
- Exploring the history of media using a super-tech screening room with surround sound.
- Developing hands-on research activities, creative media projects, and internship experiences that link students with businesses, nonprofits, and the community.

To complete the major, students can take courses from across the Communication Arts curriculum, or they may choose to focus their coursework in one of four suggested areas of study: Advertising and Public Relations (<https://manchester.unh.edu/academics/degree-programs/communication-arts/advertising-and-public-relations-option>)*, Cinema and Media Arts (<https://manchester.unh.edu/academics/degree-programs/communication-arts/cinema-media-arts-option>)*, Digital Media (<https://manchester.unh.edu/academics/degree-programs/communication-arts/digital-media-option>)*, or Human Relations (<https://manchester.unh.edu/academics/degree-programs/communication-arts/human-relations-option>)**.

A degree in Communication Arts prepares students for today's communication-driven society. The program offers students the knowledge and skills they need to succeed as professional communicators, media artists, and entrepreneurs working in a variety of careers. Our alumni have gone on to work in fields such as radio, television, film, web, digital video, corporate communications, journalism, public relations, social media, advertising, sales, strategic communication, audience research, counseling, conflict mediation, human resources, and more. A Communication Arts degree also creates pathways to careers in government, social services, public education, and community affairs, where employers seek graduates who can think creatively and communicate effectively to a variety of audiences and constituents.

Communication Arts faculty bring exceptional expertise to the classroom and are actively engaged in their own creative and scholarly work. They regularly share their knowledge with audiences around the state, the country, and the world. Some are also experienced professionals who bring current, real-world knowledge from the workplace to the classroom. In addition to classroom instruction, the program also provides students with exceptional access to experiential learning opportunities (internships, community-based research, service learning, and media production projects) that occur within real-life settings.

* Advertising and Public Relations, Cinema and Media Arts, Digital Media, and Human Relations are **Degree Options** that appear on the official UNH transcript and diploma. The specific requirements for each Degree Option are presented elsewhere in this catalog. Students are encouraged to contact the communication arts program coordinator or their academic advisor to discuss whether a Degree Option is the right choice for them.

Requirements

Degree Requirements

Students must complete a minimum of 128 credits and satisfy the University's Discovery Program and foreign language requirements. Communication Arts (CA) majors must complete 10 courses (40 credits) and maintain a minimum overall grade point average of 2.0 in the major. Transfer students must complete at least 20 credits in the Communication Arts major at UNH. Communication Arts majors may use up to two CMN and/or CA courses toward both the Communication Arts major and UNH Discovery Program requirements.

Code	Title	Credits
I. Required Core Courses ¹		
CMN 455	Introduction to Media Studies	4
CMN 456	Propaganda and Persuasion	4
CMN 457	Introduction to Language and Social Interaction	4
II. Selected Coursework		
Select three courses from area A, two from area B, two from area C ²		28
Total Credits		40

¹ Students must earn a "C" or better in each course to satisfy CA degree requirements.

² Students must earn a "C-" or better in each course to satisfy CA degree requirements.

A. Communication Practices

Code	Title	Credits
Select three of the following:		12
CA #444	Manipulating Media: Exploring Image and Sound Aesthetics	
CA 450	Introduction to Public Speaking	
CA 500	Media Writing	
CA 501	Internship/Communication in the Urban Community	
CA 502	Image and Sound	
CA #503	Techniques for News Reporting	
CA #504	Film Criticism	
CA 506	Gender	
CA 507	Relational Violence	
CA 508	Conflict in Relational Communication	
CA 512	Screenwriting	
CA 514	Fundamentals of Video Production	
CA 515	Advanced Video Production	
CA #516	Speechwriting	
CA 517	Fundamentals of Audio Prod	
CA 518	Advanced Topics in Digital Media Production	
CA 519	Advanced Screenwriting	
CA 520	Special Topics in Applied Communication	
CA 522	Graphic Design I	
CA 523	Graphic Design II	
COMP #515	Multimedia: Introduction and Applications	
HIST 595	Explorations	

PSYC 762	Counseling	
Total Credits		12

B. Communication Practices: Organization, History, and Policy

Code	Title	Credits
Select two of the following:		
CA #525	Media Programming	8
CA #526	Organization of Newswork	
CA 527	History of Film	
CA 531	History and Organization of Advertising	
CA 532	Typography I	
CA 533	Typography II	
CA #537	Health Communication	
CA 539	Communicating in Families	
CA 540	Public Relations	
CA 542	Social Media for Organizations and Business	
CA 550	Special Topics in Communication Organization, History, and Policy	
ENGL 534	21st Century Journalism: How the News Works	
Total Credits		8

C. Communication Practices: Theory and Research

Code	Title	Credits
Select two of the following:		
CA #600	Research Methods in Media	8
CA 601	Exploring Relationships	
CA 610	Communication Technologies and Culture	
CA #611	Theories of Relational Communication	
CA 612	Narrative	
CA #614	Communication and Power	
CA 615	Film History/Theory and Method	
CA 618	Documentary	
CA 720	Seminar	
CA 795	Independent Study	
Total Credits		8

Capstone Requirement

The capstone requirement will be satisfied in a student's senior year by completion of a specific four-credit capstone course at the 600 or 700 levels. Students may not enroll in a capstone course until they have completed all three CA program core courses (CMN 455 Introduction to Media Studies, CMN 456 Propaganda and Persuasion, and CMN 457 Introduction to Language and Social Interaction) and all CA Area A and Area B requirements. The capstone course can also fulfill an Area C course requirement.

The capstone experience offers seniors an opportunity to synthesize and apply knowledge and skills gained throughout their communication arts major coursework. The capstone course requires students to conduct an original research study, a creative media project, an internship, community-based research, or an advanced service learning project in communication arts under the close supervision of a communication arts faculty member. Students are strongly encouraged to share their capstone projects with the larger UNH community through participation

in the Undergraduate Research Conference, a presentation in the Brown Bag lunch series, publication in the UNH undergraduate journal *Inquiry*, or presentation in some other public venue. Students should work closely with their advisers to make sure the capstone requirement has been satisfied.

Courses that satisfy this requirement include, but are not limited to:

Code	Title	Credits
CA 601	Exploring Relationships	4
CA 612	Narrative	4
CA #614	Communication and Power	4
CA 615	Film History/Theory and Method	4
CA 720	Seminar	4
CA 795	Independent Study	4

For more information, contact Jeff Klenotic, program coordinator, at (603) 641-4130 or jeffrey.klenotic@unh.edu, or contact the Office of Admissions (unhm.admissions@unh.edu), (603) 641-4150.

Communication Arts Major: Advertising and Public Relations Option (B.A.)

Description

<https://manchester.unh.edu/academics/degree-programs/communication-arts/advertising-and-public-relations-option>

Students in the Advertising and Public Relations option develop knowledge and skills relating to the use of strategic communication practices within a variety of settings such as ad agencies, commercial businesses, and nonprofit organizations. A dynamic mix of historical, social, ethical, organizational, creative, analytical, and experiential perspectives is used to create a strong foundation for professional success and graduate study. Coursework covers topics such as earned and paid media, social media, graphic design, media writing, data analytics, and audience research. Some courses use field trips and guest speakers to keep students up-to-date with current trends. An internship in advertising and public relations is required.

Requirements

Option Requirements

Students must complete all of the Communication Arts major requirements (p. 365) and will work with their academic advisor to select courses that also satisfy option requirements.

The option in Advertising and Public Relations consists of 24 credits as distributed below. Note that some courses may also be used to fulfill the requirements of the Communication Arts major. Courses applied to the option must be completed with a minimum grade of C- and overall GPA of 2.0. Transfer students must complete a minimum of 12 credits, including the Advertising and Public Relations Internship, at UNH Manchester.

Code	Title	Credits
I. Select two of the following courses:		
CA 531	History and Organization of Advertising	8

CA 540	Public Relations	
CA 542	Social Media for Organizations and Business	
CA 550	Special Topics in Communication Organization, History, and Policy ¹	
II. Select two of the following courses:		8
CA 450	Introduction to Public Speaking	
CA 500	Media Writing	
CA 514	Fundamentals of Video Production	
CA 520	Special Topics in Applied Communication ¹	
CA 522	Graphic Design I	
CA 523	Graphic Design II	
CA 532	Typography I	
CA 533	Typography II	
DATA 557	Introduction to Data Science and Analytics	
III. Select one of following courses:		4
CA 610	Communication Technologies and Culture	
CA 720	Seminar ¹	
CA 795	Independent Study ¹	
IV. Select one of the following courses:		4
CA 501	Internship/Communication in the Urban Community ¹	
UMST 500	Internship ¹	
Total Credits		24

¹ Topic must be related to advertising and public relations, and approved by advisor.

For more information, contact Jeff Klenotic, program coordinator, at (603) 641-4130 or jeffrey.klenotic@unh.edu, or contact the UNH Manchester Office of Admissions (unhm.admissions@unh.edu) at (603) 641-4150.

Communication Arts Major: Cinema and Media Arts Option (B.A.)

<https://manchester.unh.edu/academics/degree-programs/communication-arts/cinema-media-arts-option>

Description

Students choosing the Cinema & Media Arts option study the creative media industries with a focus on developing professional skills and knowledge relating to careers in film, television and radio. Courses cover topics such as narrative, screenwriting, audio and video production, film history and criticism, documentary, and audience research methods. Students may elect to take an internship in the area of cinema and media arts to help fulfill requirements for the Option.

Requirements

Option Requirements

Students must complete all of the Communication Arts major requirements (p. 365) and will work with their academic advisor to select courses that also satisfy option requirements.

Students must complete all of the Communication Arts major requirements. The option in Cinema and Media Arts consists of 24 credits

as distributed below. Courses may be used toward the Communication Arts Degree requirements as well as the Cinema and Media Arts option. Courses applied to the option must be completed with a minimum grade of C- and overall GPA of 2.0. Transfer students must complete a minimum of 12 credits at UNH Manchester.

Code	Title	Credits
I. Select three of the following:		12
CA 500	Media Writing	
CA 512	Screenwriting	
CA 514	Fundamentals of Video Production	
CA 515	Advanced Video Production	
CA 517	Fundamentals of Audio Prod	
CA 518	Advanced Topics in Digital Media Production ¹	
CA 519	Advanced Screenwriting	
CA 520	Special Topics in Applied Communication ¹	
II. Select two of the following:		8
CA 501	Internship/Communication in the Urban Community	
CA 502	Image and Sound	
CA 527	History of Film	
CA 550	Special Topics in Communication Organization, History, and Policy ¹	
III. Select one of the following:		4
CA #600	Research Methods in Media	
CA 612	Narrative	
CA 615	Film History/Theory and Method	
CA 618	Documentary	
CA 795	Independent Study ¹	
Total Credits		24

¹ Topic must be related to cinema and media arts.

For more information, contact Jeff Klenotic, program coordinator, at (603) 641-4130 or jeffrey.klenotic@unh.edu, or contact the Office of Admissions (unhm.admissions@unh.edu), (603) 641-4150.

Communication Arts Major: Digital Media Option (B.A.)

<https://manchester.unh.edu/academics/degree-programs/communication-arts/digital-media-option>

Description

Students choosing the Digital Media option use coursework and hands-on learning to explore the intersections of technology, creativity and artistry with a focus on audio, video and web-based media. Students gain a comprehensive overview of the different stages of a digital media project, from writing and pre-production through production and post-production. Courses cover topics such as web authoring and multimedia, audio and video production, social media and public relations, ethics and law in the digital age, and motion graphics. An internship in the area of digital media is required.

Requirements

Option Requirements

Students must complete all of the Communication Arts major requirements (p. 365) and will work with their academic advisor to select courses that also satisfy option requirements.

Students must complete all of the Communication Arts major requirements. The option in Digital Media consists of 24 credits as distributed below. Note that some courses may also be used to fulfill the requirements of the Communication Arts major. Courses applied to the option must be completed with a minimum grade of C- and overall GPA of 2.0. Transfer students must complete a minimum of 12 credits, including the Digital Media Internship, at UNH Manchester.

Code	Title	Credits
I. Select three of the following (one must be COMP):		12
COMP 405	Introduction to Internet and Web Authoring	
COMP 415	Mobile Computing First and For Most	
COMP #515	Multimedia: Introduction and Applications	
CA 500	Media Writing	
CA 514	Fundamentals of Video Production	
CA 515	Advanced Video Production	
CA 517	Fundamentals of Audio Prod	
CA 518	Advanced Topics in Digital Media Production	
II. Select one of the following:		4
CA 531	History and Organization of Advertising	
CA 540	Public Relations	
CA 542	Social Media for Organizations and Business	
COMP 560	Ethics and the Law in the Digital Age	
III. Select one of the following:		4
CA 610	Communication Technologies and Culture	
CA 795	Independent Study ¹	
CA 720	Seminar ¹	
IV. Complete one, four-credit Digital Media Internship with advisor approval		
CA 501	Internship/Communication in the Urban Community ¹	4
Total Credits		24

¹ Topic must be related to digital media

For more information, contact Jeff Klenotic, program coordinator, at (603) 641-4130 or jeffrey.klenotic@unh.edu, or contact the Office of Admissions (unhm.admissions@unh.edu), (603) 641-4150.

Communication Arts Major: Human Relations Option (B.A.)

<https://manchester.unh.edu/academics/degree-programs/communication-arts/human-relations-option>

Description

Students choosing the Communication Arts Human Relations option explore practical, theoretical, and historical perspectives on the study of

human relationships in professional and personal contexts. With so many of today's employers emphasizing the value of human communication skills in potential employees, the Human Relations Option offers students the knowledge and hands-on learning they need to develop their oral and written communication skills, as well as their ability to work in teams. Coursework covers topics such as verbal and nonverbal communication, perception, identity, conflict, human resource management, power, health, social psychology, human development, and counseling. An internship in the area of human relations is required.

Requirements

Option Requirements

Students must complete all of the Communication Arts major requirements (p. 365) and will work with their academic advisor to select courses that also satisfy option requirements.

The option in Human Relations consists of 24 credits as distributed below. Note that some courses may also be used to fulfill the requirements of the Communication Arts major. Courses applied to the option must be completed with a minimum grade of C- and overall GPA of 2.0. Transfer students must complete a minimum of 12 credits, including the Human Relations Internship, at UNH Manchester.

Code	Title	Credits
Select four of the following courses¹		16
ANTH 411	Global Perspectives on the Human Condition: An Introduction to Anthropology	
BUS 455	Management of Human Resources Management	
CA 506	Gender	
CA 507	Relational Violence	
CA 508	Conflict in Relational Communication	
CA 520	Special Topics in Applied Communication ²	
CA 539	Communicating in Families	
CA 542	Social Media for Organizations and Business	
CA 550	Special Topics in Communication Organization, History, and Policy ²	
INTR 438	A Socio-cultural Perspective on the Deaf Community	
PSYC 401	Introduction to Psychology	
PSYC 552	Social Psychology	
PSYC 581	Child Development	
PSYC #582	Adult Development and Aging	
PSYC 762	Counseling	
PSYC 791	Advanced Topics (Adult Development and Aging)	
Select one of the following courses		4
CA 601	Exploring Relationships	
CA 612	Narrative	
CA #614	Communication and Power	
CA 795	Independent Study ²	
CA 720	Seminar ²	
Select one of the following courses		4
CA 501	Internship/Communication in the Urban Community ²	

UMST 500	Internship ²	
Total Credits		24

¹ At least two courses must be above the 400 level

² Topic must be related to Human Relations

For more information, contact Jeff Klenotic, program coordinator, at (603) 641-4130 or jeffrey.klenotic@unh.edu, or contact the Office of Admissions (unhm.admissions@unh.edu), (603) 641-4150.

Communication Arts Minor

<https://manchester.unh.edu/academics/degree-programs/communication-arts-minor>

Description

The communication arts minor allows students in other majors to broaden their understanding of human communication while also developing deeper knowledge and practical skills that can enhance their professional lives and complement their major field of study.

Requirements

The communication arts minor allows students to expand their understanding of human communication while also developing knowledge and skills that can enhance their professional lives and complement their major fields of study.

The communication arts minor requires completion of five courses (20 credits), according to the requirements below. A minimum GPA of 2.0 in minor courses is required, with no individual grade lower than a C-. Courses taken on a pass/fail basis may not be used for the minor. Students should work with their major advisers to ensure that any prerequisites for CA courses have been met, or that permission to enter the course has been granted by the course instructor. Courses used to satisfy Discovery Program requirements may be used to satisfy CA minor requirements. No more than 8 credits used by a student to satisfy major requirements may be used for the minor. At the discretion of the minor coordinator, transfer credits may be used to satisfy minor requirements, but no more than 8 credits (or 2 of 5 classes) should be transfer credits.

Code	Title	Credits
I. Breadth Courses		
Select any two of the following, as long as they are NOT from the same category.		8
Category A:		
CMN 457	Introduction to Language and Social Interaction	
Category B:		
CMN 455	Introduction to Media Studies	
CA 502	Image and Sound	
Category C:		
CMN 456	Propaganda and Persuasion	
CA 450	Introduction to Public Speaking	
II. Depth Courses		
Select any three 500-level (or above) CA course: ¹		12
Total Credits		20

¹ Except CA 501 Internship/Communication in the Urban Community

Note: Students who use CA 502 Image and Sound as a "breadth" course may not use it as a "depth" course.

For more information, contact Jeff Klenotic, minor supervisor, at (603) 641-4130 or Jeffrey.Klenotic@unh.edu.

Computer Information Systems

Inspiring future innovators through technology and real-world experience

Computing drives innovation in all economic sectors, from business to science to entertainment. Our computer information systems program is designed to develop your technical skills through hands-on projects in programming, networking, software development, system administration and information security.

Guided by faculty experts, you'll explore the latest technologies in our advanced labs and through access to cloud computing services. Through work on teams and independently, you will be prepared to effectively select, administer, apply, and integrate computing technologies to create IT solutions that meet the needs of users within an organizational context.

Real-world projects and internships with business partners will open doors to network with local start-ups, nonprofits, government and more – all while giving you the experience you need for a lucrative career in the dynamic field of information technology.

<https://manchester.unh.edu/academics/degree-programs/computer-information-systems>

Programs

- Computer Information Systems Major (B.S.) (p. 369)
- Computer Information Systems Minor (p. 371)

Faculty

Computer Information Systems Faculty (<http://manchester.unh.edu/academics/degree-programs/computer-information-systems/#unhstyleCollapsePane73>)

Computer Information Systems Major (B.S.)

<https://manchester.unh.edu/academics/degree-programs/computer-information-systems>

Description

The computer information systems (CIS) or information technology (IT) field, in its broadest sense, encompasses all aspects of computing technology. During their program of study, students develop a strong skillset to effectively select, administer, apply, and integrate computing technologies to create IT solutions that meet the needs of users within an organizational context.

The bachelor of science degree in Computer Information Systems prepares graduates with knowledge, skills, and professional practices to work in the highly integrated field of computing technologies and to grow into leadership positions. The program also enables graduates to further their studies at the graduate level and pursue research in a computing-related discipline.

Career opportunities for students with an undergraduate CIS degree are varied, but may include such areas as software applications developer, data security specialist, database developer/administrator, e-commerce analyst/programmer, help desk manager, multimedia developer, network/system administrator, technical writer, technology trainer, user support specialist, testing and quality assurance specialist, or web developer. Career options exist in a wide range of organizations as all businesses, industries, and nonprofits continue to use, develop, and integrate information technology solutions.

Program Educational Objectives

Within five years of graduation a CIS student should be able to:

- Apply knowledge and skills in core and advanced information technologies to help an organization achieve its goals.
- Advocate for users of information technologies, whether they are end users of information systems, managers of enterprise applications, developers of IT solutions, or customers of IT-reliant work systems.
- Develop, manage, and evaluate computing and communication systems and services.
- Live and work as contributing, well-rounded members of society.

Program Outcomes

The program enables students to achieve, by time of graduation, the following competencies:

- Apply knowledge of computing and mathematics appropriate to the discipline.
- Analyze a problem, and identify and define the computing requirements appropriate to its solution.
- Design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs.
- Function effectively on teams to accomplish a common goal.
- Be cognizant of professional, ethical, legal, security, and social issues and responsibilities.
- Communicate effectively with a range of audiences.
- Analyze the local and global impact of computing on individuals, organizations, and society.
- Recognize the need for, and an ability to engage in, continuing professional development.
- Use current techniques, skills, and tools necessary for computing practice.
- Use and apply current technical concepts and practices in the core information technologies.
- Identify and analyze user needs and take them into account in the selection, creation, evaluation, and administration of computer-based systems.
- Effectively integrate IT-based solutions into the user environment.
- Be cognizant of best practices and standards and their application.
- Assist in the creation of an effective project plan.

The CIS program outcomes are aligned with criteria for accrediting information technology programs as recommended by the ABET Computing Accreditation Commission and the ACM Computing Curricula – IT 2017 Information Technology guidelines.

Requirements

Students majoring in computer information systems must complete 128 credits to graduate, satisfy the University's Discovery Program, and complete 81 credits in the major with a minimum of C- in each course. Students must maintain an overall cumulative GPA of 2.0 or better.

Transfer students who elect to major in computer information systems must earn 81 approved credits for completion of their major, of which at least 24 credits must be completed at UNH Manchester.

Program Requirements

Code	Title	Credits
Required Mathematics Course ¹		
Select one of the following:		4
MATH 420	Finite Mathematics	
MATH 424B	Calculus for Life Sciences	
MATH 425	Calculus I	
COMP 500	Discrete Structures	
Introductory Core		
COMP 405	Introduction to Internet and Web Authoring	4
COMP 425	Introduction to Programming	4
COMP 430	Systems Fundamentals	4
COMP 530	Machine and Network Architecture	4
Intermediate Core		
COMP 520	Database Design and Development	4
COMP 525	Data Structures Fundamentals	4
COMP 550	Networking Concepts	4
COMP 560	Ethics and the Law in the Digital Age	4
Integrative and Professional Experience		
COMP 715	Information Security	4
COMP 730	Object-Oriented Software Development	4
UMST 582	Internship and Career Planning Seminar	1
COMP 690	Internship Experience	4
COMP 790	Capstone Project	4
Computing Topics ²		
Select three computing courses totalling twelve credits		12
Concentration ³		
Select four courses		16
Total Credits		81

¹ Any of these courses, except for COMP 500 Discrete Structures, may be used to satisfy the Quantitative Reasoning Discovery requirement.

² To broaden and advance student learning of computing innovations. Advisor permission required.

³ Majors can creatively design a concentration of courses that meet their academic and professional goals and career plans. Four courses can be selected across a wide university curriculum, reflecting majors' interests in a liberal arts, scientific, engineering, interdisciplinary, or professional area of study. The concentration must be approved by the student's advisor before the student's junior year.

For additional information about the computer information systems program, contact Michael Jonas (michael.jonas@unh.edu), (603) 641-4352, or contact the UNH Manchester Office of Admissions (unhm.admissions@unh.edu), (603) 641-4150.

Computer Information Systems Minor

<https://manchester.unh.edu/academics/degree-programs/computer-information-systems-minor>

Description

The minor requires five COMP courses (20 credit hours). Students must earn grades of at least C- in each course and maintain an overall GPA of 2.0 in minor courses. Transfer students may transfer up to two courses, subject to the approval of the minor supervisor. Courses taken on a pass/fail basis may not be used for the minor. No more than 8 credits used by the student to satisfy major requirements may be used in the minor.

Requirements

Code	Title	Credits
Select three of the following:		12
COMP 405	Introduction to Internet and Web Authoring	
COMP 415	Mobile Computing First and For Most	
COMP 425	Introduction to Programming	
COMP 430	Systems Fundamentals	
COMP 500	Discrete Structures	
Select two of the following:		8
COMP #515	Multimedia: Introduction and Applications	
COMP 520	Database Design and Development	
COMP 525	Data Structures Fundamentals	
COMP 530	Machine and Network Architecture	
COMP 550	Networking Concepts	
COMP 650	Network Administration and Maintenance	
COMP 625	Data Structures and Algorithms	
COMP 640	Human Computer Interaction	
COMP 698	Special Topics (Systems Software)	
COMP 705	Web Application Development	
COMP 715	Information Security	
COMP 720	Database Application Development	
Total Credits		20

Other 600- or 700-level COMP courses may be substituted with the permission of the minor supervisor. Students must seek permission of the minor supervisor to enroll in courses that have prerequisites.

For more information, contact Michael Jonas, minor supervisor, at (603) 641-4352 or michael.jonas@unh.edu.

Computer Science

<https://manchester.unh.edu/academics/degree-programs/computer-science>

Overview

Shaping computing professionals through innovation and hands-on experience

Given the demand for graduates who have a solid base in theory, strong conceptual knowledge and demonstrated competencies to develop cutting-edge computing systems, our computer science program gives you the skills to succeed in this rapidly growing industry.

You'll learn the computer science theories to build a strong technical foundation, and apply those theories through real-world experience with our network of local businesses. With one-on-one faculty interaction, cutting-edge lab facilities and face-to-face networking opportunities, you'll be prepared for a career or graduate studies in computer science and other computing fields.

Programs

- Computer Science Major (B.A.) (UNHM) (p. 371)

Faculty

Computer Science Faculty (<http://manchester.unh.edu/academics/degree-programs/computer-science-entrepreneurship/#unhstyleCollapsePane73>)

Computer Science Major (B.A.) (UNHM)

<https://manchester.unh.edu/academics/degree-programs/computer-science>

Description

The computer science program combines a solid foundation in computing necessary to succeed in today's start-up and high-tech environments. The program is designed in response to market demand for students proficient in computer science.

Students in the computer science program are required to complete three sponsored projects. The projects focus on real-world experience and give students the opportunity to work with industry experts through internships and sponsored research.

Career opportunities for students with an undergraduate computer science degree are varied, and may include such areas as applications developer, computer and information research scientist, data security specialist, database administrator, database developer, multimedia developer, network architect, product development manager, quality

assurance analyst, software systems developer, user experience designer, or web developer.

Program Educational Objectives

Within five years of graduation, a CS student should be able to:

- Demonstrate mastery of the core areas of computer science
- Invent, develop, manage, and evaluate computing systems and services
- Exercise professional responsibility and have appreciation of the social, legal, ethical, and cultural issues inherent in the computing field.

Program Outcomes

The program enables students to achieve, by time of graduation, the following competencies:

- Apply knowledge of computing and mathematics appropriate to the discipline.
- Analyze a problem, and identify and define the computing requirements appropriate to its solution.
- Design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs.
- Function effectively on teams to accomplish a common goal.
- Be cognizant of professional, ethical, legal, security, and social issues and responsibilities.
- Communicate effectively with a range of audiences.
- Analyze the local and global impact of computing on individuals, organizations, and society.
- Recognize the need for, and an ability to engage in, continuing professional development.
- Use current techniques, skills, and tools necessary for computing practice.
- Apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computer-based systems in a way that demonstrates comprehension of the trade offs involved in design choices.
- Apply design and development principles in the construction of software systems of varying complexity.

Requirements

Students majoring in computer science must complete 128 credits to graduate, satisfy the University's Discovery Program, and complete 73 credits in the major with a minimum of C- in each course. Students must maintain an overall cumulative GPA of 2.0 or better.

Transfer students who elect to major in computer science must earn 73 approved credits for completion of their major, of which at least 24 credits must be completed at UNH Manchester.

PROGRAM REQUIREMENTS

Code	Title	Credits
Mathematics and Science ¹		
COMP 490	Statistics in Computing and Engineering	4
COMP 500	Discrete Structures	4
MATH 425	Calculus I	4
PHYS 407	General Physics I	4

Computing Core		
COMP 415	Mobile Computing First and For Most	4
COMP 425	Introduction to Programming	4
COMP 430	Systems Fundamentals	4
COMP 525	Data Structures Fundamentals	4
COMP 530	Machine and Network Architecture	4
COMP 560	Ethics and the Law in the Digital Age	4
COMP 625	Data Structures and Algorithms	4
COMP 698	Special Topics (Systems Software)	4
Project and Professional Practice ²		
UMST 582	Internship and Career Planning Seminar	1
COMP 590	Entrepreneurship Project	4
COMP 690	Internship Experience	4
COMP 790	Capstone Project	4
Computing Topics ³		
Select three courses in computing to broaden and advance student learning of computing innovations		12
Total Credits		73

¹ The program requires three mathematics courses and one physics course.

² The program prepares students for the workforce and further education in a holistic way by emphasizing communication, collaboration, team work, initiative, appreciation for diversity, and self-direction and responsibility. These competencies are developed through the sequence of courses.

³ Advisor permission required.

For additional information about the computer science program, contact Michael Jonas, (603) 641-4352, michael.jonas@unh.edu, or contact the UNH Manchester Office of Admissions, (603) 641-4150, unhm.admissions@unh.edu.

Digital Language Arts

The Digital Language Arts major is a regionally-distinctive course of study designed to mesh your creative writing interests with the world of digital creative production. This major focuses on many of the skills considered important for success in the job market: critical and creative thinking, creative writing, written and oral communication, and the ability to collaborate as part of a team.

With courses in areas from visual and digital narratives to experimental creative writing, from virtual reality to metamodern poetics, this exceptional major offers a digital-age curriculum that is innovative, entrepreneurial, and cross-disciplinary. You'll build high-level skills in critical and creative thinking through the creation and development of digital-age projects in environments from print to virtual reality.

You'll also have the opportunity to be part of one of two on-campus publications: *The Manchester Independent*, a digital newspaper covering the Greater Manchester area, and *Best American Experimental Writing*, an annual, nationally distributed anthology of innovative literary art.

The Digital Language Arts major culminates with real-world experience through upper-level seminars, capstones, and the opportunity for internships that are tailored to your own career ambitions—and focused on the applied skills that employers particularly value.

<https://manchester.unh.edu/academics/degree-programs/digital-language-arts>

Programs

- Digital Language Arts Major (B.A.) (p. 373)
- Creative Writing Minor (p. 373)

Faculty

<https://manchester.unh.edu/directory/all>

Digital Language Arts Major (B.A.)

<https://manchester.unh.edu/academics/degree-programs/digital-language-arts>

Description

Students in the Digital Language Arts program develop high-level critical and creative thinking skills by planning and constructing innovative, entrepreneurial digital-age projects. By conceptualizing, theorizing, and authoring cutting-edge ideas for both art and business, you'll learn to excel in every type of literacy necessary for success in the digital marketplace. This includes, in addition to conventional print literacy, literacies in visual, audiovisual, digital, transmedia, performative, augmented reality, augmented virtuality, and virtual reality environments.

Requirements

For the Digital Language Arts program at UNH Manchester, students must complete a minimum of 128 credits and satisfy the University's Discovery Program and foreign language requirements, and complete a minimum of 40 credits in major coursework with a grade of C- or higher. The major requirements consist of a minimum of 10 courses. These 10 courses (40 credits) must include the capstone requirement. Students in the major must earn C or higher to pass ENGL 419 Introduction to Literary Analysis, ENGL 502 Professional and Technical Writing, and ENGL 595 Literary Topics: Digital Creative Writing. One literary theory/poetics course is required.

PROGRAM REQUIREMENTS

Code	Title	Credits
Core Courses		
ENGL 419	Introduction to Literary Analysis	4
ENGL 502	Professional and Technical Writing	4
ENGL 595	Literary Topics (Digital Creative Writing)	4
Development/Extension		
ENGL 694	Special Topics in Creative Writing (Experimental Narratives)	4
ENGL 694	Special Topics in Creative Writing (Visual Narratives)	4
ENGL elective ¹		4
Specialization/Practice		
ENGL 787	English Major Seminar ²	4
ENGL 797	Special Studies in Literature ³	4

ENGL 791	English Grammar	4
ENGL elective ⁴		4
Total Credits		40

- ¹ Choose 500/600-level ENGL course in literature, literary theory, or creative writing with advisor approval
- ² Capstone course
- ³ Variable topic seminar colloquium
- ⁴ Choose 500, 600, or 700-level ENGL course in creative writing, creative nonfiction, poetics, or appropriate courses in Communication Arts and allied Programs with advisor approval

For more information, contact program coordinator Susanne Paterson at susanne.paterson@unh.edu or contact the Office of Admissions (unhm.admissions@unh.edu), (603) 641-4150.

Creative Writing Minor

<https://manchester.unh.edu/academics/degree-programs/creative-writing-minor>

Description

The Creative Writing Minor is a course of study tailored to the interests of individual creative writers, with an additional focus, in all classes, on oral and written persuasion, imaginative and critical thinking, and collaboration with creative peers. The aim of the Minor is to help students develop a unique approach to language that results in memorable, publishable work. Students are free to author work in any of 36 genres of creative writing, and are encouraged to innovate, experiment, and cross genre lines at will. Because our program is especially focused on interdisciplinarity and multimedia literary art, it is well-suited to those wishing to become “creatives” in the digital age. Even students who do not intend to publish their work will find that the skills developed through the Minor—including literacies in everything from print to virtual reality, from visual narrative to augmented virtuality—are useful in any profession where creativity and entrepreneurial ingenuity are valued.

Classes in the Creative Writing Minor prize innovation, experimentation, individuality, and creative daring across genres and media, and emphasize collaboration and conceptual reasoning far more than is common in many creative writing courses. A central presumption of the Creative Writing Minor is that the most engaging literary art is reflexive—meaning that not only is there a philosophy of language animating it, but also that its author has drawn from all his or her non-literary interests in developing that philosophy. For this reason, undergraduates in STEM programs are particularly encouraged to study in the Minor; they bring the way they speak, write, and reason in their non-creative writing courses into all of the workshops and theory seminars in this plan of study as well.

The director of the Creative Writing minor, Professor Seth Abramson (seth.abramson@unh.edu), is the author of many books of cross-genre creative writing and the series editor for *Best American Experimental Writing*, an annual anthology of experimental poetry and prose published annually by Wesleyan University Press and sponsored by the Digital Language Arts program (<https://manchester.unh.edu/academics/degree-programs/digital-language-arts>) at University of New Hampshire.

Requirements

Students must complete 20 credits with a minimum 2.0 grade-point average in these courses overall and with no individual grade lower than a C-. No more than 8 transfer credits will be accepted.

Code	Title	Credits
Workshop Course ¹		4
Select one of the following:		
ENGL 501	Introduction to Creative Nonfiction	
ENGL 503	Persuasive Writing	
ENGL 526	Introduction to Fiction Writing	
ENGL 527	Introduction to Poetry Writing	
ENGL 595	Literary Topics	
ENGL 623	Creative Nonfiction	
ENGL 625	Intermediate Fiction Writing Workshop	
ENGL 627	Intermediate Poetry Writing Workshop	
ENGL 694	Special Topics in Creative Writing	
ENGL 701	Advanced Fiction Writing Workshop	
ENGL #703	Travel Writing	
ENGL #705	Advanced Poetry Writing Workshop	
CA 450	Introduction to Public Speaking	
CA 500	Media Writing	
CA 512	Screenwriting	
CA 519	Advanced Screenwriting	
Literature & Theory Course ²		4
Select one of the following:		
ENGL #531	Introduction to Drama: How to Read a Play	
ENGL 693	Special Topics in Literature	
ENGL 711	Editing	
ENGL 787	English Major Seminar	
ENGL 795	Independent Study	
CA 610	Communication Technologies and Culture	
CA 612	Narrative	
CA 618	Documentary	
CA 795	Independent Study	
Workshop Course OR Literature & Theory Course		4
Select one from either of the lists above		
One Interdisciplinary "Breadth" Course ³		4
UMIS 599	Independent Study ⁴	4
Total Credits		20

¹ Or any other ENGL or CA course declared a "Workshop" course for the Minor in the course catalog.

² Or any other ENGL or CA course declared a "Literature & Theory" course for the Minor in the course catalog.

³ This course, chosen in consultation with the faculty advisor for the Minor, relates to an interest of the student outside creative writing that will inform the student's final project in the Minor.

⁴ This course will culminate in the creation of a significant and distinctive literary work.

For more information, contact Assistant Professor Seth Abramson, Writing Specialist, at Seth.Abramson@unh.edu (seth.abramson@unh.edu).

Education

Programs

- Education Minor (UNHM) (p. 374)

Education Minor (UNHM)

<https://manchester.unh.edu/academics/degree-programs/education-minor>

Description

Explore the field of education!

A Certification of Completion of Minor form (<http://www.unh.edu/registrar/forms/minorform.pdf>) needs to be completed at the beginning of a student's final undergraduate semester at UNH. The form is available online (<http://www.unh.edu/registrar/forms/minorform.pdf>) and in the Registrar's Office.

Requirements

A minor in Education consists of 20 credits of UNH Education Department courses. A methods course located in another department may be counted for four of these 20 credits, e.g., ARTS 791 Art Education (Elementary) or ARTS 792 Art Education (Secondary), ENGL 792 Teaching Literature and Literacy, MATH 708 Teaching Mathematics in Grades K-8, MATH 709 Teaching of Mathematics in Grades 6-12.

- Courses used in obtaining a minor in Special Education cannot be used towards a minor in Education.
- EDUC 500 Exploring Teaching can only be counted once (four credits) towards the minor.
- No more than two transferred courses in education or a closely-related area from another college or university may be used towards a minor in Education. A three-credit course transferred from another school will count for three credits at UNH, not four credits.
- No more than 8 credits used to satisfy major requirements may be used for the minor.
- A minor in Education does NOT lead to a teaching certification.

For more information, contact Cindy Glidden, Department Coordinator, at cindy.glidden@unh.edu or (603) 862-2311 or Kathryn McCurdy, UNH Manchester campus, at kathryn.mccurdy@unh.edu or (603) 641-4197.

Engineering Technology

Shaping the next generation technical workforce through hands-on and real-world experience

With topics including communications theory, digital signal processing, analog systems, and digital systems. The ABET-accredited **Electrical Engineering Technology** program gives you the practical experience to

meet both industry demand and your career goals. Small class sizes mean opportunities to collaborate with faculty who are industry experts, giving you one-on-one attention to excel in the dynamic, highly rewarding field of electronics.

From advanced manufacturing concepts to complex machine design, the ABET-accredited **Mechanical Engineering Technology** program will ignite your fascination with how things work. You'll work alongside faculty experts to learn mechanical design, fluid/thermal technology, production systems, automation engineering and more.

Through hands-on experience in the classroom and in the field, this applied degree program gives you the practical experience to turn your passion into a career.

Programs

- Electrical Engineering Technology Major (B.S.) (p. 375)
- Mechanical Engineering Technology Major (B.S.) (p. 375)

Faculty

Electrical Engineering Technology Faculty (<http://manchester.unh.edu/academics/degree-programs/electrical-engineering-technology/#unhstyleCollapsePane73>)

Mechanical Engineering Technology Faculty (<http://manchester.unh.edu/academics/degree-programs/mechanical-engineering-technology/#unhstyleCollapsePane73>)

Electrical Engineering Technology Major (B.S.)

<https://manchester.unh.edu/academics/degree-programs/electrical-engineering-technology>

Description

Engineering technology requires the application of engineering and scientific knowledge and methods combined with technical skills in support of engineering activities. Graduates may work in a variety of areas including engineering design, manufacturing, field service, testing, and sales and may work in management positions related to engineering, manufacturing, and computer technology.

The UNH Manchester engineering technology program is accredited by:

The Engineering Technology Accreditation Commission of ABET
415 North Charles Street
Baltimore, MD 21201
(410) 347-7700

The engineering technology program at UNH Manchester offers only junior- and senior-level coursework. Students admitted to this program must have an appropriate associate degree from the New Hampshire Technical Institute or an equivalent institution accredited by the Engineering Technology Accreditation Commission of the Accreditation Board of Engineering and Technology (ETAC of ABET) or show academic evidence of ability to successfully complete the requirements of this calculus-based program. After two major courses, non-matriculated

students must either be admitted to the program or declare that they are not planning to pursue a degree in engineering technology.

The programs at UNH Manchester are designed to meet the needs of both full- and part-time students with a mix of classes scheduled during the day and in the evening.

Requirements

Students must complete a minimum of 128 credits and satisfy the University's Discovery Program.

Electrical Engineering Technology (EET) Program Requirements

Code	Title	Credits
COMP 425 or COMP 415	Introduction to Programming Mobile Computing First and For Most	4
ET 625	Technical Communications	4
ET 671	Digital Systems	4
ET 674	Control Systems and Components	4
ET 677	Analog Systems	4
ET 680	Communications and Fields	4
ET 697	Topics in Electrical Engineering Technology	4
ET 733 or COMP 560	Business Organization and Law Ethics and the Law in the Digital Age	4
ET 734	Economics of Business Activities	4
ET 781	Introduction to Automation Engineering	4
ET 788	Introduction to Digital Signal Processing	4
ET 791	Electrical Engineering Technology Project (Senior Capstone Project, two semesters; satisfies the Discovery Senior Capstone Experience requirement)	8
Discovery Program Requirements, Writing Intensive (WI) Requirement, and electives		
MATH 426	Calculus II ¹	4
Total Credits		56

¹ All entering Engineering Technology students should have completed mathematics through differential and integral calculus, calculus I. All students must complete MATH 426 Calculus II within the first semester before taking advanced level Engineering Technology coursework.

For information about the electrical engineering technology program (EET), contact the B.S. engineering technology program coordinator, Christopher LeBlanc, at Christopher.LeBlanc@unh.edu. For admissions information, contact the Office of Admissions (unhm.admissions@unh.edu) at (603) 641-4150.

Mechanical Engineering Technology Major (B.S.)

<https://manchester.unh.edu/academics/degree-programs/mechanical-engineering-technology>

Description

Engineering technology requires the application of engineering and scientific knowledge and methods combined with technical skills in support of engineering activities. Graduates may work in a variety of areas including engineering design, manufacturing, field service, testing, and sales and may work in management positions related to engineering, manufacturing, and computer technology.

The UNH Manchester engineering technology program is accredited by:

The Engineering Technology Accreditation Commission of ABET
415 North Charles Street
Baltimore, MD 21201
(410) 347-7700

The engineering technology program at UNH Manchester offers only junior- and senior-level coursework. Students admitted to this program must have an appropriate associate degree from the New Hampshire Technical Institute or an equivalent institution accredited by the Engineering Technology Accreditation Commission of the Accreditation Board of Engineering and Technology (ETAC of ABET) or show academic evidence of ability to successfully complete the requirements of this calculus-based program. After two major courses, non-matriculated students must either be admitted to the program or declare that they are not planning to pursue a degree in engineering technology.

The programs at UNH Manchester are designed to meet the needs of both full- and part-time students with a mix of classes scheduled during the day and in the evening.

Requirements

Students must complete a minimum of 128 credits and satisfy the University's Discovery Program.

Mechanical Engineering Technology (MET) Program Requirements

Code	Title	Credits
COMP 425 or COMP 415	Introduction to Programming Mobile Computing First and For Most	4
ET 625	Technical Communications	4
ET 635	Fluid Technology and Heat Transfer	4
ET 641	Production Systems	4
ET 644	Mechanical Engineering Technology Concepts in Analysis and Design	4
ET 674	Control Systems and Components	4
ET 675	Electrical Technology	4
ET 696	Topics in Mechanical Engineering	4
ET 733 or COMP 560	Business Organization and Law Ethics and the Law in the Digital Age	4
ET 734	Economics of Business Activities	4
ET 751	Mechanical Engineering Technology Project	8
ET 781	Introduction to Automation Engineering	4
Discovery Program Requirements, Writing Intensive (WI) Requirement, and electives		
MATH 426	Calculus II ¹	4

CHEM 403	General Chemistry I ²	4
Total Credits		60

- ¹ All entering Engineering Technology students should have completed mathematics through differential and integral calculus, calculus I. All students must complete MATH 426 Calculus II within the first semester before taking advanced level Engineering Technology coursework.
- ² Must satisfactorily complete CHEM 403 General Chemistry I or offer evidence of equivalent coursework.

For information about the mechanical engineering technology program (MET), contact Sean Tavares at Sean.Tavares@unh.edu. For admissions information, contact the Office of Admissions (unhm.admissions@unh.edu) at (603) 641-4150.

English Teaching

Shaping skilled English educators through creativity and real-world experience

Inspire others to share your love of reading and writing with our English Teaching program. Considered one of the region's best, our program gives you the tools, guidance and real-world experience for a rewarding career in English education.

Our faculty are not only master teachers, but thoughtful advisors and mentors to those who see themselves as educators. They offer a diverse spectrum of expertise—from Shakespeare to African literature, from 21st century journalism to deep knowledge of standards-based literacy education.

Our five-year Accelerated Master's option allows you to work on requirements for your Master of Arts in Teaching degree while still in the bachelor's program. You'll spend the fifth year interning at an area school, preparing you to become state-certified to teach English Language Arts.

Combine your passion for reading and writing with theories of learning and teaching literacy—leading you to a career helping students develop the skills they need for a lifetime of learning.

<https://manchester.unh.edu/academics/degree-programs/english-teaching>

Programs

- English Teaching Major (B.A.) UNHM (p. 376)
- TESOL Minor (UNHM) (p. 377)

Faculty

English Teaching Faculty (<http://manchester.unh.edu/academics/degree-programs/english-teaching/#unhstyleCollapsePane73>)

English Teaching Major (B.A.) UNHM

<https://manchester.unh.edu/academics/degree-programs/english-teaching>

Description

Shaping skilled English educators through creativity and real-world experience

Inspire others to share your love of reading and writing with our English Teaching program. Considered one of the region's best, our program gives you the tools, guidance and real-world experience for a rewarding career in English education.

Our faculty are not only master teachers, but thoughtful advisors and mentors to those who see themselves as educators. They offer a diverse spectrum of expertise—from Shakespeare to African literature, from 21st century journalism to deep knowledge of standards-based literacy education.

Our five-year Accelerated Master's option allows you to work on requirements for your Master of Arts in Teaching degree while still in the bachelor's program. You'll spend the fifth year interning at an area school, preparing you to become state-certified to teach English Language Arts.

Combine your passion for reading and writing with theories of learning and teaching literacy—leading you to a career helping students develop the skills they need for a lifetime of learning.

Requirements

All English Teaching majors must complete 10 courses (40 credits). Six of 10 courses must be at the 600-level or above. The English Teaching major prepares prospective teachers of middle- and high-school English (grades 5-12). This degree does not provide state certification. Students who wish to be certified must apply for admission to graduate study within the Education Department. Certification requires an additional year of course work and internship at the graduate level. Most, or all, of the graduate coursework and internship may be completed in the 12 months following completion of the B.A. in English Teaching.

- All prospective English Teaching majors should enroll in EDUC 500 Exploring Teaching as early as possible.
- ENGL 419 Introduction to Literary Analysis must be completed with a minimum grade of C. All other major courses must be completed with a minimum grade of C-.
- English Teaching majors must have a 2.5 GPA in the following program requirements:

Program Requirements

Code	Title	Credits
ENGL 419	Introduction to Literary Analysis	4
ENGL 514W	British Literature III: Revolts, Renewals, Migrations ¹	4
ENGL 516	American Literature II Money, Migration, and Modernity: Huck Finn to Beloved ¹	4
Select an additional 500/600/700-level English course		4
Select two literature courses 600/700 level		8
ENGL 657	Shakespeare	4
ENGL 710	Teaching Writing	4
ENGL 791	English Grammar	4

ENGL 792	Teaching Literature and Literacy	4
Total Credits		40

Diversity Requirement

In addition, students must take one course that focuses on diversity in race, ethnicity, religion, gender or class, and theories concerning them. This course may count toward the ten courses described above. Consult with your advisor about other courses that may fulfill this requirement.

Code	Title	Credits
The following are examples of courses which fulfill the Diversity requirement:		
ENGL 517	Introduction to African American Literature and Culture	
ENGL 581	Introduction to Postcolonial Literatures in English	
ENGL #609	Ethnicity in America: The African American Experience in the 20th Century	
ENGL 693	Special Topics in Literature	
ENGL #685	Women's Literary Traditions	
ENGL 738	Topics in Asian American Studies	
ENGL 739	American Indian Literature	
ENGL #740	Indigenous New England	
ENGL 797	Special Studies in Literature (Jewish American Writers)	

Capstone Requirement

Code	Title	Credits
Select one of the following²		4
One 700-level English course		
ENGL 797	Special Studies in Literature	

- ¹ Cannot be repeated under different course title
- ² See faculty advisor about taking a course for Capstone credit during senior year.

Combine the English Teaching major with UNH's renowned MAT, taken at the Manchester campus, and in five years students can be state certified to teach English and Language Arts. With the five-year master's option, students can apply 12 undergraduate credits to the advanced degree. The English Teaching major includes courses that will introduce students to the Common Core Standards, a nationwide effort now transforming K-12 education.

For more information about the English Teaching program, contact Susanne Paterson, Associate Professor and Program Coordinator, at susanne.paterson@unh.edu or the UNH Manchester Office of Admissions at (603) 641-4150, unhm.admissions@unh.edu.

TESOL Minor (UNHM)

<https://manchester.unh.edu/academics/degree-programs/tesol-minor>

Description

The Teaching English to Speakers of Other Languages (TESOL) Minor is set of courses designed to prepare interested students in teaching and/or working with multilingual learners. The minor is primarily for students pursuing careers in teaching but is also appropriate for students

interested in a range of professions that require regular interaction with a multilingual population (e.g., social work, work force development, public health, and management). It is also benefits students who want to later pursue K-12 ESOL certification or a graduate degree in education or linguistics at UNH or another institution. As the cultural and linguistic diversity in K-12 schools continues to increase, the TESOL Minor is an excellent addition to any student interested in public school teaching.

Furthermore, the TESOL Minor appeals to students who are interested in teaching English to bi-/ multilingual learners in non-K-12 settings, either in the US or abroad. In the U.S. this includes teaching at the post-secondary level, e.g. community colleges, academic enrichment centers at Institutions of Higher Education (IHEs) and at adult learning centers. For students interested in teaching abroad, the TESOL Minor provides a competitive edge over other BS/BA candidates, including prestigious opportunities such as the Fulbright English Teaching Assistant Program.

The Minor is also attractive to students who are interested in using the credential to pursue overseas opportunities (e.g., Peace Corps, World Teach), and, in addition, opens up new international job-seeking possibilities.

Requirements

For the Teaching English to Speakers of Other Languages (TESOL) Minor at UNH Manchester, students must complete 20 credits with a minimum 2.0 grade-point average in these courses overall and with no individual grade lower than a C-. No more than 8 transfer credits will be accepted.

Code	Title	Credits
Required courses		
EDUC 712	Teaching Multilingual Learners ¹	4
ENGL 716	Curriculum, Materials and Assessment in English as a Second Language	4
ENGL 791	English Grammar	4
EDUC 500	Exploring Teaching (with an ESOL placement)	4
EDUC 797	Special Topics in Education (related to TESOL) ²	4
Total Credits		20

¹ Since 1998, EDUC 712 Teaching Multilingual Learners has been recognized by the Durham English Department as the equivalent of ENGL 715 Teaching English as a Second Language: Theory and Methods

² Special topics in the past have included: "Language and Culture in Schools & Schooling"; "The Immigrant Experience in Film and Literature"; and "Sociolinguistics and Socioliteracies". Students may petition to have a TESOL related course from another major (e.g., English, Communication Arts) fulfill the EDUC special topics requirement.

For more information, contact Judy Sharkey, Associate Professor of Education at judy.sharkey@unh.edu or Susanne Paterson, Associate Professor and Program Coordinator at susanne.paterson@unh.edu.

General Studies

The Associate in Arts in General Studies offers students academic flexibility in a program that combines the foundations of a liberal education and elective courses that satisfy personal interests.

<https://manchester.unh.edu/academics/degree-programs/general-studies>

Programs

- General Studies (A.A.) (p. 378)

Faculty

<https://manchester.unh.edu/directory/all>

General Studies (A.A.)

<https://manchester.unh.edu/academics/degree-programs/general-studies>

Description

The associate of arts in general studies offers students academic flexibility in a program that combines the foundations of a liberal education and elective courses that satisfy personal interests. The A.A. in general studies is the first two years of a baccalaureate program and all 400-level courses transfer to and fulfill the University's Discovery requirements. Students who earn an A.A. in general studies have a foundation for continued study in any major while they develop problem-solving skills, cognitive skills, and learning techniques that are vital to a lifetime of learning. Many students begin their college study in the A.A. general studies program. Depending on personal interests and academic goals, students may choose to apply to a baccalaureate degree program prior to completion of the A.A. degree.

Requirements

To graduate with an associate of arts degree in general studies, students must complete 64 credits, earn a minimum cumulative GPA of 2.0, and fulfill two types of requirements: University Discovery Program and degree requirements. The program includes nine courses from the Discovery Program curriculum. Working with their advisers, students enhance their program of study with elective courses where they can explore their interests and possible baccalaureate degree majors. The last 16 hours of credit must be UNH courses completed following admission and matriculation, unless permission is granted to transfer part of this work from another institution.

The A.A. general studies program includes the following course requirements:

Code	Title	Credits
Discovery Foundations		
Two writing-intensive courses, one of which must be ENGL 401, First-Year Writing		8
One course in quantitative reasoning (must be completed within the first 32 credits)		4
One Inquiry or Inquiry attribute course (must be completed within the first 25 credits)		4
Discovery Categories		
Two courses from two of the following categories (one must be a lab course):		8

Biological Sciences	
Physical Sciences	
Environment, Technology and Society	
One course in Historical Perspectives	4
One course in World Culture or Fine and Performing Arts	4
One course in Social Science	4
One course in Humanities	4
Completion of the Interdisciplinary Core Requirement (may also fill the Humanities category requirement)	4
HUMA 411 Humanities I or HUMA 412 Humanities II	
Elective courses	20
Total Credits	64

For more information, contact the Office of Admissions at (603) 641-4150 or unh.admissions@unh.edu.

Global Studies

- Global Studies Minor (p. 379)

Global Studies Minor

<https://manchester.unh.edu/academics/degree-programs/global-studies-minor>

Description

Globalization is a complex web of interwoven processes that affect virtually all facets of our daily lives, from pop culture to economics, politics to climate and everything in between. Many of the pressing problems of the 21st Century – climate change, environmental sustainability, terrorism, pandemics, etc. – transcend national boundaries and will need to be solved as a global community. The Global Studies minor explores the challenges and opportunities that arise from living in an increasingly inter-connected world and also cultivates cross-cultural awareness by encouraging students to view issues from different cultural perspectives.

The Global Studies minor has four thematic pillars: culture & society, governance & conflict, economics & interdependence, and environment & health.

Governance & Conflict: explores the challenges of global governance in an increasingly inter-connected world of societies with different political and economic systems; analyzes the causes and effects of conflict and examines techniques for conflict resolution

Culture & Society: explores the values, norms, art and literature of different cultures around the world and throughout history, and their inter-relatedness

Environment & Health: explores human security issues, such as food security, health and disease, environmental sustainability and climate change

Economics & Interdependence: explores the politics, policies and practices of international trade and finance, and the development and effects of economic interdependence

Requirements

All five courses applied to the Global Studies minor must be completed with a minimum grade of C- and an overall GPA of 2.0. Students must take at least three 500-level or above courses to complete the minor.

Code	Title	Credits
Required courses		
PS 520	Globalization: Politics, Economics and Culture	4
Select four approved courses in at least two of the following thematic pillars:		
I. Governance & Conflict		
POLT 403	United States in World Affairs	
HLS 580	Environmental and Human Security	
PS 505	Political Violence and Terrorism	
PS 509	Political and Social Change in Developing Countries	
PS 511	Women and War	
PS #512	People on the Move: Immigration and Refugee Policy in Global Perspective	
PS 514	Model United Nations	
POLT 560	World Politics	
POLT 559	Comparative Politics of the Middle East	
HIST 600	Explorations (European Crisis 1900-1945)	
HIST 600	Explorations (Justice, Violence and Society)	
PS 651	Selected Topics Politics and Society (International Human Rights)	
PS 702	International Relations: Interdisciplinary Approach	
PS #703	Dictatorship and Democracy	
II. Culture & Society		
ANTH 411	Global Perspectives on the Human Condition: An Introduction to Anthropology	
ARTS 480	Introduction to Art History	
ENGL 514	British Literature III: Revolts, Renewals, Migrations	
ENGL 581	Introduction to Postcolonial Literatures in English	
ENGL 681	Introduction to African Literatures in English	
ENGL 693	Special Topics in Literature	
HIST 421	World History to the 16th Century	
HIST 422	World History in the Modern Era	
HIST 425	Foreign Cultures	
HIST 435	Origins of European Society	
HIST 656	Twentieth Century Europe	
HUMA 411	Humanities I	
HUMA 412	Humanities II	
III. Environment & Health		
BIOL 520	Our Changing Planet	
BSCI 421	Diseases of the 21st Century	
BSCI 620	Global Science Exploration	
ESCI 401	Dynamic Earth	
GEOG 401	Regional Geography of the Western World	
GEOG 402	Regional Geography of the Non-Western World	
HLS 580	Environmental and Human Security	
PS 510	Politics of Food	

PHIL 450	Environmental Ethics
IV. Economics & Interdependence	
POLT 403	United States in World Affairs
BUS #665	International Marketing Strategy Management
ECN 411	Introduction to Macroeconomic Principles
PS 509	Political and Social Change in Developing Countries
PS 510	Politics of Food
POLT 560	World Politics
PS 702	International Relations: Interdisciplinary Approach
Total Credits	20

For more information contact Melinda Negron-Gonzales, minor supervisor, at Melinda.Negron@unh.edu.

History

Programs

- History Minor (UNHM) (p. 380)

History Minor (UNHM)

<https://manchester.unh.edu/academics/degree-programs/history-minor>

Description

An excellent complement to any degree, a History minor helps you build a foundational understanding of the political, social, economic and cultural forces that influence human life.

Requirements

To earn a minor in history, students must complete 20 credits with no individual grade lower than C- and a 2.0 grade-point average in minor courses. Up to 8 transfer credits may be used toward the history minor.

Code	Title	Credits
Any five history (HIST) courses ¹		20

¹ Two must be 500 level or above

For more information, contact Sonic Woytonik, minor supervisor, at kristen.woytonik@unh.edu.

Homeland Security

Preparing innovative, dynamic problem-solvers for a safer tomorrow

Today's threat environment is complex and dynamic and includes threats from small- to large-scale attacks of violence or terrorism, to cybersecurity to catastrophic natural disasters such as hurricanes, wildfires, tornadoes and earthquakes. Fully available to students on both campuses (Durham and Manchester), the Homeland Security (HLS) program will give students the tools to help organizations and the nation be safe and resilient.

<https://manchester.unh.edu/academics/degree-programs/homeland-security>

Programs

- Homeland Security Major (B.S.) (p. 380)
- Corporate Security Minor (p. 381)
- Homeland Security Minor (p. 381)
- Terrorism Studies Minor (p. 382)

Faculty

Homeland Security Faculty (<http://manchester.unh.edu/academics/degree-programs/homeland-security/#unhstyleCollapsePane235>)

Homeland Security Major (B.S.)

<https://manchester.unh.edu/academics/degree-programs/homeland-security>

Description

The UNH Homeland Security program is built upon the expertise and advice of subject matter experts from around the Nation. Its proven curriculum includes practical experiences, service and experiential learning opportunities, and consulting opportunities that together empower students to manage programs and to lead people. HLS provides students with an impressive array of tools including how to do strategic planning, how to build emergency management and continuity plans, how to perform an organization-wide security and risk assessments, and how to design and evaluate exercises. The 4-year curriculum is flexible and incorporates the ability for students to take 40 credits of "breadth" as either two minors, a double major, or a dual degree. Students transferring with an associate's degree automatically satisfy the breadth requirement. Ultimately, the Homeland Security program empowers students to be successful on the job market or in graduate school.

Homeland security is a broad-field, applied liberal arts degree teaching students critical thinking, writing and analysis skills. As a result, HLS creates several graduate school opportunities and opens students to dozens of career paths in both the public sector (i.e., local, state or federal government), and the private sector or the military. Students will find diverse and rewarding career opportunities in cyber security/information assurance, intelligence analysis, civil or Foreign Service, diplomatic security, law enforcement at the local, state or federal levels, emergency and disaster management, immigration, border and transportation security, policy making, corporate security, risk management, critical infrastructure protection, human security and more.

Requirements

Students must complete 128 credits to graduate. All courses within the major must be completed with a grade of C- or above, and an overall GPA of 2.0 or above in major courses.

Core Major Requirements

Code	Title	Credits
HLS 410	Introduction to Homeland Security	4
HLS 415	Fundamentals of Corporate Security	4
HLS 455	Introduction to Cybersecurity	4
HLS 480	Professional Skills in Homeland Security	4
HLS 510	Fundamentals of Emergency Management	4
HLS 515	Critical Infrastructure Security and Resilience	4
HLS 520	Homeland Security Law and Policy	4
PS 505	Political Violence and Terrorism	4
or POLT 570	Counterterrorism: Nation states' responses to terrorist activity	
or SOC 656	Terrorism	
HLS 580	Environmental and Human Security	4
HLS 610	Exercise Design and Evaluation in Homeland Security	4
HLS 650	Intelligence Systems and Structures in Homeland Security	4
or POLT 568	Introduction to Intelligence	
HLS 760	Strategic Planning and Decision Making	4
or POLT 562	Strategy and National Security Policy	
HLS 770	Internship in Homeland Security	4
or HLS 799	Thesis in Homeland Security	
HLS 790	Capstone in Homeland Security	4
Total Credits		56

Complimentary Block of Courses

In addition to the core HLS courses, students must complete 40 additional credits in one of five ways:

1. two minors;
2. a minor and a "coherent block"/self-designed concentration approved by the HLS coordinator;
3. a second major or a UNH dual degree;
4. an associate's degree transferred in to UNH;
5. some other combination of coursework with consent of the HLS program coordinator.

For additional information about the Homeland Security program, contact James Ramsay, HLS Program Coordinator, at james.ramsay@unh.edu or the UNH Manchester Office of Admissions (unhm.admissions@unh.edu) at (603) 641-4150.

Corporate Security Minor

Description

<https://manchester.unh.edu/academics/degree-programs/corporate-security-minor>

Security threats are all around us. Modern society has demonstrated that all organizations face risks from natural disasters, to disgruntled employees, to foreign terrorists groups such as the Islamic State or Al Qaeda, to domestic terrorists/criminals, to active shooters, cyber-attacks, bioterror threats such as EBOLA, SARS, and anthrax. Further, weather-related events such as Hurricanes Katrina and Sandy, or massive

snow storms causing extended shut downs of businesses, tornadoes, earthquakes and potential flood and rain events are always possible and can be devastating to the financial solvency of any organization. Consequently, threats like these have changed how employers evaluate and manage risk.

The relatively rapid rise of the Corporate Security Officer (CSO) in the private sector indicates the deep commitment many organizations now have to enterprise risk management of security threats across all industrial sectors. Corporate security professionals (not "security guards") plan for future potential events, develop and implement risk management, preparedness and resilience strategies that avoid, transfer or reduce the risk to the organization posed by these threats. The need for corporate security expertise has likely never been greater.

Requirements

The corporate security minor requires students to complete five courses (20 credits). All five courses applied to the corporate security minor must be completed with a minimum grade of C- and an overall GPA of 2.0. Students must take at least three 500-level or above courses to complete the minor, noting no more than two courses (8 credits) may also be used in the HLS major.

Code	Title	Credits
Required courses		16
HLS 415	Fundamentals of Corporate Security	
HLS 515	Critical Infrastructure Security and Resilience	
HLS 630	Sports and Large Event Security Management	
BUS 400	Introduction to Business	
Select one of the following:		4
BUS 620	Organizational Behavior	
BUS 640	Business Communication and Conflict	
BUS 715	Forensic Accounting/Fraud Examination	
Total Credits		20

For more information about the Homeland Security minor on either campus, contact James Ramsay, HLS program coordinator and minor supervisor, at james.ramsay@unh.edu.

Homeland Security Minor

<https://manchester.unh.edu/academics/degree-programs/homeland-security-minor>

Description

Today's threat environment is complex and dynamic and includes threats from small- to large-scale attacks of violence or terrorism, to cybersecurity to catastrophic natural disasters such as hurricanes, wildfires, tornadoes and earthquakes. Fully available to students on both campuses (Durham and Manchester), the Homeland Security (HLS) minor will give students an excellent glimpse at what it takes to keep the nation safe and resilient.

The minor in Homeland Security (HLS) is designed to provide a professional experience to students *not* majoring in Homeland Security, but who are interested in aspects of the homeland security profession. Students will see how Homeland Security issues, challenges, and tools

are related to their specific major and how Homeland Security can be used to embellish their careers.

Requirements

The minor in homeland security requires five courses (20 credits). Students must earn grades of at least C- in each course and an overall GPA of 2.0 in minor courses. Transfer students may transfer up to two courses, subject to the approval of the HLS program coordinator. Courses taken on a pass/fail basis may not be used for the minor. No more than eight credits to satisfy major requirements may be used in the minor.

Code	Title	Credits
Required courses:		
HLS 410	Introduction to Homeland Security	4
HLS 455	Introduction to Cybersecurity	4
or HLS 415	Fundamentals of Corporate Security	
Select three of the following:		12
HLS 510	Fundamentals of Emergency Management	
HLS 515	Critical Infrastructure Security and Resilience	
HLS 520	Homeland Security Law and Policy	
PS 505	Political Violence and Terrorism	
HLS 580	Environmental and Human Security	
HLS 650	Intelligence Systems and Structures in Homeland Security	
HLS 760	Strategic Planning and Decision Making	
Total Credits		20

For more information about the Homeland Security minor on either campus, contact James Ramsay, HLS program coordinator and minor supervisor, at james.ramsay@unh.edu.

Terrorism Studies Minor

Description

<https://manchester.unh.edu/academics/degree-programs/terrorism-studies-minor>

The discipline of terrorism is a fluid topic. Terrorism has existed for hundreds of years. Yet since the tragic events of September 11, 2001, terrorism has become the top priority of US national and homeland security including the Intelligence Community, the DOD, FBI, CIA, DHS, and State Department. Additionally, acts of terrorism have continued to challenge the national security interest of not only the United States, but of all her allies. To combat the threats of terrorism, much has been done, and continues to be addressed in the domestic and international arenas.

The United States has taken drastic measures to create new laws and enhance existing ones to attempt to ensure terrorist attacks don't reach the US. Other nations have experienced their own issues with terrorism, whether it is Russia's conflict with Chechen Rebels, Columbia's war with FARC, or the effects on Mid East and African countries at the hand of Al Qaeda, al Shabaab, or Boko Haram. The development of asymmetric tactics by terrorists and insurgencies worldwide affect governments, infrastructure, and world peace.

The terrorism studies minor is both multidisciplinary and interdisciplinary, which means that some courses will explore phenomena primarily

through one disciplinary lens whereas others will weave together different disciplinary perspectives.

Requirements

The terrorism studies minor requires students to complete five courses (20 credits). All five courses applied to the terrorism studies minor must be completed with a minimum grade of C- and an overall GPA of 2.0. Students must take at least three 500-level or above courses to complete the minor.

Code	Title	Credits
Select one of the following: ¹		4
POLT 570	Counterterrorism: Nation states' responses to terrorist activity	
PS 505	Political Violence and Terrorism	
SOC 656	Terrorism	
Select one of the following: ¹		4
HLS 650	Intelligence Systems and Structures in Homeland Security	
POLT 568	Introduction to Intelligence	
Select three of the following:		12
POLT 403	United States in World Affairs	
POLT 507	Politics of Crime and Justice	
POLT 500	American Public Policy	
POLT 502	State and Local Government	
POLT 548	Drug Wars	
POLT 765	Security Intelligence Study	
PS 507	Justice Law and Politics	
PS 509	Political and Social Change in Developing Countries	
PS 511	Women and War	
PS 520	Globalization: Politics, Economics and Culture	
SOC 780	Social Conflict	
HIST 410	Historic Survey of American Civilization	
HIST 600	Explorations ²	
HLS 750	Emergent Topics in Homeland Security/Homeland Defense (Study Abroad trip)	
Total Credits		20

¹ Required in the Terrorism Studies minor and Homeland Security major

² Explorations course title must be: *War and Political Violence in the Modern West* or *Justice, Violence, and Society*

For more information about the Terrorism Studies minor on either campus, contact James Ramsay, Homeland Security program coordinator and minor supervisor, at james.ramsay@unh.edu or Melinda Negrón-Gonzales, Public Service and Nonprofit Leadership program and minor supervisor, at melinda.negrón@unh.edu.

Humanities

Shaping insightful thinkers through liberal arts exploration

Channel your curiosity about the human condition with our highly interdisciplinary Humanities program. With self-designed concentrations and faculty mentorship, you'll develop the intellectual, analytical and communication skills that will set you apart in any industry.

As a humanities major, you'll sharpen your abilities in analysis and critical thinking through exploration of diverse works of art, music, literature, history, philosophy and the sciences. Let your interests fuel your studies with self-designed concentrations, from the social and ethical implications of genetic engineering to the examination of a historical period through literature, arts and more.

With the personalization to tailor your degree to the future you want, the skills and knowledge you'll gain will help you reach your career goals.

<https://manchester.unh.edu/academics/degree-programs/humanities>

Programs

- Humanities Major (B.A.) UNHM (p. 383)
- Humanities Minor (UNHM) (p. 383)

Faculty

Humanities Faculty (<http://manchester.unh.edu/academics/degree-programs/humanities/#unhstyleCollapsePane73>)

Humanities Major (B.A.) UNHM

<https://manchester.unh.edu/academics/degree-programs/humanities>

Description

The UNH Manchester humanities program is an interdisciplinary study of the human condition, past and present. The program is based on careful examination of substantial works from a variety of disciplines and is intended to develop intellectual skills, specialized knowledge, and breadth of understanding. It provides students with a broad foundation of knowledge and skills in the liberal arts combined with a coordinated, self-designed program of studies in an area of individual student interest.

The program attracts highly motivated students who wish to assume significant responsibility for the content and direction of their studies. Humanities students develop skills of analysis, critical assessment, and effective communication as they study diverse works of art, music, literature, history, philosophy, and the sciences. Individually designed programs may cover the full range of student interests: for example, the social and ethical implications of genetic engineering or the examination of an historical period through study of its literature, arts, history, philosophy, and sciences. Students complete their major with two capstone seminars. The first, HUMA 795 Study of Creativity, explores the nature of creativity through the lives and works of individuals such as Leonardo da Vinci, Kathe Kollwitz, Mozart, Freud, Einstein, and Georgia O'Keeffe. The second seminar, HUMA 796 Study of Contemporary Issues,

explores current social and political issues with a focus on developments in public policy, science, and business, and their impact on social values.

Humanities majors find employment in a wide range of fields or pursue graduate study in subjects such as law or education. Skills and knowledge developed through the major are important in virtually all social and career responsibilities. A humanities major or minor can also complement work in other majors such as elementary or secondary education, business, communications, or computer information systems.

Requirements

Program of Study

For the humanities major at UNH Manchester, students must complete a minimum of 128 credits and satisfy the University's Discovery Program and foreign language requirements, and students must complete 40 credits with a minimum grade of C in each course in the major.

Code	Title	Credits
Core Courses		
HIST 500	Introduction to Historical Thinking	4
or ENGL 419	Introduction to Literary Analysis	
HUMA 411	Humanities I	4
HUMA 412	Humanities II	4
Self-Designed Concentration ¹		20
Discovery Program Capstone Courses		
HUMA 795	Study of Creativity	4
HUMA 796	Study of Contemporary Issues	4
Total Credits		40

¹ This is an approved program of study designed by the student in consultation with a faculty advisor. In addition to courses available on the Manchester campus, students may, with prior approval, use courses from area colleges and the University's Durham campus. The concentration is made up of two humanities courses (HUMA prefix) at the 600 or 700 level and three courses from any relevant discipline at any level.

For more information, contact Susanne Paterson, program coordinator, at susanne.paterson@unh.edu or the UNH Manchester Office of Admissions (unhm.admissions@unh.edu) at (603) 641-4150.

Humanities Minor (UNHM)

<https://manchester.unh.edu/academics/degree-programs/humanities-minor>

Description

The humanities minor is an interdisciplinary program where students can combine humanities courses and courses from other disciplines that form a multidisciplinary theme or topic. The minor in humanities is an excellent way to add breadth of perspective to specialized study in particular disciplines. Many professions encourage students to develop skills and knowledge outside their area of professional interest. The humanities minor can meet this objective and make college education a more enlightening and rewarding experience. Students selecting a minor

in humanities should, in consultation with a faculty adviser in humanities, identify a general theme or topic for the minor.

Requirements

To earn a minor in humanities, students must complete 20 credits with no individual grade lower than C in minor courses.

Code	Title	Credits
ENGL 419	Introduction to Literary Analysis	4
Select at least two courses in the humanities (HUMA)		8
Select more courses in humanities (HUMA) or choose complementary courses from other disciplines, such as history, English, philosophy, communication arts, politics and society, or business, which contribute to the student's multidisciplinary theme or topic¹		8
Total Credits		20

¹ Select in consultation with a faculty adviser in humanities.

For more information, contact Susanne Paterson, minor supervisor, at susanne.paterson@unh.edu.

Legal Advocacy

Programs

- Legal Advocacy Minor (p. 384)

Legal Advocacy Minor

Description

<http://manchester.unh.edu/academics/degree-programs/legal-advocacy-minor>

The Legal Advocacy Minor is a set of courses which is designed to ensure students with an interest in law school have all the skill-sets and several of the field-specific knowledge bases that will help them succeed there. It is also intended to help students contemplating law school develop a clear understanding of what that experience is likely to be, as well as some insight into the nature of professional legal practice. For students who may not intend to pursue graduate study in the law, the Minor sharpens their written, rhetorical, and analytical skills, helping them succeed in a variety of other graduate programs and career paths. In all cases, it is designed to further students' understanding of how the American legal system, and their state's legal system in particular, function.

The Minor emphasizes transferable skill-sets, a commitment to public service and responsible advocacy, experiential learning, and the preparation of undergraduates for a diverse job market. The core skill-sets developed in the Minor—critical thinking, creative thinking, oral communication skills, written communication skills, and the ability to advocate for oneself and for others both singly and as part of a team—are instrumental to every profession. So too is having a basic understanding of the nation's legal system, as such knowledge is foundational to being an engaged citizen.

Instructors in the Legal Advocacy Minor include a licensed attorney with six years of trial experience in New Hampshire, a retired Justice of the 4th Circuit Court of New Hampshire, and a former paralegal who has published numerous scholarly articles on the subject of Law & Politics.

Requirements

Students must complete 20 credits with a minimum 2.0 grade-point average in these courses overall and with no individual grade lower than a C-. No more than 8 transfer credits will be accepted.

Code	Title	Credits
PS 407	Politics, Law and Contemporary Society	4
PHIL 412	Beginning Logic	4
ENGL 694	Special Topics in Creative Writing (Legal Writing and Research)	4
One Interdisciplinary "Breadth" Course ¹		4
UMST 500	Internship	4
Total Credits		20

¹ This course would relate to a law-adjacent specialization of interest to the individual student.

For more information, contact Seth Abramson, Assistant Professor, Writing Specialist, at seth.abramson@unh.edu or Stephen Pimpare, Senior Lecturer, Public Service and Nonprofit Leadership, at stephen.pimpare@unh.edu.

Literary Studies

The Literary Studies major focuses on skills considered important for professional success: critical thinking, thoughtful reading, written and oral communication, and the ability to collaborate as part of a team.

The major offers courses in areas from graphic novels to crime fiction, from film adaptations of literature to post-colonial narratives. As a Literary Studies major, you will explore poetics, literary theory, and literary analysis in print and digital literature.

You'll also have the opportunity to be part of one of two on-campus publications: *The Manchester Independent*, a digital newspaper covering the Greater Manchester area, and *Best American Experimental Writing*, an annual, nationally distributed anthology of innovative literary art.

The Literary Studies major culminates with real-world experience through upper-level seminars, capstones, and the opportunity for internships that are tailored to your own career ambitions—and focused on the applied skills that employers particularly value.

<https://manchester.unh.edu/academics/degree-programs/literary-studies>

Programs

- Literary Studies Major (B.A.) (p. 385)
- English Minor (UNHM) (p. 385)

Faculty

<https://manchester.unh.edu/directory/all>

Literary Studies Major (B.A.)

<https://manchester.unh.edu/academics/degree-programs/literary-studies>

Description

Students in the Literary Studies program advance their power to analyze keenly and write incisively by studying leading-edge and foundational literary works in print, graphic and digital forms. Gaining a mastery of aesthetics and genre, literary theory and cultural history, our students learn to see how language shapes the world on every scale. Literary Studies students take an array of literature classes as well as core courses in digital language arts and professional and technical communication, making them just the sort of versatile, critically aware graduates prized in workplaces today.

Requirements

For the Literary Studies program at UNH Manchester, students must complete a minimum of 128 credits and satisfy the University's Discovery Program and foreign language requirements, and complete a minimum of 40 credits in major coursework with a minimum grade of C-. The major requirements consist of a minimum of 10 courses. These 10 courses (40 credits) must include the capstone requirement.

Students in the major must earn C or higher to pass ENGL 419 Introduction to Literary Analysis, ENGL 502 Professional and Technical Writing, and ENGL 595 Literary Topics: Digital Creative Writing. One literary theory/poetics course is required. Two pre-1800 literature courses are required.

PROGRAM REQUIREMENTS

Code	Title	Credits
Core Courses		
ENGL 419	Introduction to Literary Analysis	4
ENGL 502	Professional and Technical Writing	4
ENGL 595	Literary Topics (Digital Creative Writing)	4
Development/Extension		
Select three courses of the following:		12
Any 500 or 600-level ENGL courses in literature, literary theory, poetics, or narrative ^{1,2}		
Specialization/Practice		
ENGL 787	English Major Seminar ³	4
ENGL 797	Special Studies in Literature ⁴	4
Select two courses of the following:		8
Any 600 or 700 level ENGL electives in literature, literary theory, poetics, or narrative ¹		
Total Credits		40

- ¹ One or more must be a pre-1800 Literature course. Examples include: ENGL 512 British Literature I Age of Heroes: Beowulf to Dr. Faustus, ENGL 513 British Literature II Age of Revolutions: Shakespeare to Austen, ENGL 518 Bible as Literature, ENGL 651 Comparative Literature, ENGL 657 Shakespeare, ENGL #680 Early English Drama: From Cycles to the Globe, ENGL 741 Literature of Early America, ENGL 751 Medieval Epic and Romance, ENGL #753 Old English, ENGL #756 Chaucer, ENGL 758 Advanced Shakespeare, ENGL 759 Milton, ENGL 767 Literature of the Restoration and Early 18th Century, ENGL 768 Literature of the Later 18th Century, ENGL #780 Drama of Shakespeare's Contemporaries: Will and Company, ENGL #781 English Drama, 1660-1800, ENGL 783 English Novel of the 18th Century. See advisor for selected topics in ENGL 595 Literary Topics, ENGL 693 Special Topics in Literature, and ENGL 797 Special Studies in Literature.
- ² ENGL 514W British Literature III: Revolts, Renewals, Migrations and ENGL 516 American Literature II Money, Migration, and Modernity: Huck Finn to Beloved cannot be repeated under different course titles
- ³ Capstone course
- ⁴ Variable topic seminar colloquium

For more information, contact program coordinator Susanne Paterson at susanne.paterson@unh.edu or contact the Office of Admissions (unhm.admissions@unh.edu), (603) 641-4150.

English Minor (UNHM)

<https://manchester.unh.edu/academics/degree-programs/english-minor>

Description

With a minor in English, you can complement your major with five classes from our areas of study. We think you'll find that even subjects that seem far apart have an uncanny way of intersecting.

In our literature courses, you might read and research a play about thermodynamics, even as our writing classes give you an opportunity to study the many genres of creative and occupational writing. English study expands your portfolio of transferable skills while keeping your imaginative faculties in high gear.

Employers from across the professional spectrum are looking for employees with skill-sets that include those of an English minor—for instance, the ability to think critically, parse challenging texts, and express new ideas persuasively and creatively. You'll be amazed at what an English minor can do for you both personally and professionally.

Requirements

For the English minor at UNH Manchester, students must complete 20 credits with a minimum 2.0 grade-point average in these courses overall and with no individual grade lower than a C-. Students may include in the English minor courses from the Writing Focus, which includes courses in creative writing and journalism.

ENGL 419 Introduction to Literary Analysis is **recommended** as one of the five courses.

Code	Title	Credits
Select two English courses at the 500 level (or ENGL 419 and one 500 level course)		
		8

Select three English courses at the 600 or 700 level	12
Total Credits	20

For more information, contact Susanne Paterson (Susanne.Paterson@unh.edu), Associate Professor, Program Coordinator, and minor supervisor, at (603) 641-4115.

Neuropsychology

Explore the human brain to fuel research, innovation, and discovery

Channel your curiosity about the human brain and behavior in our cutting-edge Neuropsychology program. Fusing core components of biology and psychology, this program prepares students for an impactful career in the growing field of neuroscience.

You'll explore the concepts behind normal human behavior, from learning and memory to sensation and perception. You'll also examine complex neurological conditions like dementia, addiction and mood and movement disorders.

Guided by faculty experts in our innovative research labs, you'll gain the empirical, analytic and communication skills that will make you stand out in your career – or in your application to graduate or medical school.

<https://manchester.unh.edu/academics/degree-programs/neuropsychology>

Programs

- Neuropsychology Major (B.S.) (p. 386)

Faculty

Biology Faculty (<http://manchester.unh.edu/academics/degree-programs/biological-sciences/#unhstyleCollapsePane73>)

Psychology Faculty (<http://manchester.unh.edu/academics/degree-programs/psychology/#unhstyleCollapsePane73>)

Neuropsychology Major (B.S.)

<https://manchester.unh.edu/academics/degree-programs/neuropsychology>

Description

Neuropsychology is the study of the human brain and its relation to behavior. The UNH Manchester program focuses on the biological basis of human functioning in both normal and pathological states (e.g., dementia, depression) and therefore, prepares students for careers working with individuals with various mental health and neurological conditions. This interdisciplinary program offers a concentration of core and advanced courses in psychology and biology while providing sufficient flexibility for students to customize their education in order to meet specific requirements for their chosen career path, including the health professions.

The neuropsychology program prepares students for a variety of careers within the field of neuroscience, including bachelor-level positions and

graduate training in research and health professions. At the bachelor-level, students are prepared for positions in healthcare (e.g., clinical laboratory technologist, psychometrician) and biomedical research (research assistant). The program is also designed to provide the flexibility needed to prepare students for graduate training in the health professions, such as being a physician, physician assistant, psychologist, neuropsychologist, or occupational therapist. Students interested in medical school are able to complete premedical requirements within four years.

Requirements

Students majoring in neuropsychology must complete a minimum of 128 credits and satisfy the University's Discovery Program, and complete 56 credits in the major with a minimum of C- in each course and a 2.0 overall grade-point average in all major requirements. Three courses in the major can be used to fulfill both a major requirement and a Discovery requirement, providing students with more flexibility to customize their education.

Transfer students who elect to major in neuropsychology must complete at least 32 credits in the program at UNH to qualify for the degree in neuropsychology. The department's academic advisors will determine the distribution of these credits. Transfer students should note that courses are allotted only the number of credits granted by the original institution (after adjustments for semester-hour equivalents). Thus, students transferring from an institution at which courses carry less than four credits each must make up for any credit deficit created by acceptance of transfer credits into the neuropsychology major.

Specific course selections should be discussed with the advisor. Exceptions to the requirements for the major require a petition to the department.

Program Requirements

Code	Title	Credits
Core Courses in Psychology and Biology		
BIOL 413 & BIOL 414	Principles of Biology I and Principles of Biology II (both with lab)	8
CHEM 403	General Chemistry I (with lab)	4
GEN 604	Principles of Genetics	4
PSYC 401	Introduction to Psychology ¹	4
PSYC 402	Statistics in Psychology	4
PSYC 502	Research Methods in Psychology	4
PSYC 531	Psychobiology	4
PSYC 705	Tests and Measurement	4
Advanced Courses in Psychology and Biology		
Select three of the following:		12
BSCI 680	Pharmacology ²	
BSCI 735	Cell Biology	
PSYC 710	Visual Perception	
PSYC 713	Psychology of Consciousness	
PSYC 731	Brain and Behavior (with lab)	
PSYC 733	Drugs and Behavior ²	
PSYC 735	Neurobiology of Mood Disorders	
PSYC 736	Attention Disorders	
PSYC 741	Advanced Topics	

Advanced Elective in Psychology

Select one of the following: 4

PSYC 712 Psychology of Language

PSYC 758 Health Psychology

PSYC 762 Counseling

PSYC 791 Advanced Topics

Capstone Requirement

Select one of the following:

PSYC 793 Internship (at approved site)

PSYC 795 Independent Study (1-4 credits)³

Total Credits 52

¹ If used to fulfill SS Discovery requirement, students must take PSYC 511 Sensation and Perception, PSYC 513 Cognitive Psychology, or PSYC 561 Abnormal Behavior.

² Students can either take BSCI 680 Pharmacology or PSYC 733 Drugs and Behavior for major credit, but not both.

³ If a student chooses to complete PSYC 795 for less than 4 credits, they will need to take additional credits that count toward the major.

For more information about the neuropsychology program, contact John Sparrow, Ph.D., program coordinator, at John.Sparrow@unh.edu (john.sparrow@unh.edu), Daniel Seichepine, Ph.D., at Daniel.Seichepine@unh.edu, (Daniel.Seichepine@unh.edu) or the UNH Manchester Office of Admissions (unhm.admissions@unh.edu) at (603) 641-4150.

Philosophy

Programs

- Philosophy Minor (UNHM) (p. 387)

Philosophy Minor (UNHM)

<http://manchester.unh.edu/academics/degree-programs/philosophy-minor>

Description

Philosophy is the study of the fundamental nature of truth, existence, beauty, morality, and justice. People study philosophy to understand the basic principles of science, art, and the human condition.

Though this sounds abstract, a background in philosophy is excellent training for any walk of life. Philosophy offers training for a variety of careers by providing a unique combination of life-long skills: analytic and interpretive skills, critical reasoning skills, the enhanced capacity to detect problems and to solve them, excellence in oral and written presentation and defense of one's ideas, skill at asking probing and central questions about the ideas of others (as well as about one's own ideas), and skill at effectively understanding, organizing, and evaluating complex systems of thought.

Requirements

A philosophy minor consists of five philosophy courses, completed with a C- or above, one of which must be at the 500-level or higher, (PHIL 495

Tutorial Reading or PHIL 795 Independent Study with special permission only).

For more information, contact Phillip Deen (phillip.deen@unh.edu), minor supervisor, or the Academic Advising Office (unhm.counseling@unh.edu) at 603-641-4170.

Professional and Technical Communications

The Professional and Technical Communications major was uniquely designed with your career in mind. Built upon an analysis of large-scale polls of employers, this major focuses on the five skills considered most important for success in the job market: critical thinking, creative thinking, written communication, oral communication, and the ability to collaborate as part of a team.

With courses in areas from new media journalism to legal writing, from business communications to technical writing, this regionally distinctive major offers a professionally-oriented curriculum that is entrepreneurial and forward-thinking. You will develop career-driven, transferable skills and learn to excel in any professional context by studying how to communicate and collaborate in a variety of academic and applied environments.

You'll also have the opportunity to be part of one of two on-campus publications: *The Manchester Independent*, a digital newspaper covering the Greater Manchester area, and *Best American Experimental Writing*, an annual, nationally distributed anthology of innovative literary art.

The Professional and Technical Communications major culminates with real-world experience through upper-level seminars, capstones, and a required internship that are tailored to your own career ambitions—and focused on the applied skills that employers particularly value.

<https://manchester.unh.edu/academics/degree-programs/professional-and-technical-communications>

Programs

- Professional and Technical Communications Major (B.A.) (p. 387)
- Professional Writing Minor (p. 388)

Faculty

<https://manchester.unh.edu/directory/all>

Professional and Technical Communications Major (B.A.)

<https://manchester.unh.edu/academics/degree-programs/professional-and-technical-communications>

Description

Students in the Professional and Technical Communications program study to become accomplished digital-age communicators. You'll develop transferable skill-sets in oral and written communication that prepare you to excel in any professional environment. In addition, you'll

learn to communicate and collaborate in specializations of your choice – including, among others, new media journalism, creative nonfiction, business writing, legal writing and research, and technical writing.

Requirements

For the Professional and Technical Communication program at UNH Manchester, students must complete a minimum of 128 credits and satisfy the University's Discovery Program and foreign language requirements, and complete a minimum of 40 credits in major coursework with a grade of C- or higher. The major requirements consist of a minimum of 10 courses. These 10 courses (40 credits) must include the internship requirement. Students in the major must earn C or higher to pass ENGL 419 Introduction to Literary Analysis, ENGL 502 Professional and Technical Writing, and ENGL 595 Literary Topics: Digital Creative Writing.

PROGRAM REQUIREMENTS

Code	Title	Credits
Core Courses		
ENGL 419	Introduction to Literary Analysis	4
ENGL 502	Professional and Technical Writing	4
ENGL 595	Literary Topics (Digital Creative Writing)	4
Development/Extension		
ENGL 595	Literary Topics (Business Writing)	4
ENGL 602	Advanced Professional and Technical Writing	4
ENGL 694	Special Topics in Creative Writing ¹	4
Specialization/Practice		
UMST 500	Internship	4
Select three courses of the following:		12
Any 500, 600, or 700 level writing, communications, or journalism electives ²		
ENGL 534	21st Century Journalism: How the News Works (recommended)	
ENGL 791	English Grammar (recommended)	
Total Credits		40

¹ Can be duplicated for credit, provided the topics are different

² May include appropriate courses in Communication Arts and allied programs/disciplines, with advisor approval

For more information, contact program coordinator Susanne Paterson at susanne.paterson@unh.edu or contact the Office of Admissions (unhm.admissions@unh.edu), (603) 641-4150.

Professional Writing Minor

<https://manchester.unh.edu/academics/degree-programs/professional-writing-minor>

Description

The interdisciplinary minor in professional writing introduces you to the many genres of professional writing, providing opportunities to practice your skills in an internship setting.

Courses span the areas of English, Communication Arts, and Computing, and include classes such as Media Writing, Journalism in the 21st

Century, Introduction to Creative Non-Fiction, Professional and Technical Writing, Social Media for Organizations and Business, Introduction to Computer Applications, Mobile Computing, as well as others.

Requirements

Students must complete 22-24 credits for the minor. Courses must be completed with a minimum grade of C- unless otherwise specified, and a 2.0 overall GPA in courses used for the minor is required. A maximum of two transfer courses (3 or 4 credits each) may be applied to the minor. No more than 8 credits used by the student to satisfy major requirements may be used in the minor.

Students should select courses from the following subject areas:

Code	Title	Credits
English Courses		
Select three of the following:		12
ENGL 501	Introduction to Creative Nonfiction	
ENGL 502	Professional and Technical Writing	
ENGL 534	21st Century Journalism: How the News Works	
ENGL 621	Writing and Reporting the News I	
ENGL 631	Introduction to Digital Reporting	
Other courses by permission		
Communication Arts Courses		
Select at least one of the following:		4
CA 500	Media Writing	
CA 512	Screenwriting	
CA 514	Fundamentals of Video Production	
CA 542	Social Media for Organizations and Business	
Computing Courses		
Select one of the following:		4
COMP 415	Mobile Computing First and For Most	
Other course by permission		
Internship		
Select one of the following:		1-4
UMST 500	Internship	
Another discipline-based internship approved by the minor supervisor		
Total Credits		21-24

For more information, contact Susanne Paterson (Susanne.Paterson@unh.edu), Associate Professor, Program Coordinator, and minor supervisor, at (603) 641-4115.

Psychology

Explore the biopsychosocial factors that drive thoughts and behaviors

Explore the science of behavior and mental processes in our Psychology program, bringing classroom learning to life in our research labs and in the field. Guided by faculty who are experts in their disciplines, you'll develop a broad background in the field – including perceptual, biological, clinical/counseling, and developmental psychology.

Our program prepares you for careers aimed at improving lives ranging from research assistant to mental health worker, social welfare caseworker to teaching. You'll also foster skills that are attractive and useful in all industries, including critical and logical thinking, data analysis, research, scientific communication and more.

<https://manchester.unh.edu/academics/degree-programs/psychology>

Programs

- Psychology Major (B.A.) UNHM (p. 389)
- Psychology Minor (UNHM) (p. 390)

Faculty

Psychology Faculty (<http://manchester.unh.edu/academics/degree-programs/psychology/#unhstyleCollapsePane73>)

Psychology Major (B.A.) UNHM

<https://manchester.unh.edu/academics/degree-programs/psychology>

Description

Psychology is the scientific study of behavior and mental processes. The UNH Manchester psychology program provides students with a broad background in psychology, introducing them to both the experimental and clinical perspectives in the field.

The psychology program, through its independent study and internship programs, offers opportunities for participation in cooperating New Hampshire mental health, human services, and rehabilitation facilities. Students have worked in hospitals, halfway houses, mental health centers, and other agencies. The department also invites guest speakers to discuss important issues in the field and sponsors a Psychology/Neuropsychology Club.

Psychology graduates find employment as trained research assistants, mental health aides in a wide variety of human services agencies, social welfare caseworkers, teachers in special education programs, and professionals in government, business, and industry. It is normally expected that students who wish to do professional work in the field of psychology will pursue graduate training at the M.A., M.S., Ph.D., or Psy.D. level.

Requirements

Students majoring in psychology must complete a minimum of 128 credits, satisfy the University's Discovery Program and foreign language requirements, and complete 44 credits with a minimum of C- in each course and a 2.0 overall grade-point average in all major requirements.

Transfer students who elect to major in psychology must complete at least 24 credits in the program at UNH/UNH Manchester to qualify for the degree in psychology. Transfer students must earn a total of 44 approved credits for completion of the psychology major. The department's academic advisers will determine the distribution of these credits. Transfer students should note that courses are allotted only the number of credits granted by the original institution (after adjustments for semester-hour equivalents). Thus, students transferring from an

institution at which courses carry less than four credits each must make up for any credit deficit created by acceptance of transfer credits into the psychology major.

The courses listed below are offered on the UNH Manchester and/or Durham campuses; specific course selections should be discussed with the adviser. Exceptions to the requirements for the major require a petition to the department.

Program Requirements

Code	Title	Credits
Core Courses		
PSYC 401	Introduction to Psychology	4
PSYC 402	Statistics in Psychology	4
PSYC 502	Research Methods in Psychology	4
500-level breadth courses		
Group I: Select two courses of the following:		8
PSYC 511	Sensation and Perception	
PSYC 512	Psychology of Primates	
PSYC 513	Cognitive Psychology	
PSYC 521	Behavior Analysis	
PSYC 522	Behaviorism	
PSYC 531	Psychobiology	
Group II: Select two courses of the following:		8
PSYC 552	Social Psychology	
PSYC 553	Personality	
PSYC 561	Abnormal Behavior	
PSYC 571	Pioneers of Psychology	
PSYC 581	Child Development	
PSYC #582	Adult Development and Aging	
700-level depth courses (at least three must be taken at UNH)		
Group I: Select two courses of the following:		8
PSYC #702	Advanced Statistics and Research Methodology ¹	
PSYC 705	Tests and Measurement ¹	
PSYC 710	Visual Perception	
PSYC 712	Psychology of Language	
PSYC 713	Psychology of Consciousness	
PSYC 720	Animal Cognition	
PSYC 722	Behaviorism, Culture, and Contemporary Society	
PSYC 731	Brain and Behavior	
PSYC 733	Drugs and Behavior	
PSYC 735	Neurobiology of Mood Disorders	
PSYC 737	Behavioral Medicine	
PSYC 741	Advanced Topics	
PSYC 741W	Advanced Topics	
Group II: Select two courses of the following:		8
PSYC #702	Advanced Statistics and Research Methodology ¹	
PSYC 705	Tests and Measurement ¹	
PSYC 755	Psychology and Law	
PSYC 756	Psychology of Crime and Justice	
PSYC 758	Health Psychology	
PSYC 762	Counseling	
PSYC 763	Community Psychology	
PSYC 780	Prenatal Development and Infancy	

PSYC 783	Cognitive Development
PSYC 785	Social Development
PSYC 791	Advanced Topics
PSYC 791W	Advanced Topics
PSYC 793	Internship
Capstone Requirement (taken in senior year)	
See below	
Total Credits	44

¹ May be substituted for a group I or group II course, but they may not both be used to fill the same group.

Discovery Capstone:

1. PSYC 793 Internship: This will count towards fulfilling the capstone and a group II 700 level psychology course. By taking PSYC 793 Internship, the capstone will be considered fulfilled.
2. PSYC 795 Independent Study: Students can designate a 4 credit independent study as their capstone experience. The capstone designation form must be filled out and students will be registered for PSYC 798 Capstone, a 0 credit course to reflect the capstone experience is fulfilled. This can count towards the capstone and as a 402 replacement course.
3. One 700 level course designated as capstone. A capstone designated 700 level course will count towards fulfilling the capstone and a 700 level course. The capstone designation form must be filled out and students will be registered for PSYC 798 Capstone, a 0 credit course to reflect the capstone experience is fulfilled. **See guidelines below:**
 - You may take any 700 level Psychology course in your **senior year** (90+ completed credits) for Capstone credit.
 - At the beginning of the semester, ask your professor about the possibility of taking the course for Capstone credit. Remember that your professor is not obligated to designate a course for Capstone credit. Please be respectful in approaching your professor, and if the answer is no, please accept this decision.
 - Meet and discuss with your professor what you will be doing to constitute your Capstone experience. In some cases, it will be an extra assignment; in others it will involve the expansion of existing class work. Your professor will use his/her professional discretion to determine what constitutes as your Capstone experience.
 - Fill out the Capstone Designation Form (found in the Psychology office); both you and your professor will need to sign it. Submit the form to the Psychology Department Office.
 - The Psychology Department will register you for PSYC 798 Capstone, a 0 credit course so that it reflects on your degree evaluation.

Students who plan to transfer to Durham should consult with their advisor.

For more information about the psychology program, contact John Sparrow, program coordinator, at john.sparrow@unh.edu or the UNH Manchester Office of Admissions (unhm.admissions@unh.edu) at (603) 641-4150.

Psychology Minor (UNHM)

<https://manchester.unh.edu/academics/degree-programs/psychology-minor>

Description

The Psychology minor brings a unique perspective on society and human behavior to your studies and adds a set of skills that makes you stand out to employers in a variety of industries.

Requirements

The minor in psychology consists of five psychology department courses (20 credits) including:

Code	Title	Credits
PSYC 401	Introduction to Psychology	4
Select four additional psychology department courses, including at least two courses at the 500 level or above		16
Total Credits		20

No more than 4 credits of PSYC 795 Independent Study may be applied to the minor. Each course must be passed with a grade of C- or better, with an overall minimum grade point average of 2.0 for the five minor courses. No pass/fail or credit/fail courses may be applied toward the minor. Under no circumstances can more than 9 transfer credits be applied toward the minor.

For more information, contact John Sparrow, minor supervisor at john.sparrow@unh.edu.

Public Service and Nonprofit Leadership

<https://manchester.unh.edu/academics/degree-programs/public-service-and-nonprofit-leadership>

Overview

Developing agents of change in the classroom and in the field

The bachelor of arts degree in public service and nonprofit leadership provides an interdisciplinary, applied approach to the study of public and not-for-profit institutions and actors. Students explore the ways that leaders and citizens work in and around governments to address the complex problems confronted by N.H. and the U.S. today.

Accelerated Master in Public Policy (with a B.A. in Public Service and Nonprofit Leadership) (<https://manchester.unh.edu/academics/degree-programs/public-service-and-nonprofit-leadership>)

The Accelerated Master's Program gives diligent students the exciting opportunity to complete a B.A. in Public Service and Nonprofit Leadership and a Master of Public Policy in five years by taking graduate-level courses during their senior year. Public Service and Nonprofit Leadership majors have the opportunity to pursue an accelerated Master of Public Policy (MPP) by taking up to 12 credits in approved electives while still undergraduates. No credit toward the major will be given for any course in which the student receives a grade of less than C-. A student must be admitted to the Graduate School before the start of the semester in which the course(s) will be taken in order to receive graduate credit. Once accepted, a student must maintain the minimum

3.2 cumulative grade point average until their undergraduate degree is awarded. A student may apply for early admission using the Graduate School application (<http://www.gradschool.unh.edu/apply.php>). Students will follow the standard MPP curriculum beginning in the fall following completion of their undergraduate degree.

Programs

- Public Service and Nonprofit Leadership Major (B.A) (p. 391)
- Political Economy Minor (p. 392)
- Political Science Minor (p. 392)
- Public History Minor (p. 392)

Faculty

Public Service and Nonprofit Leadership Faculty (<http://manchester.unh.edu/academics/degree-programs/politics-society/#unhstyleCollapsePane73>)

Public Service and Nonprofit Leadership Major (B.A)

<https://manchester.unh.edu/academics/degree-programs/public-service-and-nonprofit-leadership>

Description

The bachelor of arts degree in public service and nonprofit leadership provides an interdisciplinary, applied approach to the study of public and not-for-profit institutions and actors. Students explore the ways that leaders and citizens work in and around governments to address the complex problems confronted by N.H. and the U.S. today.

Students may apply a total of two courses in sociology, economics, or history toward the major, and may earn credit for up to a semester of coursework with an internship in Washington, D.C. through the Washington Center Program. An accelerated Master in Public Policy track is available for eligible students.

Public Service majors develop essential, transferable skills in critical thinking, problem solving, communication, teamwork, leadership, civic and community engagement, and research and data analysis. Coursework emphasizes experiential learning, such as interning at the N.H. State House or local law firms and hands-on service learning at a range of not-for-profit organizations in health, social services, and the arts. All students must undertake at least one semester-long internship and at least one independent research project to be presented at the UNH Undergraduate Research Conference.

Public service and nonprofit leadership graduates can pursue careers in state and local government, law, advocacy, non-profit organizations, journalism, education, and more, and are prepared to pursue graduate studies in law, public policy, public administration, community development, education, social work, and public health.

Requirements

Students must complete 128 credits to graduate, including 44 credits in the public service and nonprofit leadership major. Students must

maintain an overall cumulative GPA of 2.0 and a cumulative GPA in the major of 2.0. No credit toward the major will be given for any course in which the student receives a grade of less than C-. Students also must fulfill the UNH Discovery Program requirements. Up to three courses may be used toward both the public service and nonprofit leadership major and UNH Discovery Program requirements. Transfer students must take at least 28 credits in the major at UNH Manchester.

Code	Title	Credits
Required Courses		
POLT 402	American Politics and Government	4
HIST 595	Explorations (Activism in America)	4
POLT 500	American Public Policy (US Public Policy)	4
PS 515	New Hampshire Politics in Action	4
POLT 595	Smart Politics (Research Methods)	4
PS 701	Senior Project and Interdisciplinary Seminar in Politics and Society	4
Any five of the following PS or POLT courses ¹		20
PS 407	Politics, Law and Contemporary Society	
PS #501	Social and Political-Economic Theory	
PS 502	Political Psychology	
PS #503	Political Theory and Historical and Social Context	
PS #504	Empire, Democracy and War	
PS 505	Political Violence and Terrorism	
PS #506	Civil Society and Public Policy	
PS 507	Justice Law and Politics	
PS 508	Supreme Court in US Society	
PS 509	Political and Social Change in Developing Countries	
PS 510	Politics of Food	
PS 511	Women and War	
PS #512	People on the Move: Immigration and Refugee Policy in Global Perspective	
PS 514	Model United Nations	
PS 515	New Hampshire Politics in Action	
PS 520	Globalization: Politics, Economics and Culture	
PS 651	Selected Topics Politics and Society	
PS 695	Politics and Society Independent Study	
PS 702	International Relations: Interdisciplinary Approach	
PS #703	Dictatorship and Democracy	
POLT 500	American Public Policy	
POLT 507	Politics of Crime and Justice	
POLT 509	Managing Bureaucracy in America	
POLT 521	Rights and the Political Community	
POLT #522	Dissent and the Political Community	
POLT 560	World Politics	
POLT 701	Courts and Public Policy	
POLT 750	Politics of Poverty	
Total Credits		44

¹ Up to TWO SOC, ECN, or HIST courses may substituted for PS/POLT courses, *with approval from the program coordinator*. Only one 400-level course will be accepted; one course must be 700 level.

For more information, contact program coordinator Stephen Pimpare at stephen.pimpare@unh.edu; or contact the Office of Admissions (unhm.admissions@unh.edu), (603) 641-4150.

Political Economy Minor

<https://manchester.unh.edu/academics/degree-programs/political-economy-minor>

Description

Students interested in pursuing a career in government, business, communications, or the law can add a breadth of perspective through the political economy minor.

Requirements

The political economy minor consists of five courses (20 credits total). The minimum grade requirement is C- per course. Any grade lower than a C- will not count toward the minor. Students wishing to use transfer credits from abroad or other universities should meet with the political economy minor supervisor, Stephen Pimpare (stephen.pimpare@unh.edu), to determine eligibility toward the minor.

Code	Title	Credits
Select five of the following, with no more than three from the same subject area and no more than three 400 level courses:		
ECN 410	History of Literary Economics	20
ECN 411	Introduction to Macroeconomic Principles	
ECN 412	Introduction to Microeconomic Principles	
ECN 635	Money, Banking and Macroeconomic Activity	
ECN 640	Business Law and Economics	
ECN 650	Economics for Managers	
POLT 401	Politics and Society	
POLT 403	United States in World Affairs	
POLT 500	American Public Policy	
POLT 560	World Politics	
POLT 567	Politics of Global Resources	
POLT 750	Politics of Poverty	
POLT 762	International Political Economy	
PS #501	Social and Political-Economic Theory	
PS 509	Political and Social Change in Developing Countries	
PS 510	Politics of Food	
PS 514	Model United Nations	
PS 520	Globalization: Politics, Economics and Culture	
PS 702	International Relations: Interdisciplinary Approach	
Total Credits		

Substitutions are permitted by permission of minor supervisors, Stephen Pimpare (stephen.pimpare@unh.edu) and Tom Birch (tom.birch@unh.edu).

For more information, contact Stephen Pimpare at Stephen.Pimpare@unh.edu or Tom Birch at Tom.Birch@unh.edu.

Political Science Minor

<https://manchester.unh.edu/academics/degree-programs/political-science-minor>

Description

Students interested in pursuing a career in government, business, communications, or the law can add a breadth of perspective through the political science minor.

Requirements

The political science minor consists of five courses (20 credits total) that may span the sub-disciplines of American politics, international relations, comparative politics, political philosophy, and political sociology. Any courses with the political science (POLT) or politics and society (PS) course designations may be used toward the minor. No more than two courses may be taken at the 400 level.

The minimum grade requirement is C- per course. Any grade lower than a C- will not count toward the minor. Students wishing to use transfer credits from abroad or other universities should meet with the Public Service and Nonprofit Leadership minor supervisor, Melinda Negron-Gonzales, to determine eligibility toward the minor.

For more information, contact Melinda Negron-Gonzales at Melinda.Negron@unh.edu.

Public History Minor

<https://manchester.unh.edu/academics/degree-programs/public-history-minor>

Description

Public historians work on translating historical research and information to the broad public audience. The public history minor is designed to provide students with the skills and experience to work in museums, archives, libraries, historic sites and houses, non-profits and historical societies, corporations, and in educational and community programs.

Requirements

The minor is composed of five courses of 4 credits each, including an introduction to public history course and an internship, HIST 691 Internship, at a local historical site.

Code	Title	Credits
HIST 500	Introduction to Historical Thinking	4
HIST 595	Explorations	4
Select 8 credits of public history courses approved by minor supervisor at 500/600 level		8
HIST 691	Internship	4
Total Credits		20

For more information, contact Sonic Woytonik, minor supervisor, at kristen.woytonik@unh.edu.

Continuing Education, Summer Session, and January Term

Continuing education provides public access to higher education for individuals not formally admitted to a UNH degree program. Taking courses as a non-degree student is an excellent way to prepare for matriculation into a degree program, help advance or change careers, or study a topic of interest.

Non-Degree Student Status

Undergraduate

Undergraduate courses (numbered 200-799) are open to individuals with a high school diploma, GED, or home-schooled secondary education equivalency. Individuals may register for a maximum of 11 credits per semester.

Graduate

Graduate courses (numbered 800-999) are open to individuals with a baccalaureate degree from an accredited college or university. Individuals may register for a maximum of 8 credits per semester.

Full-Time Special Student Status

Undergraduate

Non-degree students who wish to register for 12 or more credits in a single semester must receive formal permission from UNH Undergraduate Admissions. Special tuition and fee rules apply. Please contact UNH Undergraduate Admissions at 603-862-1360 for more information on how to apply.

Graduate

Non-degree students who wish to register for 9 or more credits in a single semester must receive permission from The Graduate School. Students approved for this special status must pay full-time graduate tuition and fees at the time of registration. Please contact The Graduate School at 603-862-3000 for more information on how to apply.

NH Senior Citizen Tuition Waiver

New Hampshire residents who are age 65 or older and are not enrolled in a degree program are eligible to take a maximum of two credit-bearing courses (some exceptions apply) per fiscal year (Summer Session/Fall/January Term/Spring) tuition-free. Please visit <https://www.unh.edu/continuingeducation/undergraduate-coursework> for more information, under Registration.

Pre-Admission Program

The Pre-Admission Program allows students an opportunity to strengthen their academic credentials in preparation for admission to a baccalaureate program by completing coursework that satisfies both general education and introductory-level major requirements. Students complete two semesters in the program, register for up to 12 credits per semester, and then transfer to a baccalaureate program upon successful completion of the outlined criteria. For more information please visit <https://admissions.unh.edu/apply/non-traditional-students/how-to-apply/pre-admission-program>.

CATS Program

The CATS (Challenging Academically Talented Students) Program is open to highly motivated and academically strong high school juniors and

seniors who want to enrich their academic experience with a college-level course. Students may choose from freshman-level courses (400-500 numbered courses). For an application and more information, please visit <https://admissions.unh.edu/apply/cats-challenging-academically-talented-students-program>.

Prerequisites

Individuals are responsible for meeting all course prerequisites before registering for classes. Prerequisite information is included in undergraduate and graduate course descriptions.

Graduate coursework is advanced study and presumes completion of adequate preparation at the undergraduate level in the same or allied field in which the student wishes to pursue graduate coursework.

Academic Standards and Expectations

A cumulative grade-point average of 2.00 (C grade) is the minimum acceptable level for undergraduate work and 2.67 (B- grade) is the minimum acceptable level for graduate work at the University. The records of non-degree students are examined periodically and academically deficient students may be warned or excluded from registering. All non-degree students are expected to become familiar with and adhere to the current UNH Student Rights, Rules, and Responsibilities available online at <https://www.unh.edu/student/rights>.

Professional Development and Training

Professional Development and Training, an affiliate office of the Graduate School, serves individuals, businesses, and organizations by offering a wide range of non-credit professional development opportunities throughout the year. Programs are designed to assist professionals in developing new or advanced knowledge and skills in a variety of fields. Training is offered in Durham, Manchester, and Portsmouth, N.H. For more information, visit <https://training.unh.edu/>.

Summer Session

Summer Session provides a wide range of credit and non-credit courses, institutes, and programs in a variety of term lengths from May to August. From youth-enrichment programs to advanced-level institutes, Summer Session provides educational opportunities for learners of all ages. On-campus housing is available for students enrolled in summer credit courses. Please note: summer credit courses are held to the same academic standards as regular term courses but are typically offered at an accelerated pace. For more information, please visit www.unh.edu/summersession (<https://unh.edu/summersession>).

January Term

January Term is a three-week learning opportunity held during winter break. Online, on-campus, and study-away credit courses are available in a variety of academic disciplines at both the undergraduate and graduate levels. Because of the intensive course of study, students may register for only one course during January Term. For more information, visit <https://unh.edu/januaryterm/>.

<https://www.unh.edu/continuingeducation/university-coursework>

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Accounting and Finance (ACFI)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

ACFI 501 - Survey of Accounting

Credits: 4

Survey of basic accounting concepts, including exposure to financial statements, accounting processes, decision making, and budgeting. This course is designed for students pursuing a Business Administration minor or exploring basic accounting. No credit for students who have had ADMN 502. Not for Paul College students.

ACFI 620 - Topics in Accounting

Credits: 4

Special topics; may be repeated. Prereq: ACFI 621 or ACFI 723 depending on topics and junior standing.

ACFI 621 - Intermediate Financial Accounting I

Credits: 4

Examination of the nature and applicability of accounting theory and the conceptual framework of accounting. Development of the capacity to address and resolve issues and problems in financial reporting. Topics include valuation and reporting of current and operating assets, and revenue recognition. Prereq: ADMN 502. Students wishing to repeat ACFI 621 must request and obtain departmental approval.

ACFI 622 - Intermediate Financial Accounting II

Credits: 4

Selected topics within financial reporting such as accounting for leases, pensions, stock options, and deferred taxes. Focus on how and why these issues are accounted for in the manner prescribed by current GAAP.

ACFI 640 - Topics in Finance I

Credits: 2-4

Special topics; may be repeated for a maximum of 8 credits.

ACFI 640W - Topics in Finance I

Credits: 2-4

Special topics approved as Writing intensive may be repeated for a maximum of 8 credits. Topics include: A) Financial Scandals, Upheavals, and Crises..

Attributes: Writing Intensive Course

ACFI 650 - Wildcat Investment Fund**Credits: 2**

Students actively manage the Wildcat Fund, a donor-created fund which consists of cash and stocks. During weekly meetings, students present their stock selections to the group and debate the merits of the presented stocks. Trades are then made accordingly. An officer corps is responsible for structuring and coordinating the group. Students in good standing may retake course up to a maximum of 12 credits. Prereq: permission.

ACFI 701 - Financial Policy**Credits: 4**

Development of analytical tools and practical skills for recognizing and solving complex problems of business finance. Working-capital management, capital budgeting, cost of capital, capital structure, and dividend policy. Prereq: ADMN 570.

ACFI 702 - Investments Analysis**Credits: 4**

Security valuation, efficient markets, portfolio management, options, and alternative investments. Computer research topics. Prereq: ADMN 570.

ACFI 703 - International Financial Management**Credits: 4**

Financial management problems facing multinational firms. Primary focus on effects of currency denominations on financial decisions. Prereq: ADMN 570.

ACFI 704 - Derivative Securities and Markets**Credits: 4**

Derivative assets and markets, and their role in business decision-making and portfolio management. Emphasis on practical and theoretical aspects of hedging and speculating using futures and options for both commodities and financial assets, including their market mechanics. Prereq: ADMN 570.

ACFI 705 - Financial Institutions**Credits: 4**

Examination of financial institutions and markets. Emphasis on how institutions create value, the regulatory environment under which they operate, and the role of risk management. Prereq: ADMN 570. Only open to BusAdm: Finance majors. Writing intensive.

Attributes: Writing Intensive Course

ACFI 706 - Financial Modeling and Analytics**Credits: 4**

The main objective of the course is to bridge the gap between theory and practice by using software applications and real-world data to solve a variety of financial problems. The course is very 'hands-on' and is expected to help students develop skills that are useful in a variety of jobs in finance, accounting, insurance, and real estate. Prereq: ADMN 570.

ACFI 707 - Equity Analysis and Firm Valuation**Credits: 4**

This course is intended to provide practical tools for analyzing and valuing a company's equity. Primarily an applications course, it covers several valuation models such as market multiples and free cash flow models, and focuses on the implementation of finance theories to valuation problems. Prereq: ADMN 570.

ACFI 708 - Real Estate Finance**Credits: 4**

This course provides an introduction to residential and commercial real estate. Topics include market analysis, cash flows, debt and equity financing, valuation, and real estate investment trusts. Case studies, projects, and real world applications of the concepts learned are significant components of the course. Prereq: ADMN 570 or HMG 655.

ACFI 709 - Mortgage Banking and Fixed Income Securities**Credits: 4**

This course focuses on bonds and the bond market. While the cash flows of bonds are specified, their valuation is particularly challenging given interest rate movements, embedded optionality, and credit risk. As part of an examination of structured products, the course will examine the process of creating, valuing, and trading mortgages. Further, the course demonstrates the skills needed to manage fixed income portfolios in light of both client specific objectives and the market environment. Prereq: ADMN 570 or HMG 655 and ACFI 702 or permission.

ACFI 710 - Big Data in Finance**Credits: 4**

This course serves as an introduction to many aspects of big data utilization, specifically as it applies to finance. Topics typically include high frequency trading, stock market anomalies, data management, fintech innovations, and safety and ethics when working with big data. Programming languages common to finance, such as Stata, SAS, and Python, are learned and used to analyze and manipulate data. Prereq: ADMN 570.

ACFI 720 - Topics in Finance II**Credits: 4**

Special topics. Prereq: ADMN 570. May be repeated for a maximum of 16 credits.

ACFI 720W - Topics in Finance II**Credits: 4**

Special topics. Prereq: ADMN 570. May be repeated for a maximum of 16 credits. Writing intensive. Topics include: A) Financial Scandals, Upheavals, and Crises.

Attributes: Writing Intensive Course

ACFI 723 - Advanced Managerial Accounting Concepts and Applications**Credits: 4**

Builds on the basic managerial accounting course by continuing the theme of accounting as a management tool. Emphasis is on cost accounting as a source of data for measuring and improving the economic condition of the enterprise. Newly evolving management themes are integrated into the traditional topics of planning and control, cost analysis, overhead allocation, transfer pricing, and decision modeling. Prereq: ADMN 503.

ACFI 724 - Auditing**Credits: 4**

Philosophy and environment of auditing, with attention to an understanding of the major auditing concepts and objectives and its judgment process. Emphasis on the nature and economic purpose of audits, standards, professional ethics, auditors' legal liability, internal control, and audit evidence. Includes audit procedures, reports, and computer software. Prereq: ACFI 621. Writing intensive.

Attributes: Writing Intensive Course

ACFI 725 - Financial Statement Analysis**Credits: 4**

Methods and tools of analysis and interpretation of financial statement data. Use of financial information in a variety of decision making situations including a prediction of corporate earnings, debt ratings, and financial distress; lending decisions; risk analysis; and equity valuations. Prereq: ACFI 621 and senior standing.

ACFI 726 - Introduction to Federal Income Tax**Credits:** 4

Federal income tax concepts and law applicable to individuals. Coverage includes taxable income and deductions, passive activities, alternative minimum tax, property transactions and compensation. Prereq: ADMN 502.

ACFI 740 - Topics in Accounting II**Credits:** 4

Special topics. Prereq: ACFI 621 or 723, depending on topics, and senior standing.

ACFI 750 - Internships in Accounting**Credits:** 1-4

Accounting fieldwork in a business or other type of organization. Supervision provided by the organization, and consultation provided by the faculty sponsor. Written report required. Course credits vary according to the nature of the fieldwork, to be determined by the faculty sponsor. Prereq: seniors in high standing; permission. May be repeated up to a maximum of 12 credits. Cr/F.

ACFI 751 - Internships in Finance**Credits:** 1-4

Finance fieldwork in a business or other type of organization. Supervision provided by the organization, and consultation provided by the faculty sponsor. Written report required. Course credits vary according to the nature of the fieldwork, to be determined by the faculty sponsor. Prereq: seniors in high standing; permission. May be repeated up to a maximum of 12 credits. Cr/F.

ACFI 752 - Independent Studies in Accounting**Credits:** 1-4

Student-designed individual research projects, approved by a faculty sponsor. Paper required. Course credits vary according to the nature of the project, to be determined by the faculty sponsor. Prereq: seniors in high standing; permission. May be repeated up to a maximum of 12 credits.

ACFI 753 - Independent Studies in Finance**Credits:** 1-4

Student-designed individual research projects, approved by a faculty sponsor. Paper required. Course credits vary according to the nature of the project, to be determined by the faculty sponsor. Prereq: seniors in high standing; permission. May be repeated up to a maximum of 12 credits.

ACFI 754 - Honors Seminar in Accounting and Finance**Credits:** 4

Seminar discussions of advanced readings in accounting and finance. For seniors with standing in the honors program.

ACFI 799 - Honors Thesis/Project in Accounting**Credits:** 4-8

Supervised research leading to the completion of an honors thesis or project in accounting; required for graduation from the honors program in administration for students in the accounting option. Prereq: permission of director of undergraduate programs and Accounting and Finance department chair.

Administration (ADMN)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

ADMN 400 - Introduction to Business**Credits:** 4

This course will introduce students to business organizations, the business disciplines and critical issues in contemporary business. The priority will be in having students develop strong intellectual foundations in business, knowledge of core disciplines of business, and an awareness of businesses' role in the economy and in the larger society. The course will include once a week lectures and also small group discussion sessions. The lectures will be organized by the lead PAUL faculty person and include visits and discussions with executives from New Hampshire companies. Writing intensive.

Attributes: Writing Intensive Course**ADMN 403 - Computing Essentials for Business****Credits:** 1

Self-paced course covering the fundamental skills and proficiency of general business software applications. Topics will include word processing and spreadsheet applications. Cr/F.

ADMN 410 - Management Information Systems**Credits:** 4

This course provides an introduction to computer literacy, basic computer hardware and software concepts, business applications of information technology and computer ethics. Hands-on exercises include spreadsheets, databases and web pages. Students registering for ADMN 410 are expected to be able to bring a laptop computer to each class session running the Windows version of Microsoft Office Professional (including Microsoft Access). Prereq: ADMN 403.

ADMN 420 - Business Statistics**Credits:** 4

Introductory coverage of statistical methods for managerial decision-making: probability, descriptive and inferential statistics, and regression. Quantitative techniques common to many introductory statistics courses are covered, but the emphasis is on understanding concepts such as uncertainty, inferences from sample data, and model formulation, and on utilizing these techniques as aids in decision-making. No credit for students who have had ADM 430; BIOL 528; EREC 525; HHS #540; MATH 439; MATH 539; MATH 644; PYSC 402; SOC 502. Prereq: ADMN 403; MATH 420 or 424A.

ADMN 444 - Business for People, Planet, and Profits**Credits:** 4

Many experts and practitioners have realized that the traditional approaches of government and the non-profit sector will not - alone - be enough to solve the myriad of social and environmental challenges facing the world. Rather than seeing big business as "part of the problem" many are considering how the immense power of the private sector can contribute to addressing social and environmental issues. This course will allow students to explore the growing phenomenon of "socially and environmentally conscious capitalism," a more considered type of capitalism with the potential to be a platform for social and environmental change.

Attributes: Social Science (Discovery); Inquiry (Discovery); Writing Intensive Course**ADMN 502 - Financial Accounting****Credits:** 4

Fundamentals of financial accounting concepts and procedures for analyzing economic events and the preparation and use of financial statements. No credit for students who have taken ACFI 501.

ADMN 503 - Managerial Accounting**Credits: 4**

The use of information by managers to (1) determine the cost and profitability of the organization's products or services; (2) plan, control, and evaluate routine operations; and (3) make special non-routine decisions. The demand for managerial accounting information is derived from an integrated treatment of organizational objectives, an orientation to customers, and a focus on activities as the unit of analysis for measurement of cost, quality, and time. Prereq: ADMN 502.

ADMN 570 - Introduction to Financial Management**Credits: 4**

The investments, financing, and dividend decisions of the firm in a global setting. Topics include capital budgeting, designing and issuing securities, manager performance evaluation, resolution of agency problems, and working capital management. Open to PAUL majors only. Prereq: ECON 401. Pre- or Coreq: ADMN 420, ADMN 502; ECON 402.

ADMN 575 - Behavior in Organizations**Credits: 4**

Behavioral science concepts applied to work settings. Focus on understanding and analyzing individual beliefs, values, goals, perceptions, motivation, commitment, and decision making; group structures and processes (interpersonal skills, communication, conflict resolution, leadership, and team work); organizational control systems (rewards, task design, performance appraisal); outcomes (satisfaction and development of the person as well as the organization); and organizational change. No credit for students who have already had MGT 580. Prereq: ADMN 400, ADMN 403, ADMN 502. Writing intensive.

Attributes: Inquiry (Discovery); Writing Intensive Course

ADMN 580 - Quantitative Decision Making**Credits: 4**

Introduction to the use of quantitative tools in the decision-making process of an organization. Planning and operational problems in the manufacturing and services sectors are emphasized. Topics include forecasting, capacity planning, optimization, project scheduling, simulation and risk analysis, quality, inventory management, and waiting lines. Open to PAUL majors only. Prereq: ADMN 420, ADMN 503.

ADMN 585 - Marketing**Credits: 4**

Covers marketing as the process of planning and developing goods and services to satisfy the needs of target customers: consumers, other businesses, institutions. Focus on how marketing contributes to the firm's goals through product planning, pricing, promotion, and distribution policies, through both digital and traditional channels. Open to PAUL majors only. No credit for students who have had MKTG 550 or HMG 600. Prereq: ADMN 400; ECON 401.

ADMN 598 - Topics**Credits: 1-4**

Special topics; may be repeated up to a maximum of 12 credits. Prereq: permission. Cr/F.

ADMN 685 - Study Abroad**Credits: 16**

Open to students studying abroad in the discipline as approved by the department chair and Undergraduate Programs Office. Special fee. Cr/F. **Co-requisite:** INCO 588

Attributes: World Cultures(Discovery)

ADMN 686 - Study Abroad**Credits: 16**

Open to students studying abroad in the discipline as approved by the department chair and Undergraduate Programs Office. Special fee. Cr/F. **Co-requisite:** INCO 588

ADMN 700 - PAUL Assessment of Core Knowledge**Credits: 0**

One of the learning objectives in the Business Administration Program is that all students will graduate with an understanding of these core knowledge assembled from the various disciplines that contribute courses to the program. We assess this learning as part of our Assurance of Learning Program. The zero credit course provides an administrative mechanism for accomplishing this goal. Permission required. Cr/F.

Co-requisite: ADMN 703

ADMN 703 - Strategic Management: Decision Making**Credits: 4**

Capstone course: Problem-solving, decision-making, and strategic thinking relative to managerial, economic, ethical, legal, political, social, and technological aspects of an organization's environment. Integrates the functional discipline skills within the role of the general manager as leader and chief strategist, organizational builder and doer. Case discussion and analysis, industry and competitive analysis, environmental scanning, industry simulation, strategic audit, stakeholder analysis, values, ethics and social issues management within the public policy process are important course components. Open to PAUL majors only. Prereq: ADMN 570; ADMN 575; ADMN 580; ADMN 585; and senior standing.

Co-requisite: ADMN 700

ADMN 798 - Topics**Credits: 1-4**

Special topics; may be repeated up to a maximum of 12 credits. Prereq: permission.

ADMN 798W - Topics**Credits: 1 or 4**

Special topics; may be repeated up to a maximum of 12 credits. Prereq: permission. Writing intensive.

Attributes: Writing Intensive Course

ADMN 799 - Honors Thesis/Project**Credits: 4-8**

Supervised research leading to the completion of an honors thesis or project; required for graduation from the honors program in administration. Prereq: permission of director of undergraduate programs and department chair. Writing intensive.

Attributes: Writing Intensive Course

Administration-UNHM (ADM)

ADM #550 - Business Law**Credits: 4**

This course explores the legal environment in which businesses operate and studies the interaction between business and the legal system. Students examine various areas of the law which are integral to operating a business enterprise. Topics include contracts, torts, agency, Uniform Commercial Code, ethical and criminal implications of business actions, property laws, and the legal aspects of different business entities. Business owners, managers, accountants, paralegals, and all those seeking to gain or broaden their general understanding of the legal system should benefit from this course. Prereq: ADM 400. Business Admin majors only.

ADM 685 - Applications in Business Management**Credits:** 4

Selected topics. Topics will vary. Barring duplication of subject, may be repeated for credit.

ADM 695 - Independent Study in Business**Credits:** 1-4

Independent study exploring a special topic emphasizing the managerial, organizational, strategic, political or economic context(s) within which business decisions are made. Prereq: ADM 400 and permission of instructor. May be repeated for a maximum of 8 credits.

Aerospace Studies (AERO)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

AERO 301 - Leadership Laboratory**Credits:** 0

Taken by all AFROTC cadets throughout enrollment in AFROTC. Command and staff leadership experiences in cadet corps. Air Force customs and courtesies, drill and ceremonies, career opportunities, and life and work of the junior officer. Student leadership potential developed in a practical, supervised laboratory. Cr/F.

AERO 415 - Heritage and Values of the United States Air Force I**Credits:** 2

Heritage and Values of the United States Air Force I, is a survey course designed to introduce students to the United States Air Force and provides an overview of the basic characteristics, missions, and organization of the Air Force.

AERO 416 - Heritage and Values of the United States Air Force II**Credits:** 2

Heritage and Values of the United States Air Force II, is a survey course designed to introduce students to the United States Air Force and provides an overview of the basic characteristics, missions, and organization of the Air Force. This is a continuation of AERO 415.

AERO 541 - Team and Leadership Fundamentals I**Credits:** 2

Team and Leadership Fundamentals I, focuses on laying the foundation for teams and leadership. The topics include skills that will allow cadets to improve their leadership on a personal level and within a team. The courses will prepare cadets for their field training experience where they will be able to put the concepts learned into practice. The purpose is to instill a leadership mindset and to motivate sophomore students to transition from AFROTC cadet to AFROTC officer cadet.

AERO 542 - Team and Leadership Fundamentals II**Credits:** 2

Team and Leadership Fundamentals II, focuses on laying the foundation for teams and leadership. The topics include skills that will allow cadets to improve their leadership on a personal level and within a team. The course will prepare cadets for their field training experience where they will be able to put the concepts learned into practice. The purpose is to instill a leadership mindset and to experience where they will be able to put the concepts learned into practice. The purpose is to instill a leadership mindset and to motivate sophomore students to transition from AFROTC cadet to AFROTC officer candidate. This is a continuation of AERO 541.

AERO 671 - Leading People and Effective Communication I**Credits:** 4

Leading People and Effective Communication I, teaches cadets advanced skills and knowledge in management and leadership. Special emphasis is placed on enhancing leadership skills and communication. Cadets have an opportunity to try out these leadership and management techniques in a supervised environment as juniors and seniors.

AERO 672 - Leading People and Effective Communication II**Credits:** 4

Leading People and Effective Communication II, teaches cadets advanced skills and knowledge in management and leadership. Special emphasis is placed on enhancing leadership skills and communication. Cadets have an opportunity to try out these leadership and management techniques in a supervised environment as juniors and seniors. This is a continuation of AERO 671.

AERO 681 - National Security Affairs/Preparation for Active Duty I**Credits:** 4

National Security Affairs/Preparation for Active Duty I, is designed for college seniors and gives them the foundation to understand their role as military officers in American society. It is an overview of the complex social and political issues facing the military profession and requires a measure of sophistication commensurate with the senior college level. The final semester provides information that will prepare the cadets for Active Duty.

AERO 682 - National Security Affairs/Preparation for Active Duty II**Credits:** 4

National Security Affairs/Preparation for Active Duty II, is designed for college seniors and gives them the foundation to understand their role as military officers in American society. It is an overview of the complex social and political issues facing the military profession and requires a measure of sophistication commensurate with the senior college level. The final semester provides information that will prepare the cadets for Active Duty. This is a continuation of AERO 681.

AERO 695 - Officer Internship (Air Force)**Credits:** 4

Experiential learning through class and field work in a military environment. Written analysis required. Prereq: AERO 671 (maybe taken concurrently). Permission of department chair required. For AFROTC cadets only. Cr/F.

AERO 796 - AFROTC Internship**Credits:** 1-4

This internship is an Air and Space Studies program which prepares students for careers as Air Force Officers by providing experiential learning in an AFROTC detachment. History or Political Science majors are preferred. The internship is supervised by an Air Force Officer. By permission only. Prereq: AERO 415 and AERO 416, AERO 541 and AERO 542, and AERO 671 and AERO 672.

Africana & American Studies (AFAM)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

AFAM 690 - Study Abroad in Ghana**Credits:** 16

Spring semester at the University of Ghana (Legon, Ghana) for juniors and seniors, with coursework available in a wide range of disciplines. Students must be matriculated in a four-year degree program, have a GPA of at least 3.0 have a declared major, and have completed at least 32 hours of credit. Students must attend fall orientation sessions. Consult the Ghana Program Advisor in the Center for the Humanities, Huddleston Hall. Course fee required. Cr/F.

Co-requisite: INCO 588**Attributes:** World Cultures(Discovery)**AFAM 695 - Independent Study in Ghana****Credits:** 1-4

Independent study for students in the UNH program in Ghana.

AFAM 795 - Independent Study**Credits:** 1-8

Open to qualified sophomores, juniors, and seniors. May include research project, fieldwork or a relevant internship. To be elected only with permission of the coordinator and with qualified supervision. May be repeated up to a maximum of 8 credits.

Agricultural Mechanization (AM)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

AM 451 - Welding/Fabrication Technology**Credits:** 4

Processes and procedures of welding including: Shielded Metal Arc Welding (SMAW), Shielded Metal Arc Cutting (SMAC), Oxyacetylene Welding (OAW), Oxy-Fuel Gas Cutting (OFC-A), Gas Metal Arc Welding (GMAW), Plasma Arc Cutting (PAC), and Gas Tungsten Arc Welding (GTAW). Welding metallurgy and control of distortion. Special fee. Prereq: permission. 2 lec/2-hr rec.

AM 461 - Internal Combustion Engines I**Credits:** 4

Internal combustion engines (spark-ignited and diesel) and their subsystems with emphasis on their design, how they function, preventive maintenance, and troubleshooting. 2 lec/2-hr rec.

AM #462 - Internal Combustion Engines II**Credits:** 4

Advanced engine principles and theory. Detailed major failure analysis and overhaul techniques. Prereq: permission, AM 461 or EDUC 461. 2 lec/2-hr rec.

AM 470 - Residential Electricity**Credits:** 2

Electrical principles, laws, and installation with emphasis on the "National Electrical Code." While modeled at the residential level, concepts and terminology will be applicable to the commercial and light industrial sectors as well. Concepts and methodologies will be supported with design and when appropriate, hands on application to enhance the learning environment. 2 lec/2-hr rec. (half semester course.)

AM 591 - Studies in Agricultural Mechanization**Credits:** 1-4

Students who have the ability and adequate preparation to work independently may propose a contract to design a course or research project on a topic not available through existing course offerings. The purpose of this research is to explore new areas in the student's field of study or to pursue course material in greater depth. Work is supervised by an appropriate faculty/staff member; credit varies depending on the proposed project/research. Areas may include welding, engines, building construction, electricity, or computers.

AM 592 - Studies in Agricultural Mechanization**Credits:** 1-4

Students who have the ability and adequate preparation to work independently may propose a contract to design a course or research project on a topic not available through existing course offerings. The purpose of this research is to explore new areas in the student's field of study or to pursue course material in greater depth. Work is supervised by an appropriate faculty/staff member; credit varies depending on the proposed project/research. Areas may include welding, engines, building construction, electricity, or computers.

American Sign Language (ASL)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

ASL 435 - American Sign Language I**Credits:** 4

Introduction to American Sign Language with emphasis on visual receptive and expressive use of language, as well as providing opportunities for other forms for visual communication such as facial expression, mime, and gesture. Participants develop their skills through videotapes, classroom participation, and readings that cover issues important to the Deaf community. A weekly, one-hour language laboratory is required as part of this course. Limited to 15 students. Special fee. No credit if credit has been received for COMM 533.

ASL 436 - American Sign Language II**Credits:** 4

Continuation of ASL 435 and expansion on concepts and principles. Focus on more advanced vocabulary and patterns of grammar; use of space and modulation of signs to denote aspects of time and location; and additional information on Deaf culture. A weekly one-hour language laboratory is required as part of this course. Prereq: ASL 435 or program evaluation. Limited to 15 students. No credit if credit has been received for COMM 733.

ASL 531 - American Sign Language III**Credits:** 4

Continuation of ASL 436. Expands on groundwork and grammatical principles established in ASL I and II. Introduces the sociolinguistics aspects of ASL as it functions within the deaf cultural context. Limited to 15 students. Prereq: ASL 436 or program evaluation. Lab.

ASL 532 - American Sign Language IV**Credits:** 4

Continuation of ASL 531. Expands on the groundwork and grammatical principles established in ASL I, II, and III. Introduces the sociolinguistic aspects of ASL as it functions within the deaf cultural context. Areas of investigation include use of formal versus informal sign register; sign variation by region, age, and gender; social factors that give rise to code switching; and political and cultural evolution of the U.S. deaf community. Taught in the target language using the direct experience method. Prereq: ASL 531 or program evaluation. Limited to 15 students. Lab.

ASL 599 - Special Topics in American Sign Language/Deaf Studies**Credits:** 1-4

Selected topics related to American Sign Language and deaf studies that vary by semester. Description available in departmental office during preregistration. May be repeated for credit (maximum of 8 credits) if topics differ.

ASL 621 - Advanced American Sign Language Discourse I**Credits:** 4

Focuses on the use of ASL discourse in formal as well as informal settings. Students explore the genres of public speaking, artistic expression, formal discussion, interview, and narrative. Development of ASL vocabulary in specialized areas not covered in previous courses. Prereq: ASL 532. Lab.

ASL 622 - Advanced American Sign Language Discourse II**Credits:** 4

In this advanced course, students give two PowerPoint presentations on their research on two selected cutting-edge/current Deaf Studies topics, and are assessed on itemized public speaking skills, grammatical features (linguistics) studies that are a culmination of previous ASL courses, and pragmatic language functions. These presentations are to use high/academic register, appropriate for a large academic audience, demonstrating sensitive awareness of visual acuity and its impact on signing production. Prereq: ASL 621. Lab.

American Studies (AMST)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

AMST #444B - New Orleans: Place, Meaning, and Context**Credits:** 4

Course uses literature, essays, film, music, debate, and discussion, to explore the topics of place, history, people, politics, art and literature, and music. Lectures, discussion, assignments, and group projects will touch on issues regarding race, poverty, power, social mobility, gender roles, crime, corruption, energy, and the environment. Special fee. Writing intensive.

Attributes: Humanities(Disc); Inquiry (Discovery); Writing Intensive Course

AMST #444E - Fly Fishing and the American Experience**Credits:** 4

The practice of fly fishing may seem like a rather specialized topic for a semester-long course, but it is truly an interdisciplinary pursuit that is based upon a rich literary heritage. The class will begin with readings, while using film, demonstrations, field trips, and service learning, to help define the extent to which fly fishing in America has become intertwined with literature, art, popular culture, biology, environmentalism, and business/technology. On one level, students will learn about fly fishing techniques, stream ecology, and local rivers. And on another level, they will see how the American landscape and ways of thinking have created something quite distinct from its European antecedents. Writing intensive.

Attributes: Humanities(Disc); Inquiry (Discovery); Writing Intensive Course

AMST #501 - Introduction to American Studies**Credits:** 4

An introduction to the basic methods used in the interdisciplinary study of history, literature, arts, and other aspects of the life and culture in the United States, with a special focus on a local New England sub-region: the Piscataqua river, Manchester, Boston, Portland, and the White Mountains, with an emphasis on the multiracial, multilingual, and multiethnic nature of New England culture. Disciplinary approaches drawn from literature, history, environmental studies, folklore, material culture, art history, architecture, film, anthropology, and sociology. May include guest lectures, field work, trips. Required for students minoring in American studies.

Attributes: Humanities(Disc)

AMST 501W - Introduction to American Studies**Credits:** 4

An introduction to the basic methods used in the interdisciplinary study of history, literature, arts, and other aspects of the life and culture in the United States, with a special focus on a local New England sub-region: the Piscataqua river, Manchester, Boston, Portland, and the White Mountains, with an emphasis on the multiracial, multilingual, and multiethnic nature of New England culture. Disciplinary approaches drawn from literature, history, environmental studies, folklore, material culture, art history, architecture, film, anthropology, and sociology. May include guest lectures, field work, trips. Required for students minoring in American studies. Writing intensive.

Attributes: Humanities(Disc); Writing Intensive Course

AMST #604 - Landscape and American Culture**Credits:** 4

Interdisciplinary study of the perception, representation, and/or construction of nature. Topics vary from year to year and may include: landscapes in nineteenth-century literature and art, colonial mapping of the Americas (traditions of writing and cartography), Native American traditions of land perception, and the twentieth-century emergence of eco-criticism. Writing intensive.

Attributes: Writing Intensive Course

AMST 614 - Native American Studies Topics**Credits:** 4

The multidisciplinary study of the histories, cultures, and representations of indigenous peoples. Topics vary and may include Native American/Euro-American interactions under colonialism, the so-called "Era of Assimilation," and contemporary issues of sovereignty. May be repeated for a maximum of 8 credits if the subject matter is different.

AMST 615 - Asian American Studies Topics**Credits: 4**

The multidisciplinary study of Asian American literature, culture, theory, and history. Perspectives may be drawn from gender studies, anthropology, cultural studies, film studies, and medicine. Topics vary and may include the study of contemporary fiction and film, representations of gender, of race and cultural pathologies, and of the ethnic body. May be repeated for a maximum of 8 credits if the subject matter is different.

AMST 620 - Internship**Credits: 1-8**

Supervised internship with a governmental agency, private corporation, philanthropic institution, library, archives, museum, historical society, publishing company, or other institution seeking individuals interested in historical research, community development, or careers in education. Repeatable for a maximum of 8 credits. Permission required. Cr/F.

AMST 696 - Special Topics**Credits: 4**

Focused study of an issue, problem, or theme in American Studies. Topics vary. For example: Black Protest in the 1960's, the rise of consumer culture, domestic art, architecture and suburban planning. Barring duplication of subject, course may be repeated for credit. For details see the coordinator. Prereq: AMST #501, and another AMST course, or permission. Writing intensive.

Attributes: Writing Intensive Course

AMST 697 - Seminar in American Studies**Credits: 4**

Open to qualified juniors and seniors, with permission of the coordinator and the instructor. Intensive study of a specialized topic that varies from year to year. Enrollment in the seminar is limited to 15 so that all students can take an active part in the discussion and work closely with the instructor on their papers. Barring duplication of subject, course may be repeated for credit. For details see the coordinator. Prereq: a grade of B or better in AMST #501, completion of at least two other courses in the minor, permission. Not offered every year.

AMST 795 - Independent Study**Credits: 1-8**

Open to qualified juniors and seniors. May include fieldwork or an internship at a museum, library, historical society, etc. To be elected only with permission of the coordinator and with qualified supervision. May be repeated up to 8 cr.

Analytics (DATA)

DATA 557 - Introduction to Data Science and Analytics**Credits: 4**

An introduction to data science and analytics. The landscape of analytics, including an overview of industries and sectors using analytics or expected to use analytics in the near future. Data generation, data management, data cleaning, and data preparation. Ethical use of data. Focus on visual and exploratory analysis. Project-based, with an emphasis on collaborative, experiential learning. Programming and statistical software will be used, but previous experience is not required.

Attributes: Environment, TechSociety(Disc)

DATA 674 - Predictive and Prescriptive Analytics I**Credits: 4**

A first course in predictive and prescriptive analytics. Supervised learning models including linear models and CART models. Model assessment and scoring methods, including cross-validation. Regularization and model tuning. Unsupervised learning models including k-means clustering. Project-based, with an emphasis on collaborative, experiential learning. Statistical software will be used and programming required. Prereq: MATH 425, COMP 490, DATA 557, or permission of the instructor.

DATA 675 - Predictive and Prescriptive Analytics II**Credits: 4**

A second course in predictive and prescriptive analytics. Time series analysis and model ensembles. Bootstrapping, simulation, optimization. Monte Carlo methods. Project-based, with an emphasis on collaborative experiential learning. Statistical software will be used and programming required. Prereq: DATA 674 or permission of the instructor.

DATA 690 - Internship Experience**Credits: 3**

A field-based learning experience via placement in a business, non-profit, or government organization using analytics. Under the guidance of a faculty advisor and workplace supervisor, students gain practical experience solving problems and improving operational processes using analytics. Prereq: UMST 599: Internship and Career Planning Seminar.

DATA 750 - Neural Networks**Credits: 4**

Artificial neural networks power the recent advances in computer vision, speech recognition, and machine translation. This is a first course on neural networks with a focus on applications in computer vision and natural language processing. Topics will include generic feedforward neural networks, convolutional neural networks for computer vision tasks, and recurrent neural networks with application to natural language processing, with other topics to be selected based on the interests of the instructor and the class. Prereq: MATH 425, MATH 545 or MATH 645, COMP 490, or permission of the instructor. Also listed as COMP 750.

DATA 757 - Big Data**Credits: 4**

A first course in large-scale analytics and data science. Characteristics of big data and the emerging software stack for working with massive datasets, including Hadoop and MapReduce. Algorithms for extracting information from massive datasets. A first course in linear algebra is not a prerequisite, but is recommended. Prereq: MATH 425, DATA 557, or instructor permission.

DATA 790 - Capstone Project**Credits: 4**

Under direction of a faculty mentor, students work in teams to find solutions to complex real-world problems using analytics. Projects may come from internal or external sources. Students define the problem, obtain the necessary data, develop suitable models and solutions, and present their results. Prereq: Senior standing in Analytics B.S. program.

DATA 796 - Data Analytics Lab Independent Study**Credits: 4**

This class is a student independent study centered around a faculty-facilitated but student-directed analytic project. The class requires competency in two areas for successful completion: Data collection/cleaning and data mining/analysis. Students will be responsible to apply modern analytical tools and techniques such as predictive modeling, segmentation, network analysis and others to real world problems and data. They will be required to present their findings during the course and at its completion as well as write a formal report of methods and findings with modern data visualizations synthesized throughout.

Animal Sciences (ANSC)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

ANSC 401 - Animals and Society**Credits: 4**

Through an interdisciplinary and historical lens, students delve into the interaction and interdependence of animals and people, the changes and patterns over time, and the resulting implications for the animal industry and the quality of life for animals, people, and the planet. Topics covered include agricultural production, organic farming, sustainability, global agriculture, Community Supported Agriculture (CSAs), research, nutrition, food safety, genetics, animal health, aquaculture, animal welfare, breeding, recreation, companionship, and the reproduction of domestic animals. What are the major changes in meat consumption by humans? What is the effect of these changes on the environment and large and small farm operations? What are the effects of biotechnological research performed on animals for human benefits? What is the difference between animal welfare and animal rights? Why should we care? In what ways does this affect us?

Attributes: Biological Science(Discovery); Discovery Lab Course

ANSC 402 - Horsemanship**Credits: 3**

For beginning, intermediate, and advanced riders. Lecture and lab (lesson) format. All levels will work on correct position for dressage and combined training with the integration of appropriate theory. All students are required to perform the following tasks independently: properly groom, tack and cool out their horses. Students should allow time before and after lab to do so. For the safety of horse and rider, there is a rider weight limit of 200 pounds for all mounted activities in the UNH Equine Program, including ANSC 402. There are other courses that provide students with opportunities for hands-on experience with horses. Students who exceed the weight limit for ANSC 402 are encouraged to contact Sarah Rigg at sarah.rigg@unh.edu to discuss other alternative courses. Special fee. May be repeated for a maximum of 15 credits. Lab. Prereq: permission.

ANSC 403 - Summer Horsemanship**Credits: 1**

For beginning and intermediate riders. Basics of balance seat, specializing in basic dressage and combined training. There is no lecture with this summer course. Limited number of students may stable their horses at the University. Special fee. May be repeated for a maximum of 18 credits. Prereq: permission.

ANSC 405 - Theory of Horsemanship**Credits: 2**

Principles and theory of horsemanship, dressage and jumping, including biomechanics of the horse and rider, rider position and aids, cross-country jumping and conditioning, and the horse's instincts, senses, behavior and training as they relate to riding. Online only.

ANSC 406 - Careers in Animal Science**Credits: 1**

Survey of various areas of animal and veterinary science and opportunities available. Cr/F.

ANSC 411 - Freshman Seminar in Equine Science**Credits: 1**

Seminar format class. This introductory level class provides students with an overview of the equine industry, its economic impact and pressures and the job opportunities available. Class also includes investigation of the requirements and options within the UNH Equine Program and exploration of the opportunities and resources available for students. Cr/F.

ANSC 419 - Horse Power**Credits: 4**

Students explore the enduring bond between the horse and man and the effect of that bond on civilization by considering: How has the horse and man's use of the horse shaped civilization and contributed to societal change? How has the progress of civilization and societal change affected the horse and its role in society? What does our use of the horse say about us as individuals and as a society? Cannot receive credit if credit received for ANSC #444B.

Attributes: Humanities(Disc)

ANSC 421 - Animal Agriculture Today**Credits: 4**

This course provides an overview of the scope and diversity of animal agriculture at the global, national and local levels. It also provides an introduction to the animal sciences through which students 1) learn basic animal science terminology 2) acquire an appreciation of the objectives of various animal enterprises and 3) gain understanding of contemporary trends, challenges and opportunities within animal agriculture. Special fee.

ANSC #444A - Animal Ethics: Your Child or Your Pet**Credits: 4**

Human attitudes toward other animals are generally divided into five categories: animal exploitation, animal use, animal welfare, animal rights, and animal liberation. While all five categories are examined, this course concentrates on the differences between animal welfare and animal rights. These two categories differ fundamentally on the basis of the ethical or moral status they give animals. Past human societies have justified both the worship of animals and the torture and sacrifice of animals to the gods. Animal rights believers rely on a rights-based philosophy, while animal welfare advocates concentrate on a utilitarian based set of values. Course concentrates on the application of these two ethical philosophies to current uses of animals such as the use of animals in research, the use of animals as food (factory farming), the production and use of transgenic animals, and the use of animals as organ donors for humans (xenotransplantation). Since animal rights is, in itself, not a discipline, students depend on information from other disciplines ranging from moral philosophy and ethics to history to genetics, production agriculture, and ethology. Writing intensive.

Attributes: Environment,TechSociety(Disc); Inquiry (Discovery); Writing Intensive Course

ANSC #444B - Horse Power: Transforming and Reflecting Civilization**Credits: 4**

Students explore the enduring bond between the horse and man and the effect of that bond on civilization by considering: How has the horse and man's use of the horse shaped civilization and contributed to societal change? How has the progress of civilization and societal change affected the horse and how its role in society? What does our use of the horse say about us as individuals and as a society? Writing intensive. Special fee.

Attributes: Humanities(Disc); Inquiry (Discovery); Writing Intensive Course

ANSC 500 - Equine Assisted Activities and Therapies**Credits: 4**

Comprehensive examination of Equine Assisted Activities and Therapies including types of therapeutic riding and its physical, cognitive, and emotional benefits for clients with a variety of disabilities. Topics include hippotherapy, therapeutic riding, equine-facilitated mental health, youth at risk, therapeutic vaulting, carriage driving, equipment needs/modifications, special considerations for selecting and training the therapy horse, and the role of the volunteer therapist and instructor. Students have the opportunity to work with horses and riders in the UNH Therapeutic Riding Program during labs, as well as view other programs on mandatory field trips. Special fee.

ANSC 504 - Equine Science**Credits: 4**

A fundamental equine science course including anatomy, sports medicine, nutrition and preventative care. Students present oral and written journal reviews on equine science topics pertinent to lecture. Prereq: BIOL 412.

ANSC 507 - Survey of Equine Training Techniques**Credits: 3**

Physiological development, control, and education; biting, lunging, driving, and equine gymnastics. Special fee. Lab.

ANSC 510 - Integration of Culture and Agriculture in Ireland: Past, Present, and Future**Credits: 2 or 4**

What was the worst natural disaster in 19th century Europe? What characterizes Ireland's agriculture in the 21st century? In this interdisciplinary course, students examine the cultural, historical, political, economical, and religious influences on Ireland's agriculture, fisheries, and forestry. The crowning experience of the course, a 10-day study abroad in late May, provides students with a window to the world as they experience the culture, agriculture, and topography of Ireland. Students will immerse themselves in local history and culture as they tour working agricultural farms, university research facilities, and cultural landmarks. Permission required. Not open to freshmen. Special fee. Writing intensive. 2 or 4 credits.

Co-requisite: INCO 589

Attributes: World Cultures(Discovery); Writing Intensive Course

ANSC 511 - Anatomy and Physiology**Credits: 4**

Discussion/comparison of the principles of mammalian form and function. Includes molecular and cellular mechanisms of major processes (such as muscle contraction, neural transmission, and signal transduction) and systematic aspects of the nervous, endocrine, cardiovascular, respiratory, gastrointestinal, and renal systems. Prereq: BIOL 411 and BIOL 412. Special fee. Lab. No credit if credit earned for BMS 507 and BMS 508; ZOO 518. Not open to freshmen.

ANSC 512 - Anatomy and Physiology**Credits: 4**

Discussion/comparison of the principles of mammalian form and function. Includes molecular and cellular mechanisms of major processes (such as muscle contraction, neural transmission, and signal transduction) and systematic aspects of the nervous, endocrine, cardiovascular, respiratory, gastrointestinal, and renal systems. Prereq: BIOL 411 and 412 and ANSC 511. Special fee. Lab. No credit if credit earned for BMS 507 and BMS 508. Not open to freshmen.

ANSC 520 - Classical Dressage Experience in Portugal**Credits: 2**

Concentrated study of the Portuguese method of classical dressage at L'Escola De Equitaco De Alcainca 'N Alcainca, Portugal. Affords students the opportunity to ride at a premiere center for equestrian art with a master of classical dressage and to experience the culture of Portugal. Offers full immersion in dressage riding, teaching, and training. Trip takes place over Spring Break. Weekly seminar held prior to departure. Special fee. Prereq: ANSC 402: Horsemanship at I-2 level or above. Permission required. May be repeated up to a maximum of 6 credits.

Co-requisite: INCO 589

ANSC 543 - Technical Writing in Animal Sciences**Credits: 2**

Emphasis on writing scientific articles and articles for the end user on subjects pertaining to the animal science industry. Students are expected to make several oral presentations. Resume preparation is also included. Prereq: ENGL 401 or equivalent; permission. Writing intensive.

Attributes: Writing Intensive Course

ANSC 600 - Field Experience**Credits: 1-4**

A supervised experience providing the opportunity to apply academic experience in settings associated with future professional employment and/or related graduate opportunities. Must be approved by a faculty adviser selected by the student. May be repeated to a maximum of 8 credit hours. Permission of supervising faculty member required. Cr/F.

ANSC 602 - Animal Rights and Societal Issues**Credits: 4**

To explore all aspects of human-animal interaction and welfare, emphasizing social, ethical, biological, historical and economic aspects of animal care and use. (Juniors and seniors only.) Special fee. Writing intensive.

Attributes: Writing Intensive Course

ANSC 605 - Poultry Production and Health Management**Credits: 4**

This course focuses on understanding how the management practices used in raising domestic poultry can promote the production of healthy birds. Discussion centers on chickens in both large and small commercial flocks. Topics covered include breed and stock selection, anatomy & physiology, hatchery and brooder management, commercially important diseases, biosecurity and preventative health care, applicable food safety practices, and welfare. Students will gain hands-on experience working with live poultry during this course. Prereq: ANSC 421, AAS 431, or permission.

ANSC 609 - Principles of Animal Nutrition**Credits: 4**

Applied animal nutrition and nutrient metabolism. Prereq: one year of chemistry; one semester of physiology.

ANSC 612 - Genetics of Domestic Animals**Credits:** 4

Application of basic and molecular genetics to the diagnosis and control of inherited diseases of domestic animals and application of quantitative genetics for the improvement of economically important traits of farm animals. Prereq: BIOL 411 or permission.

ANSC 615 - Dairy Farm Internship**Credits:** 14

An internship on a commercial dairy farm allowing the student day-to-day management of a herd of Holstein cows health and management (animal and financial) are studied. Homework and monthly exams. Dairy Management majors only. Permission required.

ANSC 620 - Equine Diseases**Credits:** 4

Provides an understanding of the normal versus the abnormal equine including recognition of clinical signs of the abnormal equine, diagnosis and treatment options. Knowledge of when to call a veterinarian and how to administer follow up care. Emphasis on preventative health care. Prereq: ANSC 504. Special fee. (Juniors and seniors only.)

ANSC 625 - Diseases of Small Ruminants, Swine, Poultry, and Camelids**Credits:** 4

This course focuses on concepts of health and disease as they relate to domestic small ruminants (goats and sheep), swine, poultry, and camelids (llamas and alpacas). Basic principles of disease diagnosis, transmission, treatment, and prevention are introduced and applied to specific disease conditions in these species. The course is divided into sections that focus on each group of animals and specific diseases are classified and taught based on the primary body system that is affected. Prereq: AAS 439, ANSC 511, ANSC 512.

ANSC 635 - Nonprofit Management for Agriculture Business**Credits:** 4

This course is designed to give students an opportunity to focus on the agriculture industry relative to specific operational topics for nonprofit businesses. Case studies will include therapeutic riding, agricultural nonprofits, animal welfare/rescue field, animal or agricultural educational programs and nonprofit foundations and the growing field of animal and plant therapy. Topics include; legal structure and organization, credentialing, developing a strategic plan, creating and managing a board of directors, staff and volunteer management, risk management and insurance, fundraising, marketing and public relations, using social media and public accountability. Special consideration will be given to understanding and utilizing financial statements to drive the business and fundraising efforts. The course will involve lecture and project management allowing student to examine similar agricultural business operations in order to enhance practical understanding of topics covered for a final project.

ANSC 640 - Principles of Riding Instruction**Credits:** 4

Introduction to the principles, theory and practice of Riding Instruction. Includes discussion of styles of learning and instruction as applied to a riding environment, student assessment, skill acquisition, lesson planning, horse selection and principles of group and private riding instruction. Students will use lab time to observe, assist and practice teaching in sections of ANSC 402, which will be matched according to their abilities and interests. Students will prepare for ARIA licensing examinations as part of class. Fall semester only. Lab. Prereq: ANSC 402 at Intermediate 1 or above, or permission. Writing intensive.

Attributes: Writing Intensive Course**ANSC 641 - Principles of Dressage Instruction****Credits:** 2

Advanced principles and theory of dressage and advanced concepts in teaching and coaching dressage. Students will use lab time to observe, assist and practice teaching in dressage-only sections of ANSC 402. Students will prepare for ARIA licensing examinations as part of class. Spring semester only. Lab. Prereq: ANSC 640.

ANSC 642 - Principles of Jumping Instruction**Credits:** 2

Advanced principles and theory of jumping and advanced concepts in teaching and coaching over fences in the arena and cross-country. Students use lab time to observe, assist and practice teaching in intermediate I and II level sections of ANSC 402. Lab. Prereq: ANSC 640. Offered spring semester of every odd numbered year.

ANSC 643 - Principles of Therapeutic Riding Instruction**Credits:** 4

Principles and theory of teaching therapeutic riding, including special considerations of teaching in a therapeutic environment and methods of instruction for individuals with a variety of disabilities. Lab consists of observing, assisting and practice-teaching in UNH Therapeutic Riding Program as preparation for PATH International instructor certification process which is done as part of this course. Spring semester only, biannually, odd numbered years. Prereq: ANSC 640 and ANSC 500.

ANSC 650 - Dairy Industry Travel Course**Credits:** 1

Extended field trip to a variety of dairy farms and dairy related businesses in the Northeast with students and faculty from other New England land grants. Includes discussion sessions, case study, problem solving, and journal report. Prereq: permission. May be repeated to a maximum of 2 credits. Special fee.

ANSC 665 - Principles of Horse Trials Management**Credits:** 2

Theory and hands-on involvement in the organizational process of managing an event competition. Topics will include budgeting, logistical needs, working with entries, sponsorship, awards, publicity, facilities management, course design and committee management. Students will actively participate in the management and preparation of the UNH Horse Trials, overseeing the committees working in the phases of the event and also performing other responsibilities. 1-credit, half semester course. (During the fall semester, the class will meet for the first half of the semester; during the spring semester, the class will meet for the second half of the semester)

ANSC 694 - Summer Cooperative for Real Education in Agricultural Management**Credits:** 4

SCREAM (Summer Cooperative for Real Education in Agricultural Management) is a course in which students perform the work and make financial and management decisions associated with the CREAM dairy herd. Students assume complete responsibility for the management and care of the 25-cow herd for the entire summer. SCREAM provides students with a unique experiential learning model that will help them understand how to work together to manage and operate a small business, the decision-making skills required in production agriculture, and the application of science to the management of a dairy herd. Prereq: upper-class standing, permission.

ANSC 695 - Supervised Teaching Experience**Credits:** 1-2

Participants are expected to perform such functions as leading discussion sections, directing and assisting in laboratories, and assisting students with their problems in courses that participants have completed successfully. Enrollment is limited to juniors and seniors who have a minimum 3.00 cumulative average. Prereq: permission of instructor and department chairperson. May be repeated up to a maximum of 4 credits. Cr/F.

ANSC 698 - Cooperative for Real Education in Agricultural Management (CREAM)**Credits:** 4

CREAM (Cooperative for Real Education in Agricultural Management) is a 2-semester course in which students perform the work and make the financial management decisions associated with the CREAM dairy herd. Students assume complete responsibility for the management and care of the 25-cow herd for the entire academic year. CREAM provides students with a unique experiential learning model that will help them understand how to work together to manage and operate a small business, the decision-making skills required in production agriculture and the application of science to the management of a dairy herd. Two semesters of 4 cr. each are required. Prereq: AAS 425 or permission.

ANSC 701 - Physiology of Reproduction**Credits:** 4

Comparative aspects of embryology, anatomy, endocrinology, and physiology of reproduction. Lab.

ANSC 708 - Ruminant Nutritional Physiology**Credits:** 3

Anatomy of the ruminant gastrointestinal tract, physiological factors related to rumen function, and microbial and whole-body metabolism of carbohydrates, protein, and lipids. Prereq: BMS 503 and BMS 504 or equivalent.

ANSC 710 - Dairy Nutrition**Credits:** 4

Feeding management of dairy cattle. Emphasis on feedstuffs, nutritional requirements, and diet formulation for efficient production and optimum health. Prereq: ANSC 609 or NUTR 750; permission.

ANSC 715 - Physiology of Lactation**Credits:** 4

Examines the biological and biochemical influences of the lactation process. Emphasis on the physiological effects of environments, hormones, and nutrition on milk synthesis and secretion, mammary physiology, and maternal response. Prereq: ANSC 701, permission.

ANSC 724 - Reproductive Management and Artificial Insemination**Credits:** 4

Focus on goals and fundamentals of reproductive management of horses, dairy and livestock animals, and through actual experience, development of competency in performing modern breeding techniques for equine and bovine reproduction. Permission required. Special fee. Lab.

ANSC 725 - Equine Sports Medicine**Credits:** 4

Course focuses on equine anatomy and physiology in relation to athletic performance and injury. Students write an independent paper assessing the use of an equine heart rate monitor on either a UNH or private horse during the semester. (Juniors and seniors only.) Prereq: ANSC 504, 512, 620. Special fee.

ANSC 727 - Advanced Dairy Management I**Credits:** 4

Advanced management evaluation of milking procedures, reproduction, genetics, herd health, feeding, housing, and milking systems. Prereq: junior or senior standing; permission.

ANSC 728 - Advanced Dairy Management II**Credits:** 4

Advanced management evaluation of record keeping, financial and business management, personnel management, waste management, and marketing. Prereq: junior or senior standing; permission. Special fee. Writing intensive.

Attributes: Writing Intensive Course**ANSC 750 - Collaborative Farm Design and Development****Credits:** 4

As a semester long group project, students will design an economically feasible, fully operational, diversified small farm. Students will need to consider site selection, infrastructure, equipment, labor, animal production and health, financing options, marketing and sales, etc. in their design. The final project will be presented in both an oral and a written format. Independent initiative and group collaboration are both integral to success in this project. Writing intensive.

Attributes: Writing Intensive Course**ANSC 795 - Investigations****Credits:** 1-4

Investigations in genetics, nutrition, management, diseases, histology, equestrian management/agribusiness, physiology, cell biology, microbiology, dairy management, or teaching experience. May be repeated up to a maximum of 4 credits. Prereq: permission.

ANSC 795W - Investigations**Credits:** 1-4

Investigations in genetics, nutrition, management, diseases, histology, equestrian management/agribusiness, physiology, cell biology, microbiology, dairy management, or teaching experience. May be repeated up to a maximum of 4 credits. Prereq: permission. Writing intensive.

Attributes: Writing Intensive Course**ANSC 796 - Equine Senior Seminar****Credits:** 2

This course is geared to prepare graduating seniors for professional work experience, including skills related to job seeking, resume preparation and interviewing for work in the equine field. In addition, students will engage in dialogue regarding current and relevant controversial topics within the equine industry. Through guided group discussion, selected readings and guest speakers, student are exposed to subjects which equine professionals must confront and address within the equine industry. This course serves as a preparation for and pre-requisite to the Equine Capstone Experience, ANSC 797.

ANSC 797 - Equine Capstone Experience**Credits:** 4

This course allows students to review critical professional skills, concepts and theories necessary for success within the equine industry and then to demonstrate competence in these areas, to a panel of equine program faculty. Students also coordinate logistics and content of an outreach Equine Education Day. Successful completion allows students to showcase professional skills and abilities to the non-academic equestrian community. Prereq: ANSC 796.

ANSC 799 - Honors Senior Thesis**Credits:** 1-4

Independent research culminating with a written honors thesis in A) Genetics; B) Nutrition; C) Management; D) Diseases; E) Histology; F) Light Horsemanship; G) Physiology; H) Cell Biology; I) Microbiology; J) Dairy Management. May be repeated up to a maximum of 8 credits. Prereq: permission. IA. Writing intensive.

Attributes: Writing Intensive Course

Anthropology (ANTH)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

ANTH 411 - Global Perspectives on the Human Condition: An Introduction to Anthropology**Credits:** 4

This course introduces students to the core concepts, methods, and research of contemporary cultural anthropology, as well as to the ways in which the discipline is relevant to their daily lives. Students will learn how anthropology approaches the study of culture, language and communication, family and kinship, gender and sexuality, race and ethnicity, economic relationships, political systems, religion, social change and globalization. Ethnographic material from both the U.S. and cross-culturally, as well as a series of hands-on, experiential and interactive activities, will demonstrate anthropological concepts and questions.

Attributes: World Cultures(Discovery)**ANTH 411H - Honors/Global Perspectives on the Human Condition: An Introduction to Anthropology****Credits:** 4

This course introduces students to the core concepts, methods, and research of contemporary cultural anthropology, as well as to the ways in which the discipline is relevant to their daily lives. Students will learn how anthropology approaches the study of culture, language and communication, family and kinship, gender and sexuality, race and ethnicity, economic relationships, political systems, religion, social change and globalization. Ethnographic material from both the U.S. and cross-culturally, as well as a series of hands-on, experiential and interactive activities, will demonstrate anthropological concepts and questions.

Attributes: World Cultures(Discovery); Writing Intensive Course**ANTH 411W - Global Perspectives on the Human Condition: An Introduction to Anthropology****Credits:** 4

This course introduces students to the core concepts, methods, and research of contemporary cultural anthropology, as well as to the ways in which the discipline is relevant to their daily lives. Students will learn how anthropology approaches the study of culture, language and communication, family and kinship, gender and sexuality, race and ethnicity, economic relationships, political systems, religion, social change and globalization. Ethnographic material from both the U.S. and cross-culturally, as well as a series of hands-on, experiential and interactive activities, will demonstrate anthropological concepts and questions.

Attributes: World Cultures(Discovery); Writing Intensive Course**ANTH 412 - Broken Pots and Buried Cities: Adventures in Archaeology****Credits:** 4

Traces the history of archaeology's most spectacular finds and how those moments of adventure and glory developed into a scientific discipline. Provides an introduction to the methods used by archaeologists to recover, analyze, and interpret data in their ongoing effort to understand humanity through the analysis of those small things left behind.

Attributes: Social Science (Discovery)**ANTH 415 - The Human Story: Evolution, Fossils and DNA****Credits:** 4

This course uses an evolutionary approach to investigate human biological and bio-cultural variation in time and space. Through a study of the basics of population genetics, an evaluation of our closest living relatives, nonhuman primates, and an exploration of the biological and cultural pathways traversed by our ancestors to become modern Homo sapiens, students learn the depth and complexity of the human story. Laboratory exercises dealing with human genetics, hominin fossils, and evolution are integrated with lectures to give students hands-on learning experience. No credit earned if credit received for ANTH 413.

Attributes: Biological Science(Discovery)**ANTH 440A - Honors/Medicine and Culture: Science, Technology and the Body****Credits:** 4

This course takes a comparative, cross-cultural approach to global medicine. Through critical readings, multimedia presentations, class discussions, and expository writing, we consider how techno-scientific developments, transnational flows, environmental transformations, and historical inequities shape how we know and experience our bodies. Key course topics include controversies surrounding new medical technologies, the intersections between Western and non-Western medical systems, and innovative responses to chronic global diseases.

Attributes: Environment,TechSociety(Disc)**ANTH 440B - Honors/Saving Culture: Heritage Management****Credits:** 4

Culture and heritage are increasingly important topics for scholars, art connoisseurs, politicians, and the public alike. The Taj Mahal in India is the UNESCO world heritage site, but is yoga that many around the world engage in? Who decides what heritage is and what counts as culture? How do these decisions impact peoples' daily lives? The course introduces students to the concept of cultural heritage and how it "works" in complex, non-universal ways.

Attributes: World Cultures(Discovery)**ANTH 444 - The Lost Campus: The Archaeology of UNH****Credits:** 4

In this course, students are active participants in the systematic documentation and examination of the University of New Hampshire's cultural heritage resources. Students are introduced to the practice and process of archaeology through lectures, readings, assignments and hands-on archival research and archaeological fieldwork. Students learn the foundational methods of archaeology including survey, mapping, documentation, excavation, artifact identification, artifact interpretation, and presenting results to the public.

Attributes: Historical Perspectives(Disc); Inquiry (Discovery)

ANTH 450 - Introduction to Race, Culture, and Power**Credits:** 4

Race, culture, and power intersect at a social space where those in that space experience differing opportunities and access to social and economic privileges, resources, and power. This course explains the way race functions today as a social and cultural category to justify systematic inequality and differences in power and to obscure the functioning of the global economy. The course draws on emerging literature on Blackness, Whiteness, and Minorities and on analyses of the differential implementation of social welfare policies in the United States. (Also listed as INCO #450.)

ANTH 500 - Peoples and Cultures of the World**Credits:** 4

Explores cultures and peoples from specific geographic regions of the world. Broadly considers social, gendered, economic, and political changes in ecological and historical context, focusing on precolonial, colonial, and contemporary societies and globalization.

Attributes: World Cultures(Discovery)**ANTH 501 - World Archaeological Cultures****Credits:** 4

The development of prehistoric cultures worldwide offered in the following sections: A) North America; B) Mesoamerica; C) South America; D) Near East; E) Europe; F) Asia. North America: from earliest settlement to European contact, includes Eastern Woodlands, The Plains, and the Southwest. Mesoamerica: from earliest cultures through Spanish conquest, includes the Olmec, Maya, and Aztec civilizations. South America: Cultural development from earliest migrations to the Inca Empire. Near East: from earliest agricultural villages to the world's first civilizations.

Attributes: World Cultures(Discovery)**ANTH #508 - Anthropology of Internet****Credits:** 4

While adopting an anthropological lens in this course we explore how and in what ways digital environment, cyberspace in particular, affects an individual, community, and the state, and how, in turn individuals affect the digital landscape. Focusing on the dynamic interaction between digital environment and humans we will (1) tease out what is "new" about our contemporary moment, (2) clarify changes and continuity that characterize this digital age and its effects on our daily lives, (3) explore virtuality as part of our daily experiences, and (4) learn how in what ways cyberspace becomes a place of personal achievement, dwelling of community-like formations, social control, and politics.

Attributes: Social Science (Discovery)**ANTH 510 - Animals, Identity, and Culture****Credits:** 4

This course explores the roles of identity and culture in shaping the relationships humans form with other animals. A range of relationships are investigated, including those that figure animals as beings sharing in personhood, as prey, as technologies, as workers, as food, and as family. Inspired by the explosion of new research in multiple disciplines, this course emphasizes cross-cultural and transhistorical variations, while also exploring some of the biosocial features humans share with other animals.

ANTH 511 - Core Concepts in Anthropology**Credits:** 4

This foundational course, required of anthropology majors in the first year of declaring their major, provides students with a broadly biocultural approach to important anthropological topics. These themes will be explored through a focus on writing in the major, involving extensive research and reading in anthropological publications and writing according to the conventions of the field of Anthropology. Students will learn about humans as both biological and cultural beings, how we adapt to our social and natural environments over time, and how anthropology applies to today's changing world. Past and present examples of human biocultural adaptation will be explored (e.g., technological, linguistic, and social developments).

Attributes: Writing Intensive Course**ANTH 513 - Ethnographic Methods****Credits:** 4

The course introduces students to social science research and differences between quantitative and qualitative research methods, and provides a hands-on experience to develop skills in interviewing, participant-observation, life-history, surveying, socio-linguistics, fieldnotes, and ethics of the research.

Attributes: Inquiry (Discovery)**ANTH 514 - Method and Theory in Archaeology****Credits:** 4

Basic method and theory; techniques in recovering and interpreting data; laboratory exercises in ceramic and lithic analysis. Critical evaluation of archaeological literature.

Attributes: Inquiry (Discovery)**ANTH #515 - Anthropology and Contemporary Issues****Credits:** 4

Anthropological approaches to current world issues such as racism, poverty, religious movements, revolution, and environmental stress. Selected topics examined in the context of both western and nonwestern societies.

ANTH 525 - Anthropology of the Body: Fat, Fitness and Form**Credits:** 4

This course surveys the way our human bodies are valued, transformed, experienced and made subject to control in different societies around the world. It explores cultural constructions of fatness and obesity, fitness and sports as sites of politics, economics and social change, and bodily modification and dis-integration in tattooing, injury, biomedical technology, disability, aging, and extreme environments of war and outerspace. Uses anthropological and feminist theories and introduces ethnographic methods.

Attributes: Social Science (Discovery)**ANTH 550 - Introduction to Forensic Anthropology****Credits:** 4

This course provides an overview of forensic anthropology, a sub-field of biological anthropology that applies knowledge of skeletal anatomy to problems of medico-legal significance (i.e., identification of human skeletal remains and interpretation of the circumstances surrounding death). This course outlines concepts underlying the recovery and analysis of human remains, the determination of the biological profile (including age, sex, ancestry, and stature), and the interpretation of skeletal trauma and pathology.

ANTH 597 - Special Topics**Credits:** 4

Occasional and experimental offerings on an entry level. May be repeated for different topics.

ANTH 601 - Topics in Popular Culture**Credits:** 4

This course explores the anthropology of popular culture using film, novels, and other media as well as widely disseminated texts. The course focuses on myths about culture and human behavior which become part of the global cultural mainstream, and counterposes popular stereotypes with data from cultural anthropology and archaeology.

A) Native Americans and Popular Culture B) Archaeology and Popular Culture C) Popular Culture and Physical Anthropology D) Poverty and Popular Culture E) Gender and Popular Culture F) Other. May be repeated but not in duplicate areas.

ANTH 610 - Medical Anthropology: Illness and Healing**Credits:** 4

Intermediate-level introduction to medical anthropology through sociocultural and bioarchaeological approaches to describing health-related ideas and practices in cross-cultural, historical and ecological contexts. Focuses on human illness and religious experiences of disease and the end of life. Considers how suffering, diagnosis, treatment, prevention, and care are shaped by: religion and ritual; symbolism and language; age, gender and sexuality; families, social movements, and governments; and the worldwide expansion of biomedical expertise and technologies.

ANTH 611 - History of Anthropological Theory**Credits:** 4

Provides a grounding in the history of social thought in cultural anthropology and sister disciplines from 19th century evolutionism to the present. Course reading is based on primary sources - original essays written by theorists central to the discipline. Assessment is partly based on students' ability to apply theoretical concepts to novel contexts, as well as the ability to evaluate and compare theories on the basis of logic and evidence.

ANTH 612 - Applied Anthropology**Credits:** 4

Introduces students to the ways anthropological questions, concepts, and methods are applied to real world problems. Students learn how anthropological knowledge and methods can be used in a wide range of disciplines and careers. The course includes experiential learning where students engage with professionals doing work within applied anthropology. Students gain perspective on the practical possibilities in their major and acquire skills to position themselves for future careers.

ANTH 616 - Religion, Culture, and Society**Credits:** 4

Major anthropological theories of religion; analysis of religious beliefs as symbolic systems and their interrelations with ritual and other social institutions. Detailed study of specific religions. Operates on a seminar format. Writing intensive.

Attributes: Writing Intensive Course**ANTH 620 - Ritual and Religion of Ancient Mesoamerica****Credits:** 4

This course examines the religious beliefs and ritual practices of ancient Mesoamerican cultures, such as the Olmec, Maya, and Aztecs. Students learn about the meaning of ritual practices (like human sacrifice and burial rites) and the myths that underlie this mysterious ritual behavior from an archaeological perspective. This class is writing intensive and involves primarily in-class discussion. Students are evaluated based on their participation, oral presentations, and a number of writing assignments. Writing intensive.

Attributes: Writing Intensive Course**ANTH 625 - Sexuality in Cross-Cultural Perspectives****Credits:** 4

This course examines the ideologies and practices associated with sexuality from a broad perspective that incorporates diverse case studies from the ethnographic record. Working from the argument that much of human sexual behavior is culturally constructed rather than biologically determined, the course invites students to expand their notion of the "normal" and to consider the human condition from a cross-cultural perspective. Topics discussed include cross-cultural varieties of transgendered experience, same-sex sexualities, and heteronormative identities.

ANTH #627 - Urbanization in Africa**Credits:** 4

Explores the process of urbanization and describes the creation of urban culture in sub-Saharan Africa by investigating the effects of urbanization on socio-economic and cultural conditions. An attempt is made throughout the course to study urbanization and urban life within the context of broader societal, economic, cultural, and political relations in order to understand the dynamics inherent in these processes. Urbanization is discussed in the context of colonialism, post-colonialism, and other social relations of dependency that continue to shape urban life and urban-rural relations.

ANTH 640 - Anthropology of Islam: Muslims' everyday lives in contemporary communities**Credits:** 4

This course introduces students to different ways of being Muslim in contemporary world, focusing on Muslim communities residing in Central Asia (post-Soviet independent countries, China, and Afghanistan); the United States and some parts of Europe; and the Middle East and North Africa (MENA).

ANTH #670 - Language and Culture**Credits:** 4

Investigates the relationship between language and culture and how their interpenetration produces meaning. Special attention to the issues of class, gender, and ethnicity and the ways in which inequality is maintained through culturally patterned speech styles and associated prejudices. Speech communities in the United States are emphasized.

ANTH 674 - Archaeological Survey and Mapping in Belize**Credits:** 4

Involves hands-on training in field reconnaissance, survey and mapping of archaeological sites, and the use of ARCGIS mapping software. This field course takes place in Belize (Central America) and will be of interest to students studying anthropology, geography and geospatial technologies, among others. Special fee.

Co-requisite: INCO 589

ANTH 675 - Archaeol Field School Belize**Credits:** 8

The Archaeological Field School in Belize is an intensive, four-week summer program focused on the ancient Maya civilization in the eastern Belize River valley in Central America. Project participants will map and excavate archaeological sites and receive hands-on training in field and lab methods. Students will be graded on their participation, their submission of a field notebook, an exam based on readings and nightly lectures, and a final written report based on original field research. Special fee. Majors only.

Co-requisite: INCO 589**ANTH 685 - Gender, Sexuality and HIV/AIDS in Sub-Saharan Africa****Credits:** 4

HIV/AIDS has been defined as one of the exceptional global pandemics of the Millennium. This course traces the rise and global spread of HIV and AIDS and the introduction of antiretroviral therapies and preventions in sub-Saharan African and its Diasporas with a focus on sex and gender. Includes findings on heterosexual and LGBTIQA individuals, couples, and communities and perspectives on: kinship, marriage, love, transactional sex, reproduction, contraception, gender-based violence, and activist movements. Uses ethnographies and health sciences databases.

Attributes: Writing Intensive Course**ANTH 690 - Ethnographic Field Research****Credits:** 4

Explores history, theory, and practice of ethnographic research. Students read and practice such techniques as mapping, taking life histories, compiling genealogies, and analyzing use of space, language, and rituals. Each student also carries out, writes up, and presents an independent research project. Prereq: ANTH 411 or SOC 400; one 500-level or higher anthropology or sociology course; or permission. No credit for students who have completed ANTH 630. Operates on a seminar format. Writing intensive.

Attributes: Writing Intensive Course**ANTH 695 - Globalization and Global Population Health****Credits:** 4

This course traces how political economies drive global movements of people, diseases, and health interventions. It takes a multidisciplinary approach through medical anthropology and humanities, public health, and sustainability, looking at: histories of health intervention and biomedical technologies; under-development; shifting public-private sector governance; humanitarianism, cultural knowledge, expertise, and translation; and health-related social justice approaches and liberation theologies. Topics may include: epidemics, non-communicable diseases, metabolic disorders, substance abuse, violence, injury, and aging.

Attributes: Writing Intensive Course**ANTH 697 - Special Topics****Credits:** 4

Occasional or experimental offerings. May be repeated for different topics. Prereq: ANTH 411 or permission. Operates on a seminar format. Writing intensive.

Attributes: Writing Intensive Course**ANTH #698 - Folklore and Folklife****Credits:** 4

Examines the materials and methods used to study folklore and folklife, emphasizing the historical context and development of folklore studies in North America and Europe, field research, performance theory, and other topics. (Also offered as ENGL #732.) Operates on a seminar format. Writing intensive.

Attributes: Writing Intensive Course**ANTH 699 - Senior Thesis****Credits:** 4 or 8

Independent work in the library or field; recommended for, but not confined to, majors intending to pursue graduate studies. Contact staff to obtain approval and arrange supervision prior to senior year. 4 or 8 credit 2 semesters; an IA grade (continuous course) given at end of first semester. Writing intensive.

Attributes: Writing Intensive Course**ANTH 699H - Honors Senior Thesis****Credits:** 4 or 8

Independent work in the library or field; recommended for, but not confined to, majors intending to pursue graduate studies; required for honors candidates. Contact staff to obtain approval and arrange supervision prior to senior year. 4 or 8 credit 2 semesters, 8 credits required for honors; an IA grade (continuous course) given at end of first semester. Writing intensive.

Attributes: Writing Intensive Course**ANTH 700 - Internship****Credits:** 1-4

Provides student with supervised practical experience in anthropology in one of the following areas: A) professional or community support work within an academic or applied anthropology setting; B) teaching; C) museum work; D) archaeological laboratory or fieldwork; E) research on a faculty research project; F) editorial work on a journal or faculty book project. May be repeated up to 8 credits. Prereq: permission.

ANTH 705 - Topics in Mesoamerican Anthropology**Credits:** 4

Examines the very origins of civilization in the New World by first focusing on the domestication of staple food crops and the development of inequality and carefully tracing the ever increasing socio-political complexity displayed by early Mesoamerican peoples. Includes the successive rises of the Olmec, the Zapotec, the Preclassic Maya and Teotihuacan in an effort to understand the mechanisms driving the development of agricultural intensification, economic specialization, long-distance trade networks, and the institution of divine kingship. Operates on a seminar format, open only to juniors and seniors.

ANTH #730 - Anthropological Thinking on Education**Credits:** 4

Course introduces the students to key anthropological concepts that, taken together, underpin anthropological thinking on education. The concepts are Culture (Geertz, White), Evolution (Morgan Steward), Function (Malinowski, Radcliffe-Brown), Interpretation (Geertz, Turner), Feminism and Postmodernism (Leacock, Rosaldo) and Process (Bailey, Vincent). The course analyzes and synthesizes them into a conceptual framework by which to understand human behavior, activity, production and reproduction in formal education.

ANTH #740 - Teaching Race**Credits:** 4

How do we teach about race? What are schools and universities communicating about the meanings of racial ascription, of color and whiteness? How can we best use the power of educational institutions to further the struggles for equality and racial justice? And how can we do this in ways that constructively educate all our students? This course brings together prospective teachers and other students interested in human relations to discuss ways of combining the insights of new scholarship on race with personal experiences and challenges in the classroom to address these questions.

ANTH 750 - Islam and Gender. Gendered Lives of Muslims**Credits:** 4

This seminar focuses on the lives of Muslims. While critically questioning some existing ideas about and representations of Muslims, it introduces students to practical and historical aspects of gender politics in different Muslim communities.

Attributes: Writing Intensive Course**ANTH 770 - Anthropology of the Sinister****Credits:** 4

Examines narratives of the sinister—stories about witches, demons, vampires, extraterrestrials, and other in-human and human evils—that are told as if true, and the cultural, political, and economic contexts of their production. Variations of the sinister are compared cross-culturally and historically. Links between worldwide circulation of narratives of sinister phenomena, conspiracies, and processes of globalization are emphasized. Operates in a seminar format, and open only to juniors and seniors.

ANTH 785 - The Anthropology of Dreams and Dreaming**Credits:** 4

This course emphasizes the "dream theories" of indigenous societies and how beliefs and practices associated with dreaming are integrated into cultural, ontological, political, economic, and religious systems. Western theories are also examined from within a comparative perspective—from basic Freudian models to contemporary scientific debates about the neurological origin and significance of dreaming. Writing intensive.

Attributes: Writing Intensive Course**ANTH 795 - Reading and Research****Credits:** 1-8

A) Cultural/Social Anthropology; B) Anthropological Linguistics; C) Archaeology; D) Physical Anthropology. Prereq: 12 credits of anthropology; permission.

ANTH 796 - Reading and Research**Credits:** 1-8

A) Cultural/Social Anthropology; B) Anthropological Linguistics; C) Archaeology; D) Physical Anthropology. Prereq: 12 credits of anthropology; permission.

ANTH 797 - Advanced Topics**Credits:** 4

Advanced or specialized courses presenting material not normally covered in regular course offerings. May be repeated, but not in duplicate areas. Course descriptions on file in the department office during registration. A) Social Organization; B) Economic Anthropology; C) Anthropology of Religion; D) Political Anthropology; E) Social Impact Analysis; F) Cultural Ecology; G) Prehistoric Archaeology; H) Historic Archaeology; I) Cultural Resources Conservation; J) Lithic Analysis; K) Ceramic Analysis; L) Faunal Analysis; M) Human Evolution; N) Human Variations; O) Anthropological Theory. Prereq: ANTH 411 or ANTH 412 (as appropriate)/ or permission. Operates on a seminar format, open only to juniors and seniors. Writing intensive.

Attributes: Writing Intensive Course

Applied Animal Science (AAS)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

AAS 402 - Introduction to Livestock and Poultry Management**Credits:** 2

Students are introduced to the management of livestock and poultry in small-to-medium sized operations. Students learn basic animal feeding, selection, handling, housing, management and health practices necessary to manage livestock and poultry. Through readings, multi-media presentations, writing and field assignments, students gain insight into the work, commitment and skills necessary to raise domestic farm animals for food and profit.

AAS 421 - Large Animal Behavior and Handling Techniques**Credits:** 2

Introduction to domestic large animal behavior and handling techniques. Cattle, horses, swine, and sheep are used in this course. Students perform routine health-related procedures and gain valuable hands-on skills and safe animal handling techniques which can be applied to the fields of veterinary medicine, animal research, commercial agriculture, and animal control. 1 lec/1 lab.

AAS 422 - Small Animal Grooming I**Credits:** 2

Introduction to pet grooming. Course covers the techniques and styles of brushing, grooming, clipping, trimming, and bathing common breeds of dogs and cats. Students perform basic grooming in lab period. Special fee for non-TSAS students. May be repeated to a maximum of 4 credits. 1 lec/1 lab.

AAS 423 - Dairy Selection**Credits:** 2

Selection techniques used in cattle for purchase, breeding, and genetic improvement through the use of visual evaluation, pedigrees, production, and progeny information. 1 lec/1 lab.

AAS 424 - Animal Law and Regulations**Credits:** 3

This course covers the practical application and understanding of animal law and regulations. Designed for applied animal science majors the material is relevant for any learner interested in animal protection and welfare. Select current bills, court rulings or animal-related legal movements are reviewed. Practical application topics include: due process, contract law, evidence collection, and courtroom procedures. Focus is on domestic species with limited review of regulations and liability regarding exotic pet keeping.

AAS 425 - Introduction to Dairy Herd Management**Credits:** 4

The course explores economic, scientific and practical aspects of dairy herd management. The topics covered include history, cattle selection, nutrition, housing, milking, and disease prevention strategies. There are a number of field trips and weekly labs emphasizing management and hands-on experience.

AAS 426 - Equine Conformation and Lameness**Credits:** 4

The study of conformation as it relates to soundness and performance. Topics include basic unsoundness related to faulty conformation and type evaluation. Special fee.

AAS 428 - Anatomy and Physiology of Domestic Animals**Credits:** 3

An overview lecture course describing the anatomy (structure) and physiology (function) of domestic animals, focusing on canine, feline, equine, and bovine species. Anatomic and physiologic topics are intertwined as the course progresses through each body system. Relevant species differences are stressed. Focus is on applied concepts appropriate for animal-related careers. Course is designed to be taken along with AAS 428A or AAS 428B for AAS and VTEC majors respectively.

AAS 428A - Anatomy and Physiology of Domestic Animals Lab for AAS majors**Credits:** 1

Reinforces material presented in AAS 428 lecture and introduces students to the animal body by hands-on study of anatomy. Anatomical relationships and concepts that are important for the care of animals are presented. Comparative anatomy of bovine, equine, feline, and canine species is covered. Some dissection of specimens is required. Course is required of Applied Animal Science majors and is designed to be taken along with AAS 428 lecture.

Co-requisite: AAS 428**AAS 428B - Anatomy and Physiology of Domestic Animals Lab for VTEC majors****Credits:** 1

Reinforces material presented in AAS 428 lecture and introduces students to the animal body by hands-on study of anatomy. Anatomical relationships and concepts that are important for the medical care of animals are presented. The feline species will be the primary anatomical model used. Comparative anatomy of bovine, equine, and avian species will also be covered. Course is required of Veterinary Technology majors and is designed to be taken along with AAS 428 lecture.

Co-requisite: AAS 428**AAS 430 - Small Animal Breeds and Behavior****Credits:** 4

Overview of the development, selection, genetics, and function of specific breeds of companion animals. General dog and cat, as well as breed-specific, behavior is included. 2 lec/1 lab.

AAS 431 - Introduction to Animal Science**Credits:** 4

Survey of the dairy, equine, livestock, and small animal industries; current issues and related occupational opportunities are presented. Included is assistance in gaining or improving the skills needed to be successful in college. Lecture/Lab or Recitation.

AAS 432 - Introduction to Forage and Grassland Management**Credits:** 3

Introduction to grasslands of the world and their management. Special emphasis on the identification, production, and utilization of New England forage crops for feeding domestic farm animals. The course includes the selection of local plant species and varieties, including their management and recommended harvesting practices. The course also includes a basic introduction to soils, as well as nutrient and fertility management.

AAS 433 - Small Animal Grooming II**Credits:** 2

Continuation of AAS 422 Small Animal Grooming I with the addition of on-line canine dermatology and topical therapy basics. Student is assigned more complex breeds to groom and develops more proficiency in scissoring, hand stripping and clipping. Must have taken AAS 422. Special fee for non-TSAS students. 2 lab.

AAS 434 - Equipment and Facilities Management**Credits:** 3

Operation of agricultural equipment and maintenance of agricultural facilities as found in New England. Development of the essential skills and technical information needed to manage and supervise agricultural facilities and equipment. 2 lec/1 lab.

AAS 436 - Equine Show Preparation and Competition**Credits:** 1

Course addresses the safe handling and appropriate grooming and clipping of horses as they are prepared for competition. Students will demonstrate horse-handling proficiency while showing their assigned horse in hand. May be repeated to a maximum of 4 credits. Lec/Lab.

AAS 437 - Equine Handling and Care Techniques**Credits:** 4

Course familiarizes students with different aspects of equine management through a practical and hands-on approach. Topics include selection, fit and care of English tack, bits, grooming, clipping, wound care, safe bandaging techniques, equine behavior, farm layout, basic health care and monitoring, parasite control, and equine transportation. Students will have hands-on experience in the UNH stable. Responsibilities include feeding, cleaning, turnout, and basic care of the University herd.

AAS 439 - Fundamentals of Animal Health**Credits:** 2

Covers the principles of maintaining animal health by preventing and managing disease via husbandry, immunization, diagnostic testing and treatment. Focus is on domestic species; primarily dogs, cats, horses and cows. Topics include external and internal parasitology, microbiology, immunology including vaccination, and disease treatment. Course is designed to be taken along with the appropriate lab section: AAS 439A for Applied Animal Science majors or AAS 439B for VTEC majors, respectively. No credit earned if credit was received for VTEC 439.

AAS 439A - Fundamentals of Animal Health Lab for Applied Animal Science Majors**Credits:** 1

Laboratory course to complement lecture course AAS 439. Topics include: 1) laboratory diagnostic testing: internal parasites, external parasites, urine and fecal testing, immunologic testing; 2) preventive care; integrated pest control, vaccinations (including syringe and vaccine handling and administration), and husbandry; 3) safety: zoonotic disease and control of disease transmissions. This lab course is required of Applied Animal Science majors along with AAS 439 lecture.

AAS 439B - Fundamentals of Animal Health Lab for Veterinary Technology Majors**Credits: 2**

Laboratory course to complement lecture course AAS 439. Common veterinary diagnostic laboratory tests are covered, such as fecal flotation, urinalysis, complete blood count and blood chemistry, bacterial culture and sensitivity testing, gram staining, and immunologic testing such as ELISAs. Topics include laboratory safety, identification of internal and external parasites, and blood cells, examination of urine sediment, and principles of sample collection. This lab course is required of Veterinary Technology majors along with AAS 439 lecture.

AAS 445 - Veterinary Assisting Techniques**Credits: 4**

Course is designed to prepare students to enter veterinary practice as a veterinary assistant. Topics include veterinary pharmaceuticals; animal nursing including record keeping, patient observation, husbandry, and disease control; surgical preparation and assisting including surgical instrumentation, sterilization and patient management; laboratory sample collection and handling; and diagnostic imaging including radiography safety, patient positioning, radiographic film processing and filing, and ultrasound. Required for completion of the veterinary assisting certificate.

AAS 449 - Clinical Animal Nursing Techniques I**Credits: 3**

Essential skills and basic background knowledge for the care of small animals, focusing on dogs and cats. Animal handling and restraint, basic nursing skills including physical examination, medicating, bandaging and wellness protocols. 1 lec/1 lab.

AAS 451 - Human/Animal Bond**Credits: 4**

Students explore various aspects and perceptions of the human-animal bond through multidisciplinary approaches over time and across cultures. They will critically evaluate the meanings humans ascribe to companion animals. Through movies, video clips, readings, and discussions, students are exposed to historical and contemporary utilization and exploitation of companion animals they may encounter in their professional lives. Class concentrates on "pet" animals (dogs, cat, and to a much lesser extent the horse.)

AAS 525 - Canine Learning Theory and Application**Credits: 4**

Canine behavior problems are a major cause of abandonment and euthanasia in dogs. Effective application of canine learning theory can prevent and solve behavior problems and save lives. Student gain a working knowledge of animal learning theory with a focus on training basic obedience commands, prevention and modification of common canine behaviors, effective human communication within a practical canine training session, canine ethology, the business and ethics of dog training, and more. Prereq: AAS 430 or equivalent.

AAS 527 - Companion Animal Diseases**Credits: 2**

Common diseases in companion animals discussed system by system; emphasis on canine, feline, equine, and ruminant species. Other species covered based on class interest. Disease pathogenesis, diagnosis, and treatment are covered. Care-based learning includes developing differential diagnosis lists and technician evaluations and interventions. AAS 428 or another Anatomy and Physiology course is strongly suggested as a pre-requisite.

AAS 535 - Animal Nutrition**Credits: 3**

The food nutrients, their digestion and absorption, factors affecting value of feeds, feed additives, and nutrient requirements for maintenance and productive functions.

AAS 538 - Equine Handling/Longeing**Credits: 1**

This seven-week intensive course provides students with the opportunity to learn to longe a variety of University horses in an enclosed arena under private instruction. The emphasis is on safety and welfare of the horse and handler. Proper equipment and fit are addressed along with different training techniques used to improve the horse's quality of movement. Prereq: AAS 436. Applied Animal Science majors given first priority.

AAS 540 - Animal Breeding**Credits: 3**

Principles and practices, including the physiology of reproduction, fertility and sterility, artificial insemination, breeding systems, and selection.

AAS 546 - Animal Business Applications**Credits: 4**

Survey of the various elements of managing an animal and/or agricultural operation regardless of commodity. Topics include: financial statements, credit and interest, insurance considerations, labor management, marketing, promotions, advertising, and sales. 4 lec. Prereq: AAS 242 or ECON 401.

AAS 547 - Applied Equine Management**Credits: 3**

The application of farm and horse management techniques, including stable routine, planning, and design; nutrition; business considerations; and legal responsibilities. Pre- or Coreq: AAS 546.

AAS 548 - Applied Animal Business: Concepts and Practices**Credits: 4**

Course provides students an opportunity to focus on animal industry relative to specific operational concepts: small business start-up, creating a business plan, enterprise development including opportunity analysis and marketing of ideas, branding and advertising, employee hiring and management, payroll management, inventory management and industry-specific software review for maintaining and analyzing financial statements. Course involves lecture and field study allowing students to examine similar animal business operations in order to enhance practical understanding of topics covered. Prereq: AAS 546.

AAS 550 - Clinical Animal Nursing Techniques II**Credits: 4**

Builds on materials presented in AAS 249, Clinical Animal Nursing Techniques I. Covers veterinary imaging modalities including radiographic and ultrasonographic techniques and safety, nursing care of hospitalized patients including fluid therapy, laboratory and exotic animal medicine. Prereq: AAS 449.

AAS 552 - Equine Health Management**Credits: 4**

Systems of the horse as they relate to common diseases and lameness. Applied approach to conditioning, care of the sick or lame horse, and preventive care. Prereq: AAS 426 or AAS 437.

AAS 553 - Equine Competition Management**Credits: 2**

Students organize and run a combined test competition to be held in April. The class is responsible for mailing entries, handling publicity and ad sales, compiling the program, setting the course and dressage ring, and dealing with the public. Proceeds fund seminars available to students and class field trips. May be repeated once. Prereq: AAS 426 or AAS 546.

AAS 558 - Animal Population Medicine and Management**Credits: 2**

This course applies material from animal health and disease classes to populations of animals rather than individual animals. Topics include stress and disease management, behavior and ethical problems in animal populations, evaluation of scientific research, and decision analysis. Concepts in epidemiology and statistics are covered. Students design and carry out a statistical analysis on data from a chosen animal population. Prereq: AAS 428, AAS 439, MTH 202.

AAS 563 - Small Animal Grooming III**Credits: 1**

Individual supervised grooming experience for students who wish to obtain more technical grooming skills. Must have taken AAS 422 twice or AAS 422 and 433. Cr/F.

AAS 572 - Comparative Equine Operations**Credits: 2**

Exploration of national and regional equine farms and related businesses. Using field trips and journals, students will experience and study different farm and business operations. Prereq: AAS 426. 1 lab. May be repeated to a maximum of 2 credits. Cr/F.

AAS 574 - Dairy Cattle Disease Seminar**Credits: 2**

Covers principles of the immune response, immunological basis for disease control, and emphasizes management practices to prevent disease and maintain optimal animal health in dairy cattle. Numerous guest lecturers, field and case studies, and emphasis on current topics of interest to the industry.

AAS 575 - Cooperative for Real Education in Agriculture Management (CREAM)**Credits: 4**

CREAM (Cooperative for Real Education in Agricultural Management) is a 2-semester course in which students perform the work and make the financial and management decisions associated with the CREAM dairy herd. Assumption of complete responsibility for the management and care of this 25-cow herd for the entire academic year. CREAM provides students with a unique experiential learning model that will help them understand how to work together to manage and operate a small business, the decision making skills required in production agriculture, and the application of science to the management of a dairy herd. Two semesters of 4 credits each are required. Prereq: AAS 425 or ANSC 409 and ANSC 410 or permission.

AAS 577 - Functional Canine Analysis Practicum**Credits: 4**

The majority of this course takes place at the Cocheco Valley Humane Society in Dover, New Hampshire. Students facilitate the rehoming of shelter dogs with manageable behavioral issues by assessing, developing and implementing individual plans. A limited amount of time is spent on assisting with incoming temperament assessments and adopter behavioral consultations. Cases commonly involve: social hyper-arousal, obedience, confidence building, enrichment, reactivity, possessive, and barrier counterconditioning and desensitization. Includes one feline functional assessment plan. Prereq: AAS 430, AAS 525.

AAS 579 - Small Animal Care Practicum**Credits: 2**

Provides supervised, hands-on experience at the N.H.S.P.C.A. 4 hours/week. Responsibilities include cleaning, feeding, treatment, grooming, socializing and training of shelter animals. Student must receive or show proof of pre-exposure rabies prophylaxis to take the class. Prereq: AAS 422, AAS 428, AAS 430, AAS 439, AAS 449. Special fee required only for first time the course is taken. Lab coat and/or scrubs required.

AAS 591 - Studies**Credits: 1-3**

Students who have the ability and adequate preparation to work independently may propose a contract to design a course or research project on a topic not available through existing course offerings. The purpose of this research is to explore new areas in the student's field of study or to pursue course material in greater depth. Work is supervised by an appropriate faculty/staff member and credit varies depending on the proposed project/research. Areas may include dairy, light horses, livestock, poultry, meats, forages, management, small animals, or general animal science. Permission required. Course may be repeated up to a maximum of 6 credits.

AAS 592 - Studies**Credits: 1-3**

Students who have the ability and adequate preparation to work independently may propose a contract to design a course or research project on a topic not available through existing course offerings. The purpose of this research is to explore new areas in the student's field of study or to pursue course material in greater depth. Work is supervised by an appropriate faculty/staff member and credit varies depending on the proposed project/research. Areas may include dairy, light horses, livestock, poultry, meats, forages, management, small animals, or general animal science. Permission required. Course may be repeated up to a maximum of 6 credits.

AAS 593 - Equine Field Operations**Credits: 1-3**

Field experience in selected areas of equine care and handling, under supervision of appropriate faculty/staff and outside facilities supervisor. A) Veterinary Clinic; B) Breeding and Foaling; C) areas of student interest. All field operations done on an individual basis. Four or more hours per week. Students must provide their own transportation. Prereq: AAS 426, 437, 547, and/or permission of instructor and adviser.

AAS 597 - Applied Animal Science Work Experience**Credits: 0**

Employment (12 weeks, generally in the summer following the first year) in an approved animal-related position. Cr/F.

Applied Business Management (ABM)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

ABM 404A - Introduction to Business I

Credits: 2

This 1/2 semester course introduces students to the nature of the firm, market competition, and management principles. Topics include entrepreneurship, starting a firm, selecting, training and retaining human resources, choosing an appropriate legal structure, and the role of ethics in business. Students will learn basic concepts of economics, study market structures, and engage in competitive analysis of specific firms. Lectures, guest speakers, and case studies used to promote discussion and real-world situations.

ABM 404B - Introduction to Business II

Credits: 2

This course is the second half on Introduction to Business. It introduces basic marketing concepts, including product, pricing, promotional and distribution strategies; applies management principles to operations, information technology, and finance; and examines uses of accounting data and financial statements to evaluate past financial performance and project future performance. A basic business plan is required in an area of the student's interest. Students must take ABM 404A before being eligible to take ABM 404B.

ABM 405 - Small Business Accounting Principles

Credits: 4

Learn the basics of sound bookkeeping practices as they apply to any retail, service, or manufacturing entity. Topics include: debiting and crediting, trial balance, worksheets, ledgers and journals, and checkbook reconciliation. Students perform all of the necessary bookkeeping transactions for an actual business. 3-hr lec/2-hr lab.

ABM 407 - Applied Marketing

Credits: 4

Marketing processes presented through text readings, discussions, and semester-long projects. Topics include market research, target marketing, demographics and psychographics, promotion, advertising and publicity, distribution, and pricing. Focuses on the non-personal aspects of marketing and selling. Sust Agriculture&Food Systems and Applied Business Management majors only.

ABM 506 - Human Resource Management

Credits: 4

The biggest problem most managers face is getting their employees motivated to work at peak performance. This course is designed to teach managers how to motivate employees through proper hiring techniques, performance reviews, training, administering change, working with problem employees, working with unions, and administering pay and fringe benefits. 2 2-hr discussion. Sust Agriculture&Food Systems and Applied Business Management majors only.

ABM 508 - Managerial Accounting

Credits: 4

Students focus on the decision-making aspects of financial management, primarily for internal use by managers. Topics include: cost behavior and control, budgeting, inventory control, capital investments and depreciation, tax strategies, interpretation of financial statements, profitability analysis, case flow management, standard cost accounting, manufacturing accounting and other cost accounting techniques.

ABM 514 - Applied Sales

Credits: 4

Focuses on the process of personal selling and persuasion skills. Students spend considerable time practicing their techniques and working with (and observing) professional sales associates in the workplace. Selling involves the pre-approach, approach, demonstration, handling of objections, and closing the sale and follow-up. Also presents and discusses the roles of the sales manager and related financial elements. 2 2-hr lec-discussion.

ABM 532 - Small Business Law

Credits: 4

Background and understanding of the legal aspects of management, including: contracts, liability and insurance, business law and regulation, employee laws and rights, forms of ownership, tax implications, and other legal matters relevant to successful management.

ABM 540 - Ethics in Business and Society

Credits: 4

A new look at the interface of managerial and ethical issues as they relate to workers, the workplace and the interface between business and society. Brings together concepts such as profit, values, community and, responsibility to consider a paradigm that meets the needs of an organization and the social environment in which it must exist. Helps students identify methodologies for sustaining business in its function as a responsible force for the betterment of wealth and well being in society.

ABM 550 - Business Policy

Credits: 4

Through use of case studies from existing businesses, the organization and execution of a student-run business, students now bring together and apply all they have learned throughout the program. This course also features an Executive Speaker Series and a community service component. This unique and experiential final-semester course allows the individual to see how all of the parts make up the whole and to achieve a higher level of self-confidence, self-esteem, and hands-on abilities. 2 2-hr lec-discussion.

Arabic (ARBC)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

ARBC 401 - Elementary Arabic I

Credits: 4

This course introduces students to the language of Arabic and the culture of the Middle East. It teaches writing and pronunciation of Arabic letters and words, as well as a number of common phrases, such as greetings and cordial interactions. Both modern standard Arabic and colloquial Egyptian are taught. It also introduces students to basic aspects of Arabic culture and history. Special fee.

ARBC 402 - Elementary Arabic II

Credits: 4

This course builds on skills of learning Arabic acquired in ARBC 401. It continues with the teaching of these skills, which are listening, reading, writing, and speaking. It expands the students' acquisition of grammar, and widens their familiarity with the Middle East culture. It teaches both modern Standard Arabic and colloquial Egyptian. Prereq: ARBC 401 or permission from the instructor. Special fee.

Attributes: Foreign Language Requirement

ARBC 503 - Intermediate Arabic**Credits: 4**

This intermediate level course builds on the skills of reading comprehension and the writing and speaking of Modern Standard Arabic that were acquired in first-year Arabic. It takes students to the next level of familiarity with, and the practice of, Arabic. It also puts a heavier weight on using the Egyptian dialect of Arabic in conversation. Prereq: ARBC 402 or permission from the instructor. Special fee.

Attributes: World Cultures(Discovery); Foreign Language Requirement

ARBC 504 - Intermediate Arabic**Credits: 4**

This intermediate level course builds on the skills of reading and reading comprehension and the writing and speaking of Modern Standard Arabic that were acquired in Arabic 503. Students begin to read Arabic newspapers, websites, and other simple reading materials. An emphasis on using the Egyptian dialect of Arabic in conversation continues. Prereq: ARBC 503 or permission of the instructor. Special fee.

Attributes: World Cultures(Discovery)

ARBC 595 - Arabic Practicum**Credits: 2**

Practical use of Arabic language and culture through special projects outside the classroom. May be repeated for a maximum of 4 credits. Prereq: Permission. Special fee.

ARBC 631 - Advanced Arabic I**Credits: 4**

This advanced intermediate level course builds on the skills of reading and reading comprehension, and the writing and speaking, of Modern Standard Arabic that were acquired in ARBC 504. Students continue to read Arabic newspapers, websites and other materials, and bring their findings to share in class discussions. An even greater emphasis than in lower levels of Arabic, are placed on acquiring and practicing the Egyptian dialect of Arabic in class conversations. Prereq: ARBC 504 or permission from the instructor. Special fee.

ARBC 632 - Advanced Arabic II**Credits: 4**

This advanced intermediate level course builds on the skills of reading and reading comprehension, and the writing and speaking, of Modern Standard Arabic. Students continue to read Arabic newspapers, websites and other materials, and bring their findings to share in class discussions. An even greater emphasis than in lower levels of Arabic, are placed on acquiring and practicing the Egyptian dialect of Arabic in class conversations. Prereq: ARBC 631 or permission from the instructor. Special fee.

Arts/History & Studio (ARTS)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

ARTS 400 - Topics in Art History**Credits: 4**

Art History will be presented thematically. At least three distinct chronological periods will be treated; students will develop research skills and give oral presentations. Topics will vary: "Art Writers: Their Sources and Their Effects;" "Rome from Romulus to the Fascists;" "Cults of the Original and Cultures of the Copy." Repeatable up to a maximum of 12 credits with different topics. May count toward the architectural minor if papers take the appropriate emphasis.

Attributes: FinePerformingArts(Discovery); Writing Intensive Course

ARTS 401 - Principles of Design**Credits: 4**

ARTS 401 is an introduction to the principles of design. Students will explore the foundational elements and processes of design principles found in the development of the fine and commercial arts. Lectures will explore the history of design concepts and movements, while studio/lab sessions will enable students to develop their own @D, #D and Animation design. Students will develop basic proficiencies in design software programs.

ARTS 440A - Honors/From Digging to Digital: Preserving and Displaying the Past**Credits: 4**

This course introduces the methods for the digital preservation of artifacts and the ethics of cultural conservation. Students will work with objects from the UNH museum to assess digital tools available to conservators, art historians, and archaeologists. We will explore photogrammetry, 3D modeling, virtual reality, web publishing software, and digital applications to study objects and preserve out cultural heritage. Discussion sections will address the social role of museums and international affairs.

Attributes: Environment,TechSociety(Disc)

ARTS 444 - Mona Lisa to Romeo and Juliet: An Introduction to Renaissance Culture**Credits: 4**

What made Renaissance culture tick: who were the pivotal personalities (writers and politicians as well as artists); which are the most typical and which the least typical works produced in Italy and elsewhere throughout Europe? How did viewers think about the art of their time, and in particular how did they respond to the new mass medium of printed images? How connected is our present artistic culture to that of five hundred years ago? When did the Renaissance acquire its fame? Students consider connections between the English and the Italian Renaissances, comparing, for instance, Michelangelo and Shakespeare. Readings include sixteenth-century historical and literary sources as well as art historical essays. Writing intensive.

Attributes: FinePerformingArts(Discovery); Inquiry (Discovery); Writing Intensive Course

ARTS 444B - Art and Money**Credits: 4**

This course explores the relationship between art and money from a variety of perspectives. Topics will range from the art market boom in seventeenth-century Holland, to money as subject matter in twentieth-century art. How do we determine the value of art? How do markets influence taste? How do we define authenticity? What is at stake in the opposition between art and money, and can they be reconciled? Writing intensive.

Attributes: FinePerformingArts(Discovery); Inquiry (Discovery); Writing Intensive Course

ARTS 444C - Honors/Seeing Gender: Feminist Art and Visual Culture**Credits: 4**

What is the role of visual culture in our understanding of sex, gender and sexuality? What role do the history of art, art and film criticism, and philosophical aesthetics play in the creation, interpretation, and appreciation of feminist art? Through close analysis of key artworks, primary sources, and theoretical and literary texts, as well as discussion and writing, this course will explore topics including gender norms, the gaze, patriarchal/stake violence, transgender theory, and global feminism.

Attributes: FinePerformingArts(Discovery)

ARTS 455 - Architectural Design Studio**Credits:** 4

An entry level architectural design studio. Course assignments feature hand drafting, hand rendering, model building, and project presentations while developing skills in verbal, written, and graphic communication. Drafting, hand-rendering, and model making materials and tools are required for this course. Knowledge of CAD or 3-D computer modeling is not required.

ARTS 480 - Introduction to Art History**Credits:** 4

Analysis of the central forms and meanings of art history through intensive study of selected artists and monuments. Includes works of architecture, sculpture, painting, and the graphic arts. Topics will vary but might include the Parthenon, Chartres Cathedral, Michelangelo's Sistine Chapel ceiling, Rembrandt's self-portraits, Monet's landscapes, Picasso's Guernica, Frank Lloyd Wright's Falling water, Georgia O'Keeffe's abstractions, ukiyo-e prints, and Benin sculpture.

Attributes: FinePerformingArts(Discovery)**ARTS #487 - Twentieth Century Europe****Credits:** 4

This course examines the extraordinary transformations that have swept across Europe in the past century in relation to their impact on art, architecture, photography, film, theatre, and literature. The course structure reflects the interdisciplinary quality of the field of cultural studies in that we examine a range of issues that challenge traditional departmental boundaries. Readings, films viewings, and class discussions focus on specific historical events, such as World War I, World War II, the Holocaust, the Cold War, and Post colonialism, in relation to specific cultural movements, such as expressionism, futurism, surrealism, and existentialism, that have contributed to Europe's identity formation.

Attributes: FinePerformingArts(Discovery); Writing Intensive Course**ARTS #487H - Honors/Twentieth Century Europe****Credits:** 4

This course examines the extraordinary transformations that have swept across Europe in the past century in relation to their impact on art, architecture, photography, film, theatre, and literature. The course structure reflects the interdisciplinary quality of the field of cultural studies in that we examine a range of issues that challenge traditional departmental boundaries. Readings, films viewings, and class discussions focus on specific historical events, such as World War I, World War II, the Holocaust, the Cold War, and Post colonialism, in relation to specific cultural movements, such as expressionism, futurism, surrealism, and existentialism, that have contributed to Europe's identity formation. Writing intensive.

Attributes: FinePerformingArts(Discovery); Writing Intensive Course**ARTS 501 - Introductory Ceramics****Credits:** 4

Theory and practice of basic ceramics; includes all methods of basic construction, decoration, glazing, and kiln firing. Emphasis on each individual's perceptual development. Special fee. Lab.

ARTS 525 - Introductory Woodworking**Credits:** 4

This course introduces students to the process of designing and building furniture with wood as the primary material. Students think creatively to brainstorm and develop their own, individual designs and use a variety of hand tools, power tools, and machines to build their objects. This course is a prerequisite to upper level woodworking and furniture design workshop courses, which subsequently investigate more sophisticated furniture concepts and woodworking techniques. Special fee. Studio.

Attributes: FinePerformingArts(Discovery)**ARTS 532 - Introductory Drawing****Credits:** 4

This course is an introduction to the basic principles of studio drawing. Students work towards mastering the technical skills to produce drawings from observation, a working knowledge of the historical time line in drawing, and insight into the complexities of the creative process. A variety of materials are explored, pencil, charcoal, ink and collage. Art historical and contemporary drawing practices are shown in lectures and books to amplify the concepts introduced in the daily studio work. Special fee.

Attributes: FinePerformingArts(Discovery)**ARTS 532H - Honors/Introductory Drawing****Credits:** 4

This course is an introduction to the basic principles of studio drawing. Students work towards mastering the technical skills to produce drawings from observation, a working knowledge of the historical time line in drawing, and insight into the complexities of the creative process. A variety of materials are explored, pencil, charcoal, ink and collage. Art historical and contemporary drawing practices are shown in lectures and books to amplify the concepts introduced in the daily studio work. Special fee.

Attributes: FinePerformingArts(Discovery)**ARTS 536 - Introduction Printmaking: Intaglio****Credits:** 4

Study of intaglio printmaking techniques, including etching, dry point, and engraving. Prereq: ARTS 532 or permission. Special fee. Lab.

ARTS #537 - Introduction to Printmaking: Lithography**Credits:** 4

Study of lithographic processes on stone and aluminum plate. Prereq: ARTS 532 or permission. Special fee. Lab.

ARTS 546 - Painting Design I: Perceptual Painting and Color Theory**Credits:** 4

Color is the central formal issue in painting. This course explores in some detail all basic aspects of color, introducing color terms and examining the meaning of color contrast. Students become familiar with the color wheel and perform color-mixing assignments. Ideas about color are related to paintings done in class based on a variety of subjects. Students receive training on the essential vocabulary of color (as well as materials, techniques, etc.). Lectures on great colorist, critiques and outside assignments are also featured as part of the studio routine of this course. Prereq: ARTS 532 Introductory Drawing. Special fee.

ARTS 551 - Introduction to Darkroom Photography**Credits:** 4

This studio course introduces the fundamentals of photographic practice. Students learn technical aspects of exposure, developing and printing in the darkroom as they explore and respond to the visual qualities of the medium. The format includes class demonstrations, lab work, field assignments and critiques. Manual 35mm film camera will be provided. Special fee.

ARTS 552 - Introductory Digital Photography**Credits:** 4

Introduction to the basic principles and applications of digital photography. The philosophical and technical relationship between camera and computer is an integral part of today's digital literacy needs. Techniques learned correspond to traditional darkroom processes and include creative shooting, editing and image manipulation. The students uses new skills and techniques towards developing a unique artistic vision. Digital camera required (point and shoot or DSLR). Special fee.

Attributes: Environment, TechSociety(Disc)**ARTS 567 - Introductory Sculpture****Credits:** 4

Introduces the beginning student to the theory and practice of designing three-dimensional compositions using a series of progressive assignments. The student develops a practical understanding of sculptural elements, including line, form, space, mass, and plane. Multiple materials are explored including clay, plaster, wire and wood. This course is a prerequisite to upper level sculpture workshop courses, which subsequently focus on in-depth investigations of a particular sculptural material. Special fee.

ARTS 574 - Introduction to Architectural History**Credits:** 4

Survey of representative buildings from the entire history of architecture with analysis of structure, form, and symbolic content, concentrating on major works such as the pyramids, the Roman Pantheon, the Gothic cathedral, the Renaissance palace, the Baroque church, and the modern skyscraper. In addition to the overarching narrative of architectural history, further topics include materials and building technologies, design theories, aesthetic principles, and the role of the architect in society.

Attributes: Historical Perspectives(Disc)**ARTS 592 - Photography's Brave New Worlds****Credits:** 4

Today, we are bombarded by photographs on the Internet, Facebook, Twitter, and Instagram. Indeed, digital photographs seem to have created a "brave new world." However, throughout its history, photography's artistic innovations, technological developments, and creative new uses have transformed the ways in which we navigate the world. This course focuses on photography's game-changing impact on art, science, social reform, popular culture, globalization, and war propaganda from 1839 to the present.

Attributes: Historical Perspectives(Disc)**ARTS 596 - Special Topics in Studio Art****Credits:** 4

Introductory level topics to be announced before registration. Topics can be either a lecture or studio course. May be repeated for a maximum of 12 credits with different topics.

ARTS 598 - An Artist's Life**Credits:** 4

This course looks at the visual arts from the standpoint of artists. Biographies of artists and their environments are emphasized. Studio methods, professional activities, and ideas of historical and contemporary artists are also studied. The semester includes readings, discussions, and field trips. The course encourages students to develop ideas about the relationship of the visual arts to other disciplines in fine arts, literature and the sciences.

Attributes: Inquiry (Discovery)**ARTS 600 - Internship****Credits:** 1-4

Election to take an internship in the following areas within the Department of Art and Art History: (600A) Painting, Drawing, Printmaking, Photography, Sculpture, Woodworking, Ceramics, and Graphic Design; (600B) Art History; (600C) Architecture; and (600D) Museum Work. Cannot be used to satisfy one of three electives in the Studio B.F.A. Program and one of the two electives in the Studio B.A. Program. In art history, it can be taken as an elective above the 11-course major requirement. May be repeated up to 8 credits. Prereq: permission.

ARTS 601 - Ceramics Workshop**Credits:** 4

Application of new ceramic materials and techniques, with emphasis on ideas and their expression through form and content. Experimentation encouraged. Specific focus to be announced each semester. May be repeated for a maximum of 16 credits. Prereq: ARTS 501. Special fee. Lab.

ARTS 625 - Wood/Furniture Design Workshop**Credits:** 4

In this studio course students learn how to design and build furniture and non-functional objects using a variety of techniques, hand tools, and machines. Emphasis is on challenging and exploring creativity to examine preconceived ideas about what furniture forms should look like while developing a solid understanding of various techniques. May be repeated for a maximum of 16 credits. Prereq: ARTS 525 Introductory Woodworking. Special fee.

ARTS 632 - Intermediate Drawing**Credits:** 4

Intermediate Drawing reinforces and builds upon skills developed in Introductory Drawing. Strong emphasis is given to resolving spatial relationships and composition (examination of 2D and 3D space). Line as abstraction, gesture, tonal development, perspective, and drawing from the human figure are important topics of this course. Materials such as graphite, charcoal, ink, and mixed media are covered, as well as the use of different papers. Outside assignments and class critiques play an expanded role. Prereq: ARTS 532 Introductory Drawing. Special fee.

ARTS 633 - Life Drawing**Credits:** 4

A continuation of the more formal aesthetic issues introduced in introductory and intermediate drawing with an emphasis on drawing the human figure from life. Prereq: ARTS 532 Introductory Drawing. Lab. Special fee.

ARTS #636 - Printmaking Workshop**Credits:** 4

Emphasis on development of the individual's imagery in lithography and/or intaglio, including an introduction to multicolor printmaking. May be repeated for a maximum of 12 credits. Prereq: ARTS 536 and/or ARTS #537. Lab.

ARTS #645 - Water Media**Credits: 4**

This course is an introduction to water media; watercolor, gouache, egg tempera, and ink. The students explore the technical and expressive properties of each of these materials. Because water mediums are unique in their portability and adaptability to a variety of environments, the students travel outside of the studio classroom to paint in the UNH greenhouses, insect collection room and in the surrounding landscape. Students must have completed ARTS 546 Introductory Painting. Course may be taken a second time to explore the medium at a higher level. Special fee.

ARTS 646 - Painting Design II: Perceptual Painting and the Individual Artist's Vision**Credits: 4**

Students paint in class and begin to consider the character of their own work as artists. Themes related to color development are explored further. Teachers of this course help students understand the stylistic attributes of great artists/mentors. Lectures, demonstrations, outside assignments, and class critiques continue to augment the daily regime of class painting. Other painting media besides oil paint (acrylic, water media) may be featured in the class. May be repeated for a maximum of 8 credits. Prereq: ARTS 546 Painting and Color Theory. Special fee.

ARTS 651 - Photography Workshop**Credits: 4**

Individualized projects involving creative methods, including color, manipulative, and documentary techniques. Students provide their own cameras. Prereq: ARTS 551 Photography: Darkroom AND ARTS 552 Digital Photography. May be repeated for a maximum of 16 credits. Lab. Special fee.

ARTS #654 - 17th and 18th Century American Architecture**Credits: 4**

Chief architectural styles and significant buildings from the European colonization to the birth of the American republic. A study of religious, public, and domestic architecture and of the settlement patterns of the Spanish, French, Dutch, and English colonies, culminating in the revolutionary classicism of the new republic. Typical works include the California mission church, the New Orleans raised cottage, the Dutch farm house of the Hudson Valley, the plantations of Virginia, and the Boston State House. Field trips. Prereq: one 400- or 500-level art history course. Writing intensive.

Attributes: Writing Intensive Course

ARTS #655 - Nineteenth-Century Architecture: The Architecture of Empire**Credits: 4**

Architectural concepts and significant buildings in Europe and America from the Revolutions of the late eighteenth century to the First World War; this course covers religious, civic, commercial, and domestic theories of architecture as well as town planning and urban design during the rise of the modern nation-state and market capitalism. Connections between social and architectural history will be emphasized. Prereq: one 400- or 500- level art history course or permission of the instructor. Writing intensive.

Attributes: Writing Intensive Course

ARTS #656 - Twentieth-Century Architecture: Modern and Contemporary
Credits: 4

From the turn of the century to recent commissions of living architects, this course provides a global view of twentieth-century architecture, covering the major movements along with more radical engagements with architecture. Important formal, technological, and theoretical debates surrounding Modernism will lead to consideration of Post-Modernity and contemporary values of architectural design. Connections between social and architectural history will be emphasized. Prereq: one 400- or 500-level art history course or permission of the instructor. Writing intensive.

Attributes: Writing Intensive Course

ARTS 667 - Sculpture Workshop**Credits: 4**

Design and production of sculpture focusing on various materials and techniques and how they relate to composition and content. Emphasis on understanding visual language while developing an individual style. May be repeated for a maximum of 12 credits. Prereq: ARTS 567. Special fee. Lab.

ARTS 674 - Greek Art and Architecture**Credits: 4**

Ancient Greece has long been a source of emulation and inspiration. From the legendary Bronze Age palaces of Mycenae and Knossos, through the classical ideals of the city state and its ultimate diffusion through Alexander the Great, this course explores ancient Greek culture through the lens of its surviving art and architecture. We will visit the great temples, urban centers, monuments, buildings, statuary, luxury and everyday objects that Greek society produced as a reflection of its ideals. At the same time, we will consider the legacy of Greek material culture by looking at issues such as cultural heritage, the trade in antiquities, and the adoption of Greek forms in our modern world. Prereq: one 400- or 500-level art history course. Writing intensive.

Attributes: Writing Intensive Course

ARTS 675 - Roman Art and Architecture**Credits: 4**

Rome: what started as a handful of huts overlooking the Tiber River would grow into a vast empire spanning the Mediterranean Sea. Roman society would create vibrant and complex works of art and architecture that drew inspiration from the variety of ancient cultures it encompassed. Starting in the 9th century BCE and ending with Constantine, the first Christian emperor in the 4th century CE, this course will survey the artistic and architectural achievements of ancient Rome. We will examine public and domestic architecture, as well as funerary art, painting, portraiture and sculpture in their ancient and modern contexts. Our aim is to understand the development of Roman culture and consider its legacy in the modern world. Prereq: one 400- or 500-level art history course. Writing intensive.

Attributes: Writing Intensive Course

ARTS #677 - Early Medieval Art**Credits: 4**

Development of Christian art from 300 to 1000 A.D. Study of the formulation of a new visual language via the intersection of Mediterranean and northern European traditions. Major focus on early Christian catacombs, Byzantine mosaics, insular manuscripts, and Carolingian imperial art. Prereq: one 400- or 500-level art history course. Writing intensive.

Attributes: Writing Intensive Course

ARTS 678 - Romanesque and Gothic Art**Credits: 4**

From the fall of the Roman Empire to the fourteenth century, through plague and destruction, glory and honor, heaven and hell, this course tackles the culmination of medieval artistic development, focusing especially on major architectural monuments and their sculptural programs. Treating also the art of tombs, relics, manuscripts, and devotional painting. Connections between social, religious, and art history are emphasized. Prereq: 400- or 500-level art history course or permission of the instructor. Writing intensive.

Attributes: Writing Intensive Course

ARTS #679 - Northern Renaissance Art I**Credits: 4**

Painting, sculpture, graphic arts, and manuscript illumination in France, Germany, and the Netherlands in the 14th and 15th centuries. Emphasis on the development of the traditions of Northern naturalism and the emergence in 15th-century Flanders of a distinct Renaissance consciousness, which runs parallel to contemporary trends in Italy. Major figures include the Limbourg brothers, Claus Sluter, Jan van Eyck, and Hugo van der Goes. Prereq: one 400- or 500-level art history course. Writing intensive.

Attributes: Writing Intensive Course

ARTS #680 - Northern Renaissance Art II**Credits: 4**

Painting, sculpture, and graphic arts in Germany and the Netherlands in the 16th century. Emphasis on the encounter of the Northern tradition with the classical and humanistic culture of the Italian Renaissance and on the impact of the Protestant Reformation. Major figures include Bosch, Durer, Holbein, and Bruegel. Prereq: one 400- or 500-level art history course. Writing intensive.

Attributes: Writing Intensive Course

ARTS 681 - Early Renaissance Art**Credits: 4**

How did Europe recover from the Black Death in 1348? How was it possible for Florence to become the center of western creativity both before and after that catastrophe? How did Renaissance art develop elsewhere during the fourteenth and fifteenth centuries? What was "primitive" about Botticelli? Prereq: ARTS 400, 480, 500, or 574; or instructor permission. Writing intensive.

Attributes: Writing Intensive Course

ARTS 682 - The High Renaissance**Credits: 4**

Examines the trajectory from Leonardo to the deaths of Michelangelo and Titan: painting, sculpture, architecture, and works on paper. Prereq: ARTS 480, 500, or 574; or instructor permission. Writing intensive.

Attributes: Writing Intensive Course

ARTS 683 - Baroque Art**Credits: 4**

The last period of Italian world prominence in the visual arts, the Baroque witnessed a shift of artistic power toward Spain, France, and the Netherlands. The private collecting of pictures, controversies over the legitimacy of religious images, the exploration of etching, pastels, and monotypes, and the serious pursuit of less august subject matter for the visual arts all served to separate Baroque art from its esteemed predecessor, the Renaissance. Bernini, Borromini, Caravaggio, Velazquez, Rembrandt, Rubens, and Poussin are among the artists to be studied. One 400- or 500-level art history or permission of the instructor. Writing intensive.

Attributes: Writing Intensive Course

ARTS #684 - Baroque Art in Northern Europe**Credits: 4**

Dutch and Flemish painting in the 17th century. Examination of such major figures as Rubens, Rembrandt, Van Dyck, and Vermeer. Attention is also given to the development of the genres and to the many little masters who practiced them. Prereq: one 400- or 500-level art history course. Writing intensive.

Attributes: Writing Intensive Course

ARTS #685 - Graphic Art of the Renaissance and Baroque Periods**Credits: 4**

The availability of paper and the invention of the printing press made it possible for drawings and prints to become fundamental elements in the western artistic tradition. Prints have been called major instigators of the production of secular art and of overtly experimental art. They were the first art made with an elite but relatively broad class of collectors in mind, and—in different examples—the first art that could be owned even by the poor. Examination of anonymous works, works by artists famous only as printmakers, and the printed work by or after Mantegna, Durer, Lucas van Leyden, Raphael, Michaelangelo, Bruegel, and Rembrandt, as well as drawings of the period. Prereq: one 400- or 500-level art history course. Writing intensive.

Attributes: Writing Intensive Course

ARTS 686 - Eighteenth-Century European Art**Credits: 4**

European art of the "long" eighteenth century (1680-1815) experienced radical shifts in aesthetic, social, and political orientation: from the splendors of absolutism to the austere neoclassicism of revolutionary art. This course explores painting and sculpture (and works in other media) in relation to the development of a public sphere, the emergence of individualism, the invention of personal domestic comfort, the introduction of women to artistic power, the scientific revolution, and the birth of global consumer culture. Prereq: one 400- or 500-level art history course. Writing intensive.

Attributes: Writing Intensive Course

ARTS 687 - Nineteenth-Century European Art**Credits: 4**

This course examines the history of European art and visual culture from the late 1780s to 1900. How did visual art respond to the massive social, political, and technological upheavals of the nineteenth century? Topics will include the romanticism of Goya Delacroix, and Gericault; forms of mass spectacle including the panorama and diorama; the realism of Courbet; the invention of photography; Manet, the Impressionists, and Post-Impressionists; and the sculpture of Rodin and Claudel. Prereq: one 400- or 500-level art history course. Writing intensive.

Attributes: Writing Intensive Course

ARTS 688 - Histories of Late 19th & 20th Century European Modernism
Credits: 4

An examination of European and American art from Symbolism to Surrealism, from the 1890s to World War II. The course focuses on a series of topics related to the political, social, scientific, and artistic upheavals of the era. Among the topics to be considered are Gauguin and "Primitivism"; Picasso, Cubism, and film; the Bauhaus and Utopian Architecture; Modernist Photography; Surrealism and Freud; and the fate of art under Hitler and Stalin. Prereq: one 400- or 500-level art history course. Writing intensive.

Attributes: Writing Intensive Course

ARTS #689 - Pollock and Pop to Digital Art

Credits: 4

Examines the art and art criticism produced primarily in the United States and Europe in the aftermath of World War II, with some attention on contemporary art elsewhere. An ongoing theme is the construction of national and cultural identities in relation to various artistic movements, including Action and Color Field Painting, Pop Art, Minimalism and Conceptual Art, Earthworks and Sited Sculpture, Feminist Art, New Image Painting, and Digital Art. Writing intensive.

Attributes: Writing Intensive Course

ARTS 693 - American Art

Credits: 4

A chronological survey of American painting and sculpture from the European colonization to the New York Armory Show of 1913, with emphasis on portraiture, narrative, still-life, and landscape painting. Examination of stylistic and thematic developments from the Puritan and Georgian New England portrait, the heroic narrative of the Revolutionary era, the romantic landscape to the realism of the post-Civil War era and the birth of modernism. Typical works include Copley's Portrait of Paul Revere, Cole's Course of Empire, Homer's Fog Warning, Cassatt's At the Opera, and Eakin's Max Schmitt in a Single Scull. Prereq: one 400- or 500-level art history course. Writing intensive.

Attributes: Writing Intensive Course

ARTS 694 - Vision and Modernity: From Panorama to Early Film

Credits: 4

The course examines the emergence of modern visual culture between the end of the 18th century and the beginning of the 20th century. It tracks the development of new technologies and conditions of viewing--from the panorama to photography to early cinema--and situates those developments in relation to larger social, intellectual, and cultural shifts in our conceptions of subjectivity, collectivity, and the mechanics of optical perception. The visual material at the center of our discussions will include nineteenth- and twentieth-century photographs, as well as paintings, prints, film, and other forms of visual entertainment and ephemera. Prereq: one 400- or 500-level art history course. Writing intensive.

Attributes: Writing Intensive Course

ARTS 695 - Special Topics in Art History

Credits: 4

Topics and prerequisites to be announced before registration. May be repeated with permission of the instructor. Lab. Writing intensive.

Attributes: Writing Intensive Course

ARTS 695I - Problems in Visual Arts/Italy

Credits: 4

Part of the ITAL 685 and ITAL 686 study abroad program held in Italy.

ARTS 696 - Special Topics in Studio Art

Credits: 4

Topics and prerequisites to be announced before registration. May be repeated for a maximum of 12 credits with different topics.

ARTS 697 - Topics in Asian Art

Credits: 4

A thematic study of the major artistic achievements in India, China, and/or Japan from pre-history to the twentieth century. Works of art in various media, including painting, sculpture, ceramics, calligraphy, prints, architecture, and gardens, will be examined in relation to philosophical concepts and to their cultural/historical contexts. May be repeated up to a maximum of 8 credits. Prereq: one 400- or 500-level art history course or permission of the instructor. Writing intensive.

Attributes: Writing Intensive Course

ARTS #699 - Museum Studies

Credits: 4

Introduction to the history and practices of American museums, including their purposes, organization, interpretation, policies and practices. Use of the Art Gallery, with occasional visits to other museums and art conservators. This course may not be used by studio art majors and B.F.A. candidates to fulfill the art history requirement. Prereq: two courses in art history or permission. Writing intensive.

Attributes: Writing Intensive Course

ARTS 700H - Honors Seminar

Credits: 4 or 8

Requires successful completion of a written thesis supervised by two faculty advisers (one each from studio and art history faculty) to be reviewed by members of the department honors committee. The art history thesis will involve an original problem in art history and the studio art thesis will examine the student's own work. Honors students only.

ARTS 732 - Advanced Drawing

Credits: 4

Treatment of more complex compositional problems; application of a broader range of solutions to pictorial problems to reinforce and expand individual concepts of image and technique. May be repeated for a maximum of 12 credits. Prereq: ARTS 632 Intermediate Drawing and ARTS 633 Life Drawing. Lab. Special fee.

ARTS 746 - Painting Design III: Perceptual Painting and Narrative Themes

Credits: 4

Daily class routine remains grounded in practical aspects of color development, technique, and formal mastery. Outside assignments begin to stress narrative motives in a variety of assignments that present the student with opportunities to explore ideas. A higher level of ambition is encouraged in the student/artist. May be repeated for a maximum of 12 credits. Prereq: ARTS 646 Painting and the Artist's Vision (8 credits). Special fee.

ARTS 791 - Art Education (Elementary)

Credits: 4

Children's creative growth as revealed through their visual expression. Development of elementary art education programs with emphasis on objectives, methods, materials and techniques to foster creativity. Suggested prereq: EDUC 500.

ARTS 792 - Art Education (Secondary)**Credits:** 4

The creative process in the visual arts in relation to the development and skills of middle and high school students in the public schools; mechanics of beginning and maintaining a secondary art program; exploring resources for art education programs on the secondary level. Suggested prereq: EDUC 500.

ARTS 795 - Art Historians and Their Styles**Credits:** 4

Intended for students who have had some prior experience of reading art history, this course asks how do art historians formulate their projects and evaluate the results, both of their own work and that of others past and present? What issues do art historians across various specialties currently debate? Not limited to art history majors; studio art and other majors are welcome. Prereq: at least one 600-level or above art history course or equivalent experience. Writing intensive.

Attributes: Writing Intensive Course**ARTS 796 - Independent Study in the Visual Arts****Credits:** 1-8

A) Photography; B) Sculpture; C) Drawing; D) Painting; E) Printmaking; F) Water Media; G) Architectural Design; H) Curatorial Assistant; I) Painting in Italy; J) Ceramics; K) Wood Design; L) Art History. Open to highly qualified juniors and seniors who have completed the advanced level courses in the chosen medium. May be repeated to a total of 8 credits. Prereq: permission of department chairperson and supervising faculty member or members. Special fee on some sections.

ARTS 798 - Seminar/Senior Thesis**Credits:** 4-8

Readings and discussions oriented toward the intellectual premises of art. Culminates in mounting an exhibition of the student's work. Required of all students in the B.F.A program. Other advanced students may elect with instructor's permission. A year-long course; an IA grade (continuous course) will be given at the end of the first semester. Lab. Variable credit; may be repeated to a total of 8 credits. B.F.A. majors must take 8 credits total. Special fee for Photography students.

ARTS 799 - Seminar in Art History**Credits:** 4

Topics and prerequisites to be announced before registration. May be repeated with permission of instructor. Writing intensive.

Attributes: Writing Intensive Course

Biochemistry, Molecular & Cellular Biology (BMCB)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

BMCB 401 - Professional Perspectives in Biochemistry, Molecular and Cellular Biology**Credits:** 1

Introduction to the fields of biochemistry, molecular and cellular biology. Explores professional opportunities for BMCB majors. Guest speakers from on- and off-campus present seminars and lead discussions on contemporary issues in subject area. Development of strategies for achieving professional goals. Cr/F.

BMCB 405 - Biotechnology Research Internship**Credits:** 2

A 4-week (minimum) experiential learning internship in which students conduct independent laboratory-based research in an area of shared interest with a faculty mentor in the College of Life Sciences and Agriculture. Students gain first-hand experience conducting original research, incorporating direct observation, reflection, evaluation, and discussion. Permission required. Open to high school students only.

BMCB 501 - Biological Chemistry**Credits:** 5

Survey of the molecular basis of life with a focus on the mechanisms of biochemical reactions in metabolic pathways, beginning with an overview of functional groups and organic reactions relevant for living organisms. Bioenergetics of carbohydrate, lipid, and nitrogen metabolic pathways. Prereq: CHEM 403 and CHEM 404, or CHEM 411. No credit earned if credit received for BMCB 658, or BMCB 751 and BMCB 752.

BMCB 600 - Field Experience**Credits:** 1-4

A supervised experience providing the opportunity to apply academic experience in settings associated with future professional employment and/or related graduate opportunities. Must be approved by a faculty advisor selected by the student. May be repeated to a maximum of 8 credit hours. Permission required. Cr/F.

BMCB 605 - Eukaryotic Cell and Developmental Biology**Credits:** 4

Cell and developmental biology of multicellular eukaryotic organisms. Structure and function of major cellular compartments; mechanisms of cellular communication and dynamics; embryonic development. Special topics: subcellular organization and function; membrane biogenesis; signal transduction; mitogenesis; apoptosis; autophagy; tumor suppressors and cell cycle regulation; cytokinesis; cytoskeletal dynamics; cellular shape and motility; stem cell biology; organogenesis; morphogenesis and patterning. Prereq: BIOL 411 and BIOL 412; CHEM 403 and CHEM 404.

BMCB 658 - General Biochemistry**Credits:** 3

Comprehensive, introductory course emphasizing the cellular metabolism and the structure and function of proteins, nucleic acids, carbohydrates, and lipids. Prereq: BIOL 411; CHEM 545 and CHEM 546, or CHEM 547 and CHEM 548, or CHEM 651 and CHEM 652. Coreq: BMCB 659.

Co-requisite: BMCB 659**BMCB 659 - General Biochemistry Lab****Credits:** 2

Structured laboratory experiments that provide training in analytical and preparative techniques fundamental to modern biochemistry and molecular biology. Coreq: BMCB 658. Special fee.

Co-requisite: BMCB 658**BMCB 659W - General Biochemistry Lab****Credits:** 2

Structured laboratory experiments that provide training in analytical and preparative techniques fundamental to modern biochemistry and molecular biology. Coreq: BMCB 658. Special fee. UNHM only. Writing intensive.

Co-requisite: BMCB 658**Attributes:** Writing Intensive Course

BMCB 750 - Physical Biochemistry**Credits:** 3

Structure, interactions, and physical-chemical properties of biomolecules. Thermodynamic, kinetic, and spectroscopic methods for the study of proteins and nucleic acids. Prereq: CHEM 547 and CHEM 549 and CHEM 548 and CHEM 550 or equivalent; MATH 424B or equivalent; or permission.

BMCB 751 - Principles of Biochemistry**Credits:** 4

In-depth survey of biochemistry: macromolecular structure; structure and function of proteins, nucleic acids, carbohydrates, and lipids; introduction to metabolic pathways. Prereq: CHEM 547 and CHEM 548, or CHEM 651 and CHEM 652; or permission.

BMCB 752 - Principles of Biochemistry**Credits:** 4

In-depth survey of biochemistry: metabolism of amino acids, nucleotides, carbohydrates and lipids; synthesis and regulation of macromolecules; molecular biology of the eukaryotic cell. Prereq: BMCB 751 or permission.

BMCB 753 - Cell Culture**Credits:** 5

Principles and technical skills fundamental to the culture of animal and plant cells, tissues, and organs. Introduction to the techniques of sub-culturing, establishing primary cultures, karyotyping, serum testing, cloning, growth curves, cryopreservation, hybridoma formation and monoclonal antibody production, and organ cultures. Application of cell culture to contemporary research in the biological sciences. Prereq: BMS 503 and 504. Special fee. Lab.

BMCB 754 - Molecular Biology Research Methods**Credits:** 5

Theory and application of current technologies to manipulate DNA. Hands-on research experience that includes DNA isolation and quantitation methods, cloning, PCR, DNA sequencing, and analysis of gene products. Prereq: GEN 604. Special fee. Lab. Writing intensive.

Attributes: Writing Intensive Course**BMCB 755 - Laboratory in Biochemistry and Molecular Biology****Credits:** 5

Application of modern techniques to the characterization and purification of biomolecules, with an emphasis on proteins and nucleic acids. Analysis of enzyme kinetics and basic techniques used in molecular biology. Prereq: BMCB 751 or permission. Special fee. Writing intensive.

Attributes: Writing Intensive Course**BMCB 760 - Pharmacology****Credits:** 4

Introduction to the basic principles and fundamental concepts of pharmacology, with a focus on molecular mechanisms and pathological basis of therapeutics and their curative effects. Topics include: foundations of pharmacology including pharmacodynamics and pharmacogenomics; drugs affecting other systems; chemotherapeutic drugs. No credit if credit earned for BSCI 680. Prereq: BMCB 658 or BMCB 751, or permission.

BMCB 763 - Biochemistry of Cancer**Credits:** 4

Evaluation of the hallmarks of cancer, including molecular mechanisms of carcinogenesis, roles of oncogenes and dysregulated cell development, function and metabolism, tumor immunology, and the biological basis of cancer therapy. Prereq: BMCB 658 or BMCB 751 or permission.

BMCB #783 - Proteomics for Biological Discoveries**Credits:** 4

Large-scale, high throughput study of proteins; characterization of entire set of proteins in a biological sample (proteome); quantification of changes in protein composition, interactions and post-translational modifications; major technology platforms; pharmaceutical and biomedical applications. Develop skills in processing samples from research projects; analysis of mass spectrometric data. Prereq: BMCB 658 or BMCB 751 or permission.

BMCB 790 - Undergraduate Teaching Experience**Credits:** 1-4

Provide academic support to graduate teaching assistants or faculty in preparing, presenting, and executing Biochemistry, Molecular and Cellular Biology lectures or labs. May be repeated to a maximum of 4 credits. Permission required.

BMCB 794 - Protein Structure and Function**Credits:** 4

Analysis of how the three-dimensional architecture of soluble and membrane proteins contributes to their biochemical function; methods for determining the structure of proteins; protein folding; protein targeting; mechanisms of enzyme catalysis. Computer resources used for protein modeling and structural prediction. Prereq: BMCB 658 or BMCB 751 or permission.

BMCB 795 - Investigations in Molecular and Cellular Biology**Credits:** 1-4

Advanced research or scholarly projects developed and conducted under the supervision of a faculty member. Provides the opportunity to apply advanced knowledge and techniques of the major to a specific problem or question. Permission required. May be repeated for a maximum of 8 credits.

BMCB 795W - Investigations in Molecular and Cellular Biology**Credits:** 1-4

Advanced research or scholarly projects developed and conducted under the supervision of a faculty member. Provides the opportunity to apply advanced knowledge and techniques of the major to a specific problem or question. Permission required. May be repeated for a maximum of 8 credits. Writing intensive.

Attributes: Writing Intensive Course**BMCB 799 - Senior Thesis****Credits:** 1-4

Independent research project under the direction of a faculty sponsor for seniors in biochemistry, molecular and cellular biology. Final product is a written thesis. One or two semesters. May be repeated to a maximum of 8 credits. Permission required. Writing intensive.

Attributes: Writing Intensive Course**BMCB 799H - Honors Senior Thesis****Credits:** 1-4

Independent research project under the direction of a faculty sponsor for seniors in biochemistry, molecular and cellular biology and in the Honors Program. Final product is a written thesis. One or two semesters. May be repeated to a maximum of 8 credits. Permission required. Writing intensive.

Attributes: Writing Intensive Course

Bioengineering (BENG)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

BENG 620 - Tissue Engineering Cell Culture Laboratory**Credits: 4**

Introduction to culture of mammalian cell lines with applications to bioengineering and biomedical sciences. Techniques and skills include those most relevant to bioengineering and biomedical sciences; basic cell culture, sterile technique, growth and maintenance of cell lines, growth curves, transfection, cryopreservation, and cytotoxicity assays. Inquiry-based final project. Preference given to Bioengineering majors. Also listed as BMS 620.

BENG 755 - Computational Molecular Bioengineering**Credits: 4**

Introduction to fundamental concepts in bioengineering with primary emphasis on understanding details of biomolecular structures integrated with molecular modeling, simulation, and visualization techniques. The course will introduce structural details of various biomolecules (proteins, nucleic-acids, sugars, and lipids), followed by concepts in thermodynamics and physical chemistry (such as intermolecular forces, energy, entropy, chemical potential, and Boltzmann's distribution), the applications of which will be discussed in the context of drug-receptor interactions, molecular recognition, biomolecular folding, enzyme catalysis, allosteric communication, diffusion, and transport. The laboratory will include training and learning about advanced simulation and visualization software engines. Preference will be given to bioengineering majors.

BENG 762 - Biomedical Engineering**Credits: 4**

Overview of the biomedical engineering through topical studies such as drug delivery and sensors. Discussion of modern engineering methods through primary research sources. Prereq: differential equations and statistics. Writing intensive.

Attributes: Writing Intensive Course

BENG 763 - Bioengineering Design I**Credits: 2**

Bioengineering design course will cover safety, regulations and ethics for development of bioengineering devices and processes. Topics include product design, benchmarks, design team functioning, marketing and finances. Students will also learn about current Good Manufacturing Practices, process validation and intellectual property considerations. Students will produce the following documents during the course: preliminary design, materials and supplies list, project schedule and budget, innovation map, FDA approval plan.

Attributes: Writing Intensive Course

BENG 764 - Bioengineering Design II**Credits: 4**

Team based laboratory course focuses on developing the project planned in BENG 763. Major report is due at mid-semester after first prototype is completed. A second report is due at the end of the semester to indicate improvements on initial design. Writing intensive.

Attributes: Writing Intensive Course

BENG 766 - Biomaterials**Credits: 4**

Fundamental principles of biology and material science, along with latest topics in biomaterials research. Topics include cell biology, wound healing, host response to foreign materials, polymers, hydrogels, diffusion and methods of material characterization. Specific medical applications of biomaterials such as orthopedic and dental implants, heart valves, artificial blood vessels, cochlear and ophthalmic implants and tissue engineering. Laboratory. Students are expected to have some background in chemistry, mathematics, and high school biology. Also listed as CHE 766.

Biological Science (BSCI)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

BSCI 405 - Diversity of Life**Credits: 4**

Survey of ecology, evolution, genetics, and the diversity of life. Emphasis on basic biological principles. For non-biological science majors. Lecture and lab. Cannot be taken for credit after completion of BIOL 411, BIOL 413, or equivalent. No credit for students who have completed BIOL 405. Special fee. Lab.

Attributes: Biological Science(Discovery); Discovery Lab Course

BSCI 406 - Human Organism**Credits: 4**

Survey of biological chemistry, molecular and cell biology, and major plant and animal systems. Emphasis on basic biological principles. For non-biological science majors. Lecture and Lab. Cannot be taken for credit after completion of BIOL 412, BIOL 414, or equivalent. No credit for students who have completed BIOL 406. Special fee. Lab.

Attributes: Biological Science(Discovery); Discovery Lab Course

BSCI 410 - Contemporary Health Issues**Credits: 4**

This course exposes students to the three major dimensions of health - physical, emotional, and social. Nutrition, infectious diseases, substance abuse and addiction, mental health, sexual health, aging and stress management are among the issues that will be discussed. Students will learn to intelligently relate health knowledge to the social issues of the day.

Attributes: Biological Science(Discovery)

BSCI 421 - Diseases of the 21st Century**Credits: 4**

Provides a basic understanding of several different diseases that may be prevalent over the next century. Treatment and prevention of the disease are also discussed. Students will acquire a basic understanding of the research methodologies underlying several fields within the biological sciences, such as microbiology, immunology, and molecular biology. Agents of biological warfare are also discussed. Prereq: ENGL 401.

Attributes: Biological Science(Discovery)

BSCI 422 - Biotechnology and Society**Credits: 4**

Provides a basic understanding of genetic engineering. Techniques discussed include cloning, gene transfer, the Polymerase chain reaction (PCR), in vitro fertilization, organ transplants, and paternity testing. Ethical issues involved with each technological advance are examined.

Attributes: Biological Science(Discovery)

BSCI 432 - Medical Terminology**Credits:** 2

This course is an introduction to medical terminology. The origin, roots, prefixes and suffixes of common scientific and medical terms are examined. Course is totally online and includes assigned online interactive material. Appropriate for biology majors, prePA, premed, and other interested majors.

BSCI 450 - The Small Microbial World**Credits:** 4

An introduction to the invisible world of microbes and microorganisms and their impact on human life and ecosystems. Laboratory will be an opportunity for science and non-science students to learn the scientific method while they participate in citizen or crowdsourced science and contribute to scientific knowledge. Vaccines, antibiotics, and other topics will be presented. Special fee.

Attributes: Biological Science(Discovery); Discovery Lab Course**BSCI 501 - Ethical Issues in Biology****Credits:** 4

This course is an introduction to the ethical issues associated with current and future use of biotechnology. Students will think critically about different ethical problems that emerge from scientific research and its applications to medical technology. The focus will be on personal and public policy decision making. Prereq: BIOL 413 and 414 or BIOL 411 and BIOL 412. Writing intensive.

Attributes: Writing Intensive Course**BSCI 502 - Intro to Biotech Manufacturing****Credits:** 4

Introduction to the terminology and practices of the biotechnology industry, with an emphasis on the business, regulatory, legal, and basic scientific underpinnings of modern biotechnology in the commercial and government sectors.

BSCI 599 - Special Topics in Biology**Credits:** 1-4

This course explores and investigates topics in biology that would not normally be covered in other courses in the curriculum. May repeat up to 12 credits.

BSCI 606 - Industrial Microbiology and Fermentation**Credits:** 4

Production of biologics and food by the biotechnology and agribusiness industries is the major focus of this course. Development of procedures for fermentation and bioprocessing, from proof of concept through scale-up stages will be emphasized, utilizing both theory and quantitative understanding as well as hands-on wet lab experience with modern bioprocessing equipment. Troubleshooting, safety, and QC considerations will be addressed. Prereq: BMS 503, BMS 504. Special fee.

BSCI 620 - Global Science Exploration**Credits:** 4

This course includes a spring break trip abroad investigating living organisms in their natural habitat. Students will participate in pre-trip seminars on the country, local flora, fauna and habitats they will visit. Students will design a project to integrate their personal interests and objections with in-country investigation. Post-trip seminar will focus on preparation of project and its presentation. Prereq: BIOL 413 and 414, or BIOL 411 and 412. Permission required. May be repeated if the spring break trip is to a different country.

Attributes: Writing Intensive Course**BSCI 670 - Clinical Pathophysiology****Credits:** 4

This course covers the principles and mechanisms of disease at the cellular, tissue, organ, and system levels, including responses to cell injury, death and adaptation, and inflammation. Acute and chronic disease processes as well as trauma are used to both understand the impact of these processes on body function as well as a means to gain a better understanding of integrative body systems. No credit if credit earned for BMS 794 or UMST 599 Clinical Pathophysiology. Prereq: BIOL 413 and BIOL 414 or BMS 507 and BMS 508.

BSCI 680 - Pharmacology**Credits:** 4

This course is designed to cover the concepts of basic pharmacology and drug therapy. It includes examination of the body systems and the related drugs therapy within each system. It explores the basic drug groups, key similarities and differences among drugs in each group. Emphasis is placed on the mechanism of action for each group and how these medications act in relation to normative and pathophysiology. The therapeutic use and adverse effects of drugs as well as understanding recreational drug use will be included. No credit if credit received for UMST 599 Pharmacology. Prereq: BIOL 413 and BIOL 414 or BMS 507 and BMS 508.

BSCI 692 - Evolutionary Medicine**Credits:** 4

This course introduces the theory of evolution by natural selection and the influence of evolutionary theory on our understanding of the cause and treatment of human disease. Topics covered include evolutionary theory, natural selection, human evolution, pathogen evolution, evolutionary mismatch, and the evolution of aging, cancer, and reproduction. Prereq: GEN 604 or permission of the instructor. Writing intensive.

Attributes: Writing Intensive Course**BSCI 695 - Exploring Biology Teaching****Credits:** 1-4

Students assist in teaching labs in undergraduate courses supervised by the lab coordinator/instructor. Responsibilities include facilitating lab endeavors, giving a presentation, and writing a report. Prereq: permission. May be repeated to 4 credits maximum.

BSCI 701 - Senior Seminar I**Credits:** 1

To be taken during the last two semesters of the senior year as students complete their Capstone project. Course emphasizes written and oral communication, discussion of current topics in biology, and career guidance. Fall and spring semester. Cr/F.

BSCI 702 - Senior Seminar II**Credits:** 1

To be taken during the last two semesters of the senior year as students complete their Capstone project. Course emphasizes written and oral communication, discussion of current topics in biology, and career guidance. Fall and spring semester. Cr/F.

BSCI 735 - Cell Biology**Credits:** 4

This course is an upper level biology class that expands on the basic knowledge of cellular structure and function. The focus is on molecular biology and cell signaling. Experiments by preeminent scientists are explored and analyzed. Prereq: BIOL 413 and BIOL 414, CHEM 403 and CHEM 404, or equivalent.

BSCI 737 - Microbial Genomics**Credits: 4**

Microbial genomics (primarily bacteria and bacteriophages) and genome-scale approaches to addressing questions in microbial physiology and pathogenesis are the focus of the course. Large-scale sequencing projects, genome structure and evolution, metagenomics, and other challenges in comparative genomics are discussed. Hands-on wet laboratory and bioinformatics projects are included in this laboratory-lecture course. Prereq: GEN 604, BMS 503 and BMS 504. Special fee.

BSCI 740 - Aquatic Microbiology**Credits: 4**

Lectures and labs focus on Lake Massabesic and its use as the source of supply as th drinking water for approximately 160,000 New Hampshire residents. The course covers a basic history of the Lake, the importance of watershed protection, EPA regulations, and standards and the various techniques and methods available to analyze water for basic quality. No credit for students who have earned credit for UMST 599 Aquatic Microbiology. Prereq: BMS 503 and BMS 504. Permission. Special fee. Writing intensive.

Attributes: Writing Intensive Course

BSCI 750 - Cancer Biology: From Benchtop Research to Therapeutic Interventions**Credits: 4**

The development and progression of cancer can be defined by several molecular and cellular biological characteristics. In this course, we will utilize primary literature to begin to understand (1) how specific cellular processes are altered during cancer initiation and progression; (2) how different cancers and the genetic landscape underlying them are being studied using models in the laboratory; and (3) how innovative therapeutics are being designed to target tumors based upon their individual molecular signatures. Prereq: GEN 604. Writing intensive.

Attributes: Writing Intensive Course

BSCI #765 - Nucleic Acid Techniques**Credits: 4**

Laboratory course focused on application of molecular biology techniques for the extraction, detection, and use of nucleic acids. Emphasis is on recombinant DNA cloning and bioengineering techniques in biotechnology. Special fee. Prereq: GEN 604, BMCB 658/659. No credit for students who have received credit for BMCB 754, BMCB 755, BMS 650, or BMS 714.

BSCI 766 - Protein and Immunologic Techniques**Credits: 4**

Laboratory course focused on application of molecular biology techniques for the isolation, quantitation, detection, analysis, and use of proteins. Substantial emphasis on the use of immunoassays and antibodies in protein work. Modern proteomics techniques are also discussed. Emphasis on recombinant protein expression in the field of biotechnology. Prereq: GEN 604, BMCB 658. Credit cannot be received if credit received for BMS 650, BMS 714, BMS 715. Special fee.

BSCI 777 - Molecular Biology and Biotechnology**Credits: 5**

The organization, expression, and control of RNA and protein-coding genes in prokaryotic and eukaryotic cells. The focus of the course is on mechanisms of genetics at the molecular level and the application of modern techniques to laboratory biotechnology projects. Prereq: GEN 604, BMCB 658. No credit for students who have received credit for GEN 771. Special fee.

BSCI 792 - Research**Credits: 1-4**

Advanced independent research under the direction of a faculty mentor. Content area to be determined in consultation with faculty member. Prereq: permission. May be repeated for up to 8 credits. Up to 4 credits may be applied to self-designed concentration. Up to 4 credits may be applied to the Capstone requirement. Fall and spring semester. Prereq: Permission of Faculty mentor. Cr/F.

BSCI 793 - Internship**Credits: 1-4**

Field-based learning opportunities in the biological sciences through placement in the appropriate outside agency, under the direction of a faculty mentor and representative of outside agency. Content area to be determined in consultation with faculty mentor. Prereq: Permission. May be repeated for up to 8 credits. Up to 4 credits may be applied to self-designed concentration. Up to 4 credits may be applied to the Capstone requirement. Fall and spring semester. Cr/F.

BSCI 794 - Clinical Microbiology Internship**Credits: 4**

Advanced instruction in clinical bacteriology, mycology, parasitology, and/or virology at a local hospital or reference laboratory. Isolation, identification, determination of antibiotic sensitivities, and modern advanced testing for common pathogens are emphasized. Prereq: BMS 602 and permission of instructor.

BSCI 795 - Independent Study**Credits: 1-4**

Advanced individual study under the direction of a faculty mentor. Content area to be determined in consultation with faculty mentor. Prereq: permission. May be repeated for up to 8 credits. Up to 4 credits may be applied to self-designed concentration. Up to 4 credits may be applied to the Capstone requirement. Fall and spring semester. Cr/F.

Biology (BIOL)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

BIOL 400 - Professional Perspectives on Biology**Credits: 1**

Views scope of biology and explores professional opportunities for biological sciences majors. Guest speakers from on-and-off campus present seminars and lead discussions on contemporary issues in biology. Departmental and interdepartmental major and option programs and strategies for achieving professional goals are discussed. Required for all first-semester biology majors. Cr/F.

BIOL 408 - Plants and Civilization**Credits: 4**

Global experience of human interactions with plants and the ways in which plants have contributed to the development and the flourishing of human societies. Includes role of plants in providing sustenance, clothing and shelter, quest for spices, the historical consequences of plant explorations and exploitations, the power to heal or kill, plants in mythology and spiritual endeavors, plants that alter consciousness, plant diseases and human history, plants as energy for society, and the Green Revolution in global change and feeding the world in the future. Special fee.

Attributes: Biological Science(Discovery); Discovery Lab Course

BIOL 409 - Introductory Botany**Credits:** 4

Plants in their natural environments: their structure, function, growth, reproduction, and evolutionary diversity. Special fee. Lab.

Attributes: Biological Science(Discovery); Discovery Lab Course**BIOL 410 - Principles of Molecular and Cellular Biology****Credits:** 3

Introduction to structure and function of cells, tissues and organs, physiological processes; genes and heredity. No Laboratory. All COLSA and pre-professional health students should take BIOL 411, (with lab).

Attributes: Biological Science(Discovery)**BIOL 411 - Introductory Biology: Molecular and Cellular****Credits:** 4

Introduction to structure and function of cells; tissues and organs; physiological processes; genes and heredity. Required for majors in the biological sciences. Special fee. Lab. Students not permitted to enroll in BIOL 411 and BIOL 412 in the same semester.

Attributes: Biological Science(Discovery); Discovery Lab Course; Inquiry (Discovery)**BIOL 411H - Honors/Principles of Biology I****Credits:** 4

Introduction to structure and function of cells, tissues and organs, physiological processes and genes and heredity. Required for majors in the biological sciences. Special fee. Lab.

Attributes: Biological Science(Discovery); Discovery Lab Course; Inquiry (Discovery)**BIOL 412 - Introductory Biology: Evolution, Biodiversity and Ecology****Credits:** 4

The biology of organisms, including survey of kingdoms, behavior, evolution, and ecology. Required for majors in the biological sciences. Students are not permitted to enroll in BIOL 411 and BIOL 412 in the same semester. Special fee. Lab.

Attributes: Biological Science(Discovery); Discovery Lab Course; Inquiry (Discovery)**BIOL 412H - Honors/Principles of Biology II****Credits:** 4

The biology of organisms, including survey of kingdoms, behavior, evolution, and ecology. Required for majors in the biological sciences. Special fee. Lab.

Attributes: Biological Science(Discovery); Discovery Lab Course; Inquiry (Discovery)**BIOL 413 - Principles of Biology I****Credits:** 4

Lecture and Laboratory introduction to biological principles; cell structure, function, replication, energetics and transport mechanisms; physiological processes; Mendelian, molecular genetics and gene technology. Required for students majoring in the life sciences. Cannot be taken for credit after BIOL 411 or equivalent. Special fee. Lab.

Attributes: Biological Science(Discovery); Discovery Lab Course; Inquiry (Discovery)**BIOL 414 - Principles of Biology II****Credits:** 4

Lecture and laboratory survey of the five kingdoms of life; physiology of cells, tissues, organs, and organ systems; evolution; human impact on the biosphere. Required for students majoring in the life sciences. Cannot be taken for credit after BIOL 412 or equivalent. Special fee. Lab.

Attributes: Biological Science(Discovery); Discovery Lab Course**BIOL 416 - Watershed Watch - Research Experience****Credits:** 2

This course builds upon the experiences gained while conducting the field and laboratory research from BIOL 415 (Watershed Watch Summer Institute). Students will be expected to integrate the conceptual and hands-on components learned in BIOL 415 into their own independent scientific research projects conducted under the mentoring of a faculty advisor from their college or university campus. Using a seminar format, students will receive additional lecture and reading materials (via distance-learning tools), compare their research progress (e.g., problems and accomplishments) with the progress of other students on other campuses, and will integrate their findings into the larger studies of the Merrimack and Pasquotank River watersheds. Ultimately, students will present their results at the UNH Undergraduate Research Conference at the end of April. (IA grading). Prereq: BIOL 415 and instructor approval. May be repeated.

BIOL 420 - Introduction to Forensic Sciences**Credits:** 4

This course provides an introductory survey of the Forensic Sciences. The focus is on the recognition, collection, preservation, and analysis of physical evidence related to crime scene investigations. Students will be presented with various state-of-the-art techniques utilized in the analysis of physical evidence, with the presumption that students do not necessarily have in-depth scientific or technical backgrounds (e.g., chemistry, biology, and/or physics). The goal of this class will be to provide students with an understanding of what criminalistics entails and to prepare them for additional, more in-depth classes in criminalistics or forensic science. Special fee.

Attributes: Biological Science(Discovery); Discovery Lab Course**BIOL 430 - Biology of the City****Credits:** 4

This course explores biological systems, functions, and interaction of organisms in an urban environment. Using the campus as our laboratory, the course will progress from exploring the effects of urbanization on biodiversity, biological responses to urbanization, urban forestry, urban agriculture, and conclude with topics in sustainable urban development and conservation. Students in the course will develop an understanding of ecological concepts, problems, and solutions to improving ecological systems of urban areas.

Attributes: Biological Science(Discovery); Discovery Lab Course**BIOL 444A - Biotechnology and Society****Credits:** 4

The history and science of biotechnology and genetic engineering of bacteria, plants, and animals including humans. Applications of DNA technology, cloning and genetic engineering to agriculture, biomedicine, industrial products, and environmental problems. Discussion of economic, social, environmental, legal, and ethical issues related to the applications of biotechnology and genetic engineering. No credit for students who have completed BSCI 422 (UNHM).

Attributes: Environment,TechSociety(Disc); Inquiry (Discovery)

BIOL 444B - Current Controversial Issues in Biology**Credits:** 4

An inquiry into current controversial issues in biology and their scientific and technical bases, but with an emphasis on exploring the various perspectives or beliefs related to each topic and their social and environmental implications.

Attributes: Biological Science(Discovery); Inquiry (Discovery)**BIOL 495 - Research Experience in Biological Sciences****Credits:** 1-2

Hands-on research experience for high school students and UNH freshmen under the supervision of a Biological Sciences faculty member. This independent-study course introduces students to the research process and requires them to undertake a research project that involves laboratory and/or field work. Before a student can register for the course, he/she must meet with a Biological Sciences faculty member who will serve as mentor and supervisor, and the two of them must have a formal agreement on the specific research activities that the student must carry out. Prereq: permission. May be repeated up to a maximum of 4 credits.

BIOL 510 - Mushrooms, Molds, and Mildews: Introduction to the Fungal Kingdom**Credits:** 4

Fungi represent a diversity of both form and function, and occupy nearly every habitat and niche on the planet. The fungi have been crucial in early and current scientific discovery as many species are used as model systems in biological sciences for the study of ecology, epidemiology, evolution, genetics, genomics, and physiology. Fungi occupy a number of important niches in natural and man made environments including: human, animal, insect, and plant pathogens, plant symbionts, organic matter decomposers, food source, antibiotic production, and are a crucial component of global nutrient cycling. The most recent use of fungi has been the identification of specific enzymes produced by fungi to degrade lignin substrates for the production of biofuels. This course will introduce students to the wonderful world of fungi in all their diversity and complexity.

BIOL 520 - Our Changing Planet**Credits:** 4

Ecosystem interrelations and factors critical to maintain sustainability will be addressed in this course. Environmental issues such as water usage, pollution, and treatment; air and soil quality; fossil fuels and alternative energy sources will be presented. Not for credit if credit earned for ENE 520.

Attributes: Environment,TechSociety(Disc)**BIOL 528 - Applied Biostatistics I****Credits:** 4

Development of elementary statistical techniques through the analysis of prepared biological data. Continuous and discrete probability distributions, distributions of sample statistics, small-sample theory, regression, correlation, and analysis of variance. No credit for students who have completed ADM 430; ADMN 420; BIOL #555; EREC 525; HHS #540; MATH 439; MATH 539; MATH 644; PSYC 402; SOC 502.

Attributes: Quantitative Reasoning(Disc)**BIOL 541 - General Ecology****Credits:** 4

Physical and biological factors affecting distribution, abundance, and adaptations of organisms. Population, community, and ecosystem structure and function. Prereq: BIOL 411 and BIOL 412 or equivalent. Special fee. Lab. Writing intensive.

Attributes: Writing Intensive Course**BIOL 544 - Your Genes, Your Life****Credits:** 4

This course explores societal, ethical, and legal issues surrounding the human genomics revolution, with a particular focus on biomedical questions. What will it mean to know your complete DNA sequence? If everyone's genome were included in a public database, how should that information be controlled and used? What, ultimately, do our genes encode? We will examine the basis of genetic inheritance, the interaction between genes and environment, and the types of genetic variation that occur between individuals and populations. In the medical realm, we will look at genetic and evolutionary processes underlying diseases such as cancer, and at the role of genomic technology in the drive toward personalized medicine. No credit for students who have completed BIOL 444A. Writing intensive.

Attributes: Environment,TechSociety(Disc); Inquiry (Discovery); Writing Intensive Course**BIOL #555 - Experimental Design and Analysis Laboratory (EDAL)****Credits:** 4

Using hands-on laboratory based inquiry, the course explores the concepts that form the basis of statistical analysis and experimental design. Working in small teams, students examine variability in different types of measurement data and empirically derive probability distributions including Poisson, Chi-square, Normal, Student's t, and F distributions. An intuitive approach to data analysis and hypothesis testing provides students with a conceptual understanding of the basic and advanced statistical analyses including ANOVA, Linear, and Non-Linear Regression, Correlation, Goodness-of-fit, ANCOVA, and MANOVA. Students have an opportunity to become familiar with how these tests are implemented in several popular statistical software packages. The approach used in the course emphasizes development of analytical thinking skills and the application of conceptual understanding to solve new problems. Grading is based on participation in team projects, presentations, mastery of concepts and skills, and written reports. No credit for students who have completed ADM 430; ADMN 420; BIOL 528; EREC 525; HHS #540; MATH 439; MATH 539; MATH 644; PSYC 402; SOC 502.

Attributes: Quantitative Reasoning(Disc)**BIOL 566 - Systematic Botany****Credits:** 4

Scientific basis of plant taxonomy and the identification and classification of major plant families, native trees, shrubs, and wildflowers. Field trips, plant collection. Prereq: BIOL 412 or BIOL 409. Lab. Special fee.

BIOL 600 - Field Experience**Credits:** 1-4

A supervised experience providing the opportunity to apply academic experience in settings associated with future professional employment and/or related graduate opportunities. Must be approved by a faculty adviser selected by the student. May be repeated to a maximum of 8 credit hours. Prereq: permission. Cr/F.

BIOL 601 - Biology of Plants**Credits:** 4

Structural and functional biology of the plant organism, with emphasis on land plants. Evolution of vegetative processes and sexual reproduction/breeding systems. Plant adaptations to environmental challenges. Prereq: BIOL 411 and BIOL 412 or ZOOL #412.

BIOL 633 - Quantitative Reasoning and Analysis for Life Sciences**Credits:** 4

Students in Quantitative Reasoning and Analysis for Life Sciences will learn how to apply statistics, computer programming (in RStudio) and data visualization to the life sciences. The course will focus on the process of data analysis including data organization, graphing, hypothesis testing, predictive modeling, and communicating results. Students will become proficient in coding in RStudio and evaluating analyses in peer-reviewed literature. Prereq: BIOL 528 or any undergraduate statistics course.

BIOL 675 - Medical Botany**Credits:** 4

This course is an integrated study of the medical, psychoactive, and poisonous plants, their active constituents their physiological effects on people, their mode of action and their role in historical and current medical practice. Emphasis is placed on the impact that plants have on human health. Students will take an active role in class, and will develop their own knowledge of medicinal plants through guided discussions and in-class group activities. Prereq: BIOL 411, BIOL 412.

BIOL 695 - Biology Teaching Practices**Credits:** 1-4

Students assist in teaching labs in undergraduate biology courses supervised by the lab coordinator/instructor. Responsibilities include facilitating lab endeavors, giving a presentation, and writing a report. Prereq: permission. May be repeated to 4 credits maximum.

BIOL 700 - Current and Controversial Issues in Biology**Credits:** 4

This course explores current issues in the biological sciences that are controversial and have a significant impact on individuals and society. Issues related to human population growth, evolution, cloning, synthetic biology, genetically modified organisms, free will, etc. Biology capstone. Only open to Animal Science, Zoology, Neuroscience and Behavior, Biology, Marine & Freshwater Biology, and Sust Agriculture & Food Systems majors.

BIOL 701 - Plant Physiology**Credits:** 5

Structure-function relationship of plants, internal and external factors regulating plant growth and development, plant hormones, plant metabolism, water relations, and mineral nutrition. Prereq: BIOL 409 or SAFS 421 or BIOL 411 and BIOL 412; CHEM 403 and CHEM 404.

BIOL 702 - Techniques in Plant Physiology and Biochemistry**Credits:** 4

The course provides hands-on experience with instrumentation and experimental procedures for analysis of plant growth and metabolism. Experiments demonstrate the regulation of plant growth and development in response to environmental and chemical factors, analysis of cellular contents and processes, and use of modern instrumentation for physiological and biochemical studies. The experiments deal with plant water relations, photosynthesis, plant hormones, enzyme kinetics, use of spectrophotometry, aseptic procedures, and liquid and thin-layer chromatography. Prereq: BIOL 411, BIOL 412, or permission of instructor. Special fee. Lab.

BIOL 704 - Plant-Microbe Interactions**Credits:** 3

This course provides an overview of the molecular, cellular and biochemical factors underlying the interactions of plants with various microbes, including bacterial, fungal, oomycete and viral pathogens, and mutualistic symbionts, such as mycorrhizal fungi and Rhizobium. Unifying themes underlying disease, resistance, and symbiosis are emphasized. Prereq: BIOL 411 and BIOL 412, BMS 503 and BMS 504 or GEN 604.

BIOL 709 - Plant Stress Physiology**Credits:** 3

Physiological and biochemical mechanisms of plant responses to abiotic stresses, including drought, salt, high and low temperature, visible and ultra-violet radiation, heavy metals, and air pollutants. Current hypotheses, and agricultural and ecological implications are discussed. Prereq: plant physiology; biochemistry; or permission. (Offered alternate years.)

BIOL 711 - Applied Biostatistics II**Credits:** 4

Design and analysis of biological and ecological research experiments. "Real world" studies used to discuss the identification of hypotheses, appropriate experimental design, and the application of statistical analyses including ANOVA, ANCOVA, correlation and regression, cluster analysis, classification and ordination techniques. Theoretical statistical concepts tailored to consider student's own thesis and dissertation research, allowing statistical problems to be addressed at various stages of the research process. Common computer packages used for analyses. Prereq: BIOL 528; permission.

BIOL 713 - Biochemistry of Photosynthesis**Credits:** 4

Physiology and biochemistry of photosynthesis in higher plants and microorganisms: light reactions, electron transport, membrane structure and function, carbon assimilation pathways, energy conservation, and metabolic regulation. Agronomic and ecological aspects of photosynthesis are examined. Prereq: plant physiology or biochemistry (Not offered every year.) Special fee.

BIOL 720 - Plant-Animal Interactions**Credits:** 4

This course will explore interactions between plants and animals and their evolutionary consequences on individual organisms as well as on ecological communities. Readings from the primary literature will serve as case studies to discuss hypotheses related to plant-animal interactions, the methods employed to test these hypotheses, and the conclusions drawn from these experiments. A weekly discussion session will be used as a grant-writing workshop, with activities designed to help students prepare an NSF-style grant as the culminating course project. Prereq: BIOL 411 and BIOL 412.

BIOL 752 - Mycology**Credits:** 4

Classification, identification, culturing, life histories, and ecology of fungi, from slime molds to hallucinogenic mushrooms; the significance of fungi in human history, from their contributions to the art of bread making and alcoholic fermentation to their destructiveness as agents of deadly diseases of plants and animals. Prereq: BIOL 411 and BIOL 412 or BIOL 409 or equivalent. Special fee. Lab.

BIOL 758 - Plant Anatomy**Credits:** 5

Anatomy of vascular plants, emphasizing structure and development of basic cell and tissue types, and of the major plant organs. Prereq: BIOL 412 or BIOL 409. Lab. Special fee. (Not offered every year.)

BIOL 795 - Independent Investigations**Credits:** 1-4

Topics may include teaching or research practicum in a biological science, supervised by a faculty member. Prereq: 12 credits of biology or permission. May be repeated to 4 credits.

BIOL 795W - Independent Investigations**Credits:** 1-4

Topics may include teaching or research practicum in a biological science, supervised by a faculty member. Prereq: 12 credits of biology or permission. May be repeated to 4 credits.

Attributes: Writing Intensive Course**BIOL 799 - Honors Senior Thesis****Credits:** 2-8

Independent research requiring a written proposal, a thesis, and a final public presentation (e.g. the Undergraduate Research Conference). Intended for biology majors completing biology Honors-in-major requirements. Contact biology program coordinator prior to senior year to arrange supervision and obtain permission. Two consecutive semesters. (4 credit minimum total; 8 credits maximum).

Attributes: Writing Intensive Course

Biomedical Science (BMS)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

BMS 401 - Professional Perspectives in Biomedical Sciences**Credits:** 1

Introduction to the major and the options in Biomedical Sciences. Strategies for successfully achieving academic and professional goals in the biomedical sciences. Professional opportunities for BMS majors are presented. Cr/F.

BMS 402 - Special Topics in Biomedical Sciences**Credits:** 1

Introduces contemporary research and provides an avenue to explore recent developments in the field of biomedical science. Each semester focuses on a different theme. Cr/F.

BMS 405 - In Sickness and in Health: Understanding Why Bodies Fall**Credits:** 4

This course describes the basic structure and function of various organs and systems, then discuss many common diseases and conditions that impact humans, such as meningitis, Alzheimer's, diabetes, HIV/AIDS, asthma, and schizophrenia. Primary focus is on the physical process of disease but the course will also examine the emotional and social impact of certain diseases.

Attributes: Biological Science(Discovery)**BMS 407 - Germs 101****Credits:** 4

Societal and technological impact of the invisible microbial world on our lives and on the planet. Weekly extra-class activities enable students to use the scientific method of inquiry to explore topics like bacteria that use sunlight to live or use of bacteria in genetic engineering. Presents germs from different perspectives: as living organisms, as human enemies or friends, and as represented in newspapers or on TV. Especially useful for people with microphobia. No credit for BMS or Biology majors. Special fee.

Attributes: Biological Science(Discovery)**BMS 408 - Germs 101****Credits:** 4

Online version of BMS 407. Societal and technological impact of the invisible microbial world on our lives and on the planet. Weekly extra-class activities enable students to use the scientific method of inquiry to explore topics like bacteria that use sunlight to live or the use of bacteria in genetic engineering. Presents germs from different perspectives: as living organisms, as human enemies or friends, and as represented in newspapers or on TV. Especially useful for people with microphobia. No credit for BMS or Biology majors. Special fee.

Attributes: Biological Science(Discovery)**BMS 501 - Microbes in Human Disease****Credits:** 4

Identification, pathogenesis, epidemiology, treatment, and prevention of medically important microorganisms. The biology of clinically relevant bacteria, viruses, fungi, and parasites is presented in relation to disease progress and host defense mechanisms. Clinical correlations that indicate microbes are causative agents of disease are emphasized. The laboratory introduces techniques for identification of pathogenic microorganisms to reinforce and expand the theoretical content. Special fee. Lab.

Attributes: Biological Science(Discovery); Discovery Lab Course**BMS 503 - General Microbiology****Credits:** 3

Principles of microbiology; morphology, physiology, genetics, culture, and classification of bacteria and other microorganisms; relationships of microbes to agriculture, environment, industry, sanitation, and infectious diseases. Prereq: BIOL 411 and BIOL 412 or equivalent; CHEM 403 and CHEM 404 or equivalents.

Co-requisite: BMS 504**BMS 504 - General Microbiology Laboratory****Credits:** 2

Practical laboratory training in general microbiology. Topics include safe handling, visualization, and physiological identification of microorganisms with special attention given to aseptic technique. Prereq: BIOL 411 and BIOL 412 and CHEM 403 and CHEM 404 or equivalents. Coreq: BMS 503. Special fee.

Co-requisite: BMS 503

BMS 507 - Human Anatomy and Physiology I**Credits:** 4

Cellular and systematic aspects of the human body. Laboratory exercises utilize preserved specimens, dissectible models, living tissue and computer-aided instruction. Systems covered include: the cell, chemistry, tissues, integument, osseous tissue and the skeleton, muscular tissue and muscles, nerves, the brain, spinal cord, autonomic nervous system, and special senses. No credit earned for ANSC 511 and ANSC 512. Lab. Special fee.

Attributes: Biological Science(Discovery); Discovery Lab Course**BMS 508 - Human Anatomy and Physiology II****Credits:** 4

Cellular and systematic aspects of the human body. Laboratory exercises utilize preserved specimens, dissectible models, living tissue and computer-aided instruction. Systems covered include: endocrine, blood, cardiovascular, respiratory, immune, digestive and metabolism, urinary, acid-base and electrolyte balance, reproductive. Prereq: BMS 507. No credit earned for ANSC 511 and ANSC 512. Lab. Special fee.

Attributes: Biological Science(Discovery); Discovery Lab Course**BMS 560 - Body Fluids****Credits:** 3

The study of diseases and disorders through the analysis of extra-vascular body fluids. Emphasizes renal anatomy and physiology, and diseases and metabolic disorders affecting renal function.

BMS 561 - Body Fluids Laboratory**Credits:** 1

Practical experience in the performance and clinical correlation of urinalysis and selected body fluid procedures. Special fee.

Co-requisite: BMS 560**BMS 600 - Field Experience****Credits:** 1-4

Supervised experience providing the opportunity to apply academic experience in settings associated with future professional employment and/or related graduate opportunities. Must be approved by a faculty advisor selected by the student. May be repeated to a maximum of 8 credits. Only 4 credits can be used toward the major. Permission required. Cr/F.

BMS 601 - Bacteriology of Food**Credits:** 5

Lectures and laboratories address modern technical concepts of microbiology, physiology, and biochemistry related to food sanitation. Theoretical and practical approach serves as an integrative experience. Food sanitation is a serious public health issue in the meat, dairy, fish, and water industries. Benefits students seeking employment in public health or sanitary microbiology fields. Topics include food as a substrate for microorganisms, causes of food spoilage, food borne disease outbreaks, public health complications, isolation and identification of food spoiling microorganisms, and essentials for food safety and sanitation. Prereq: BMS 503 and BMS 504 or equivalent. (Not offered every year.) Special fee. UNHM only.

BMS 602 - Pathogenic Microbiology**Credits:** 3

An introduction to microbial disease, with a focus on bacterial and viral diseases in humans and animals. This course examines the clinical presentation, laboratory diagnosis, and treatment of specific microbial pathogens. Molecular aspects of both microbial infection and host immune response are discussed. Case studies based on real clinical and research microbiology problems are presented. Prereq: BMS 501, or BMS 503 and BMS 504.

BMS 603 - Pathogenic Microbiology Laboratory**Credits:** 2

An introduction to morphologic, cultural, biochemical and pathogenic characteristics of microorganisms causing human and animal diseases. Laboratory exercises focus on both classical and modern laboratory diagnostic testing. Prereq: BMS 501, or BMS 503 and BMS 504. Special fee.

Co-requisite: BMS 602**BMS 610 - Biomedical Lab Management****Credits:** 4

Overview of biomedical laboratory management, including lab operation, compliance, financial management, personnel management, information systems, and leadership. Writing intensive.

Attributes: Writing Intensive Course**BMS 620 - Tissue Engineering Cell Culture Laboratory****Credits:** 4

Introduction to culture of mammalian cell lines with applications to bioengineering and biomedical sciences. Techniques and skills include those most relevant to bioengineering and biomedical sciences: basic cell culture, sterile technique, growth and maintenance of cell lines, growth curves, transfection, cryopreservation, and cytotoxicity assays. Inquiry-based final project. Preference given to Bioengineering majors. Prereq: BMS 503 and 504.

BMS 623 - Histology: Microscopic Cellular Structure and Function**Credits:** 4

Cellular structure, function, and physiology, as well as the interactions between cells in different organ systems, are examined at the microscopic level. Digital microscopic images are utilized to examine the cellular structure of all organ systems and the interactions between cells in these organs. Prereq: ANSC 511 and ANSC 512, or BMS 507 and BMS 508. Hybrid course with online lab.

BMS 635 - Preceptorial in Prehospital Care**Credits:** 2

Practice and evaluation of prehospital care. Understand the roles of different provider levels in a healthcare setting. Students participate in ambulance activities, then discuss assessment and treatment of patients in the prehospital setting. Licensure by the New Hampshire Bureau of EMS required before course start date. Prereq: KIN 684 and KIN 685 or equivalent. May be repeated for a maximum of 4 credits. Cr/F.

BMS 640 - Phlebotomy Theory**Credits:** 2

Theory and demonstration of procedures involved in blood collection with an emphasis on safety and professionalism. Hands-on practice of selected techniques. Special fee.

BMS 641 - Phlebotomy Clinical Internship**Credits:** 1-2

Students obtain experience and proficiency in routine blood collection techniques at a health care facility (80 to 120 hours). Prereq: BMS 640. Special fee. Cr/F.

BMS 642 - Clinical Immunology and Serology**Credits:** 2

Innate and specific immunity in the context of chemical and cellular responses to antigenic challenge. Also introduces the immunologic basis of autoimmunity, immune proliferation and deficiency, and hypersensitivity. Current clinical analytical methodologies and diagnostic criteria used to identify, differentiate and/or monitor these responses and conditions included. Prereq: BIOL 411 and BIOL 412, or BMS 507 and BMS 508, or ANSC 511 and ANSC 512.

BMS 643 - Clinical Serology Laboratory**Credits:** 2

Performance, interpretation and application of serological techniques for the diagnosis of immune system disorders. Special fee.

Co-requisite: BMS 642**BMS 644 - Clinical Hematology****Credits:** 3

Human blood cell physiology in both health and disease. Includes benign and malignant conditions of red blood cells and white blood cells.

BMS 645 - Clinical Hematology Laboratory**Credits:** 2

Analysis of whole blood for cellular components with special emphasis on differentiating benign from malignant processes, as well as cellular identification by morphologic characteristics and cytochemical staining. Special fee.

BMS 646 - Clinical Hemostasis**Credits:** 1

Introduction to hemostasis through evaluation of platelets, blood vessels, coagulation factors and fibrinolysis, including dysfunction and disease states. Pre- Coreq: BMS 644 or permission.

BMS 650 - Molecular Diagnostics**Credits:** 4

Fundamental principles of molecular technology and techniques used in clinical laboratories such as nucleic acid extraction, DNA amplification, sequencing and hybridization, gel electrophoresis, and chromosome analysis. Prediction and detection of human disease (infectious disease, cancer, and other inherited disease), identity testing, molecular epidemiology, pharmacogenetics, and ethical issues. Previous knowledge of genetics and biochemistry lab techniques is highly recommended.

Attributes: Environment, TechSociety(Disc)**BMS 655 - Human and Animal Parasites****Credits:** 3

Introduction to the parasitic process in humans and different animals indigenous to domestic and foreign areas of the world. Topics include epidemiology, infection, control, genetics, and immunology, as well as global economic consequences. Prereq: BMS 503 and BMS 504.

BMS 656 - Immunohematology**Credits:** 3

The immunology of blood, including blood group systems and the critical role they play in safe transfusion medicine. Additional topics include blood collection, component use, transfusion reactions, and transfusion-transmitted infections.

BMS 657 - Blood Banking Laboratory**Credits:** 1

Hands-on experience in clinical blood banking practices including blood typing, antibody screening and identification, cross matching, and confirmatory testing. Special fee.

Co-requisite: BMS 656**BMS 658 - Medical Biochemistry****Credits:** 3

Use of body fluids to assess specific disease states including the pathophysiology of the disease, pre-analytical issues, analytical methodologies, and instrumentation. Topics include the biochemistry of analytes (amino acids, proteins, enzymes, tumor markers, non-protein nitrogen metabolites, carbohydrates, lipids, electrolytes, blood gases, etc.), clinical endocrinology, toxicology and therapeutic drug monitoring. Prereq: BMCB 658 and BMCB 659; BIOL 528, or equivalents.

BMS 659 - Clinical Chemistry Laboratory**Credits:** 2

Measurement of blood analytes such as proteins, glucose, electrolytes, and cholesterol, etc. Screening for drugs in urine and evaluation of clinical significance in human specimens. Principles of spectrometry, immunoassay, point-of-care testing, chromatography, mass spectrometry, electrophoresis, automation, and ion selective electrodes, with emphasis on instrumentation, quality control, and pre-analytical and analytical issues. Special fee.

Co-requisite: BMS 658**BMS 699 - Independent Study in Biomedical Science****Credits:** 1-6

In-depth studies under faculty supervision. Permission required. Cr/F.

BMS 699W - Independent Study in Biomedical Science**Credits:** 1-6

In-depth studies under faculty supervision. Permission required. Writing intensive. Cr/F.

Attributes: Writing Intensive Course**BMS 702 - Endocrinology****Credits:** 4

Structure and function of vertebrate endocrine systems through the lens of physiology, biochemistry, and cell and molecular biology, with special reference to mammals. Current investigations of the body's major endocrine glands, such as the brain, thyroid, pancreas, adrenals and gonads, as regulators and integrators of biological systems. BMCB 605 recommended. Prereq: BMCB 658 or BMCB 751.

BMS 703 - Infectious Disease and Health**Credits:** 4

Principles underlying the nature of infectious disease agents, including representative parasites, fungi, bacteria, viruses, and prions. Established pathogens and emerging human and animal disease agents highlighting zoonotic diseases. Epidemiology, pathogenesis, host immune response, disease transmission, treatment, and control. Weekly review and discussion of current world disease events. Prereq: BMS 503 and BMS 504.

BMS 704 - Pathologic Basis of Disease**Credits:** 4

Principles and mechanisms of disease at the cellular and tissue levels, including responses to cell injury, death and adaptation, inflammation, circulatory disturbances, disorders of the immune system, and neoplasia. ANSC 511 and ANSC 512, or BMS 507 and BMS 508 recommended.

BMS 705 - Immunology**Credits:** 3

An introduction to the fundamental mechanisms of immune function. Topics include the cells and organs of the immune system, humoral and cellular immune responses, the generation of immune cells, and how immune cells fight various infectious pathogens. Coreq: BMS 715 for BMS:MM majors only. Prereq: BMS 503 and BMS 504.

BMS 706 - Virology**Credits:** 3

Principles of animal and selected plant and bacterial virology in relation to infection and disease. Emphasizes the molecular biology of viruses, viral replication, isolation, propagation, assay, pathogenesis, diagnosis, detection, epidemiology, and control. Coreq: BMS 708 for BMS:MM majors only. Prereq: BMS 503 and BMS 504.

BMS 708 - Virology Laboratory**Credits:** 2

Principles and practices of animal, selected plants, and bacterial virological methods for the propagation, detection and enumeration of viruses. Prereq: BMS 503 and BMS 504. Coreq: BMS 706. Special fee.

Co-requisite: BMS 706**BMS 711 - Toxicology****Credits:** 4

Examination of mechanisms by which chemicals and other toxicants produce adverse effects in biological systems. Consideration of toxicant exposure and absorption, systemic and cellular distribution and metabolism, altered cellular mechanisms, and systemic and organ-specific effects of toxicity. Case-based discussions of toxicants affecting humans and other species in environmental and clinical contexts. Prereq: BMS 658.

BMS 712 - Grand Rounds**Credits:** 2

Interactive presentation and observation of disease through pathological examination of animals submitted to the NH Veterinary Diagnostic Lab for necropsy. Discussion of underlying pathogenesis of diseases and disorders. Examination of archived gross and digital tissue specimens. Integrates aspects of anatomy, physiology, microbiology, immunology, and other core sciences as well as medical ethics and social issues. Intended for those in pre-professional medical, dental, pharmacy, veterinary and biomedical fields. Prereq: BMS 507 and BMS 508, or ANSC 511 and ANSC 512. May be repeated up to a maximum of 4 credits.

BMS 715 - Immunology Laboratory**Credits:** 2

This applied immunology laboratory course highlights both historic and current methodologies important for elucidation and diagnosis of immune function. Techniques used to study phagocytosis, antibody production, immunodiffusion, and T-cell function will be introduced. Applications of the antibody technologies to other scientific disciplines (ELISA, immunofluorescence microscopy, immunoblotting, etc.) will also be covered. Prereq: BMS 503 and BMS 504. Special fee.

Co-requisite: BMS 705**BMS 716 - Public Health: Food- and Water-borne Diseases****Credits:** 4

How and why food-borne and water-borne agents (virus, protozoal, bacterial and toxic material) are still prevalent within our society with focus on the roles of government, disease and epidemiology, and sources of anthropogenic pollution. Field trips to wastewater plant and/or drinking water plant, town meetings and/or public policy hearings. Prereq: BMS 503 and BMS 504. Special fee. Lab. Writing intensive.

Attributes: Writing Intensive Course**BMS 718 - Mammalian Physiology****Credits:** 4

Advanced study of the systems that control mammalian functions with emphasis on cellular and molecular mechanisms. Includes the nervous, muscular, cardiovascular, renal, gastrointestinal, and endocrine systems. Prereq: at least one semester of animal/human physiology, or one semester of anatomy and physiology. Permission required. Writing intensive.

Attributes: Writing Intensive Course**BMS 719 - Host-Microbe Interactions****Credits:** 4

An examination of the way microorganisms interact with their hosts, with an emphasis on the pathogenic and commensal organisms of humans. Course material is introduced via reading, analysis and group presentations of primary scientific literature. Students are not only introduced to different types of host-microbe interactions, but different methods, systems and model organisms used to study these interactions. Prereq: BMS 501, or BMS 503 and BMS 504; GEN 604.

BMS 720 - Mycology, Parasitology, and Virology**Credits:** 3

Theoretical basis of the pathogenesis, epidemiology, and diagnosis of fungal, parasitic, and viral infections. Prereq: BMS 602 and BMS 603.

BMS 721 - Mycology, Parasitology, and Virology Laboratory**Credits:** 2

Practical experience in medical mycology and parasitology diagnostic techniques. Isolation and identification of mycological and parasitological specimens. Principles and practices of proper specimen collections, analysis, and interpretation of results. Special fee.

Co-requisite: BMS 720**BMS 730 - Ethical Issues in Biomedical Science****Credits:** 4

An examination of the importance of scientific integrity in the biomedical sciences. Students are introduced to the ethical issues that scientists must be familiar with when conducting research. Issues include scientific record keeping, authorship and peer review, conflicts of interest, use of animals and humans in research, and recombinant DNA technology. Class is discussion-based, encouraging both an appreciation of established guidelines and an opportunity to critically examine them. Prereq: BIOL 411; GEN 604; BMS 503 and BMS 504. Writing intensive.

Attributes: Writing Intensive Course**BMS 740 - Human Microbiome****Credits:** 4

The human microbiome is a new, rapidly growing field of microbiology that has already made important contributions to the understanding of human health. This laboratory course utilizes current research methodology to investigate the microbiome of the human skin. Students gain hands-on experience in PCR, genomics, bioinformatics, and modern clinical identification techniques. They also generate primary data to make their own contribution to this important field of research. Prereq: GEN 604; BMS 501, or BMS 503 and BMS 504. Special fee. Lab.

BMS 750 - Case Studies**Credits:** 1-5

Patient case studies are analyzed in up to four different areas: microbiology, hematology, clinical chemistry, or immunohematology. Correlation of patient history with clinical presentation and interpretation of clinical laboratory results. Learn to interpret given information, recognize abnormal results and their clinical significance, generate etiologic possibilities, and determine the best diagnosis for the patient condition including appropriate treatment and recommended follow-up testing. Writing intensive. Microbiology case studies. 2 credits. Prereq: BMS 602 and BMS 603; BMS 720 and BMS 721. Hematology case studies. 1 credit. Prereq: BMS 644 and BMS 645. Medical Biochemistry case studies. 2 credit. Prereq: BMS 658 and BMS 659. Immunohematology case studies. 1 credit. Prereq: BMS 656 and BMS 657.

Attributes: Writing Intensive Course**BMS 751 - Advanced Clinical Microbiology Internship****Credits:** 5

Instruction and clinical practice of microbiology-related techniques and their applications in the medical laboratory setting. Includes the principles and practices of proper specimen collection, clinical diagnosis testing, and interpretation of results. Special fee.

BMS 751W - Advanced Clinical Microbiology Internship**Credits:** 5

Instruction and clinical practice of microbiology-related techniques and their applications in the medical laboratory setting. Includes the principles and practices of proper specimen collection, clinical diagnosis testing, and interpretation of results. Special fee. Writing intensive.

Attributes: Writing Intensive Course**BMS 752 - Advanced Hematology Internship****Credits:** 5

Instruction and clinical practice of hematology-related techniques and their applications in the medical laboratory setting. Includes the principles and practices of special hematology procedures including diagnostic staining, advanced hemostasis studies, and evaluation of blood cells in disease states.

BMS 752W - Advanced Hematology Internship**Credits:** 5

Instruction and clinical practice of hematology-related techniques and their applications in the medical laboratory setting. Includes the principles and practices of special hematology procedures including diagnostic staining, advanced hemostasis studies, and evaluation of blood cells in disease states. Writing intensive.

Attributes: Writing Intensive Course**BMS 753 - Advanced Immunohematology Internship****Credits:** 5

Introduction and clinical practice of immunohematology-related techniques and their applications in the medical laboratory setting. Includes the principles and practices of advanced blood-banking procedures, including antibody identification, and component therapy.

BMS 753W - Advanced Immunohematology Internship**Credits:** 5

Introduction and clinical practice of immunohematology-related techniques and their applications in the medical laboratory setting. Includes the principles and practices of advanced blood-banking procedures, including antibody identification, and component therapy. Writing intensive.

Attributes: Writing Intensive Course**BMS 754 - Advanced Clinical Chemistry Internship****Credits:** 5

Instruction and clinical practice of clinical chemistry-related techniques and their applications in the medical laboratory setting. Includes the principles and practices of advanced laboratory analysis of body fluid chemistries. Enzymology, isotopes, hormones, blood gases, and toxicology. Theory, operation, evaluation and maintenance of automated chemistry systems.

BMS 754W - Advanced Clinical Chemistry Internship**Credits:** 5

Instruction and clinical practice of clinical chemistry-related techniques and their applications in the medical laboratory setting. Includes the principles and practices of advanced laboratory analysis of body fluid chemistries. Enzymology, isotopes, hormones, blood gases, and toxicology. Theory, operation, evaluation and maintenance of automated chemistry systems. Writing intensive.

Attributes: Writing Intensive Course**BMS 761 - Clinical Microbiology Internship****Credits:** 20

Advanced instruction in clinical bacteriology, mycology, parasitology, and virology at local hospital or reference laboratory. Isolation, identification, and antibiotic sensitivities for common pathogens are emphasized. Special fee.

BMS 761W - Clinical Microbiology Internship**Credits:** 20

Advanced instruction in clinical bacteriology, mycology, parasitology, and virology at local hospital or reference laboratory. Isolation, identification, and antibiotic sensitivities for common pathogens are emphasized. Special fee. Writing intensive.

Attributes: Writing Intensive Course**BMS 762 - Clinical Hematology Internship****Credits:** 20

Advanced instruction in hematology and hemostasis at a local hospital or reference laboratory. Specialized tests such as automated cell counts, cytochemical analyses, and specialized hemostasis are covered. Special fee.

BMS 763 - Clinical Immunohematology Internship**Credits:** 20

Advanced instruction in clinical immunohematology at a local hospital or reference laboratory. Pre-transfusion testing, donor screening, phlebotomy and component therapy emphasized. Special fee.

BMS 764 - Clinical Chemistry Internship**Credits:** 20

Advanced instruction in clinical chemistry at a local hospital or reference laboratory. Analysis of carbohydrates, proteins, enzymes, lipids, hormones, electrolytes, blood gases, and drugs. Special fee.

BMS 790 - Undergraduate Teaching Experience**Credits:** 1-4

Provide academic support to graduate teaching assistants or faculty in preparing, presenting, and executing Biomedical Science lectures or labs. May be repeated up to a maximum of 4 credits. Permission required.

BMS 795 - Investigations in Biomedical Science**Credits:** 1-8

Advanced research or scholarly projects developed and conducted under the supervision of a faculty member. Provides the opportunity to apply knowledge and techniques of the major to a specific problem or question. Permission required. May be repeated up to a maximum of 8 credits.

BMS 795W - Investigations in Biomedical Science**Credits:** 1-8

Advanced research or scholarly projects developed and conducted under the supervision of a faculty member. Provides the opportunity to apply knowledge and techniques of the major to a specific problem or question. Permission required. May be repeated up to a maximum of 8 credits. Writing intensive.

Attributes: Writing Intensive Course**BMS 796 - Biomedical Research Internship****Credits:** 4-16

Advanced instruction/participation in some aspect of biomedical research at an off-campus location. Student designs program of study with research supervisor and BMS faculty advisor. Permission required. May be repeated up to a maximum of 16 credits.

BMS 799 - Senior Thesis**Credits:** 1-4

Independent research project under the direction of a faculty sponsor for seniors in biomedical sciences. Final product is a written thesis. One or two semesters. May be repeated to a maximum of 8 credits. Permission required. Writing intensive.

Attributes: Writing Intensive Course**BMS 799H - Senior Honors Thesis****Credits:** 1-4

Independent research project under the direction of a faculty sponsor for seniors in biomedical sciences and in the Honors Program. Final product is a written thesis. One or two semesters. May be repeated to a maximum of 8 credits. Permission required. Writing intensive.

Attributes: Writing Intensive Course

Business (BUS)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

BUS 400 - Introduction to Business**Credits:** 4

Introduces the study of business: examines the origins and development of American business, its place in a global economy, and its legal and ethical roles in modern society. Includes an overview of the functional areas of business such as finance, marketing, and organizational behavior. Designed for business majors as well as for students considering a major in business.

BUS 410 - Introduction to Entrepreneurship**Credits:** 4

This course explores the structure and framework of entrepreneurial endeavors, both inside and outside of the business world. Questions to be addressed include: What is entrepreneurship? What is opportunity recognition and selection? How can you create and define connective advantage? How can you think about people in the entrepreneurial context? How can you garner support (financial and other) for an entrepreneurial venture? What do you do when nothing works as planned?

BUS 413 - Business Communication**Credits:** 2

The principles of business communication relate to people in business or students planning a career in business. The course includes the study of the mechanics, form, style, and content of business letters, memos, e-mails, reports, proposals, and presentations.

BUS 430 - Introduction to Business Statistics**Credits:** 4

The use of statistical methods for managerial decision making. Emphasis is on understanding concepts, including inferences from sample data and model formulation, as aids in decision-making. Lab: Using class-focused statistics problems, designed to provide opportunity to develop course-specific problem solving strategies; to adapt from mathematical to statistical thinking; to analyze and communicate significance and meaning of numerical outcomes; to develop course-specific test taking prowess. No credit for students who have received credit for BIOL 528; ADMN 420; EREC 525; HHS #540; MATH 439; MATH 539; MATH 644; PSYC 402; SOC 502.

Attributes: Quantitative Reasoning(Disc)**BUS 453 - Leadership for Managers****Credits:** 4

This course provides the critical element of analytical and intellectual examination and reflection of certain core issues in the practice of leadership. These objectives are achieved through open discussion, honest self-assessment, experiential exercises, and observation of real-life leadership practice. What is valued in this course are honest relationships and dialogue, risk-taking, dedication to the topic of leadership, initiative, and exploring the confusion and gray areas involved in these topics. Prereq: BUS 400. Only open to Business Admin majors.

BUS 455 - Management of Human Resources Management**Credits:** 4

This course emphasizes the development of skills for dealing with selected aspects of human resource management. It aims to enhance the students' ability to apply theoretical concepts and alternative approaches for dealing with common issues concerning the human side of the enterprise. The course is geared to serve the needs of line and staff administrators in supervisory positions. Thus, it strives to train students and facilitate the development of better understanding of human resources issues as they relate to other managerial functions, organizational behavior, and the ability of managers and the organization to achieve prescribed goals. Prereq: ADMN 400 or permission of instructor.

BUS 492 - American Business History**Credits:** 4

This course explores the historical development of American business institutions from the colonial era to the present. Thematic units organize the material focusing in turn on the most significant developments in the American business environment. The goal is a cumulative understanding of the development of the system. A great deal of our discussion and reading centers on the interaction of market operations and social values and how these interactions influenced the business environment at different times. It is the study of business in the context of past times that makes this course different from a course in business methods or institutions. Through the study of the past students develop their critical thinking and writing skills.

Attributes: Historical Perspectives(Disc)

BUS 520 - Training and Development**Credits: 4**

Students interested in career options in training and development of human resources development learn some of the theoretical bases, core practices, competencies, and issues of this professional field, as well as considerations for global training and development. They are exposed to research and discoveries on skills and knowledge related to training and adult learning, and models for effective training. They learn the most current trends and issues in international training and development, including the push for management and leadership training for intercultural understanding. Prereq: BUS 400, BUS 455, or permission from instructor.

BUS 530 - Personal Finance**Credits: 4**

This course is designed to give students some expertise in the life decisions that almost everyone must make concerning tax planning, purchasing or renting of a home or automobile, medical, life, auto and home insurance needs. Investments and planning for retirement among other financial decisions that adults must make.

Attributes: Quantitative Reasoning(Disc)

BUS 532 - Introduction to Financial Accounting**Credits: 4**

Fundamental concepts of accounting and their impact on the business world and society as a whole. Emphasis on the recording of economic transactions, and preparation and analysis of financial statements. No credit for students who have had ACFI 501, ACFI 502, ADMN 502.

BUS 533 - Introduction to Managerial Accounting**Credits: 4**

Emphasizes how organizational managers use accounting information to support their functions of planning, control, and decision making. Examples taken from corporations, small business, and not-for-profit organizations. No credit for students who have received credit for ACFI 503, ADMN 503. Prereq: BUS 532.

BUS 535 - Federal Taxation**Credits: 4**

Introduction to the basics of the federal income tax rules for individuals. Basic concepts in federal taxation include gross income, exclusions, adjusted gross income, deductions, exemptions, and credits. Additional tax concepts included are cash and accrual methods, passive loss rules, and like-kind exchange. No credit for taking BUS 710 (Federal Taxation) or BUS 675 (Special Topic Federal Taxation).

BUS 565 - Selling and Sales Management**Credits: 4**

The sales and selling management (SSM) course covers both the strategies, and the tactics, of selling, from the wide-ranging perspectives of sales people and customers. Management topics include: motivation and behavior, sales methodologies, channel optimization, recruiting and selecting representatives, training, compensation, and evaluation. Class also covers in-depth through the class practice sales tactics such as: prospecting and sales call planning, communicating the sales message, negotiating for win-win situations, overcoming objections, closing the sale, and follow-up management. Reflecting the nature of practice selling, the SSM course is offered in a short series of longer days. Prereq: none, but BUS 400 or BUS 610 is encouraged. No credit earned if credit earned for BUS 675 if listed as Selling and Sales Management.

BUS 600 - New Venture Creation**Credits: 4**

An opportunity for students to identify and create a new business venture via a business plan. Elements of a business plan are examined as well as review of the other entrepreneurial course that move up the minor. Prereq: BUS 410, BUS 453, BUS 550, BUS 565.

BUS 601 - Financial Management**Credits: 4**

Study of investment, finance, and dividend decisions of the business firm. Topics include capital budgeting, designing and issuing securities, management of working capital and evaluating manager performance. Prereq: completion of Introductory Business Core or permission.

BUS 603 - Intermediate Financial Accounting I**Credits: 4**

The first of two in-depth financial accounting courses. Course provides student with the in-depth understanding of the theory, conceptual framework, and development of generally accepted accounting principles giving them the knowledge necessary to properly account for and present information in financial statements prepared for external uses. Topics include the income statement, the statement of cash flows and balance sheet with an emphasis on asset accounts. Prereq: BUS 532 and BUS 533. No credit if credit received for BUS 675 Intermediate Accounting I.

BUS 610 - Marketing Principles and Applications**Credits: 4**

Studies the process of planning and distributing goods and services to the marketplace. Topics include product planning, pricing, promotion, and distribution. Emphasis on the application of marketing principles to real world business cases. Prereq: BUS 400, ECN 412.

BUS 615 - Intermediate Financial Accounting II**Credits: 4**

The second of two in-depth financial accounting courses. Course provides students with an in depth understanding of the theory, conceptual framework, and development of generally accepted accounting principles giving them the knowledge necessary to properly account for and present information in financial statements prepared for external users. Topics include time value of money, current and non-current liabilities, leases, deferred taxes, retirement benefits, stockholders equity, earning per share, accounting changes and errors, and statement of cash flows. No credit if credit received for BUS 675 Intermediate Accounting. Prereq: BUS 532, BUS 533, BUS 603.

BUS 620 - Organizational Behavior**Credits: 4**

Applications of behavioral science concepts to work settings. Topics include worker incentives and perceptions toward work, group versus individual decision making, conflict resolution, interpersonal and leadership skills, and the study of other behaviors relevant to effective managing of a business organization. Prereq: Completion of Introductory Business Core or permission. Writing intensive.

Attributes: Writing Intensive Course

BUS 629 - Adv Managerial Accounting**Credits: 4**

Further develop the basic managerial accounting knowledge base and skill set. Emphasis on the cost accounting concepts and techniques used to produce the information needed to make both planning and control decisions as well as cost analysis, overhead allocation, transfer pricing, and decision making. Prereq: BUS 532; BUS 533. No credit if received for BUS 675 Intermediate Accounting.

BUS #630 - International Management**Credits:** 4

This course introduces students to the world of international business and management by studying cultural influences, government, and business structures in our global economy. Students also learn about trade relations, international finance and legal and labor agreements. Also covered, are topics on information needs, production systems, marketing and promotion, and career planning. Prereq: an international business course. Only open to Business Administration majors.

BUS 635 - Entrepreneurial Application through Enactus**Credits:** 3

This is a three credit project driven course aimed at teaching students an understanding of free enterprise through the application of economic activities within the community. In addition, students will have special topic sessions on leadership, time management, public speaking, project management, and fundraising. Emphasis on teamwork. Course is open to all students who have junior or senior level standing, in and out of the business program. Prereq: junior or senior level standing. Special fee. Course may be repeated to a maximum of 12 credits.

BUS 640 - Business Communication and Conflict**Credits:** 4

This course is designed to give students a comprehensive view of communication, its scope and importance in business, and the role of communication in establishing a favorable outside the firm environment as well as an affective internal communications program. The various types of business communication media are covered. This course also develops an awareness of the importance of succinct written expression to modern business communication. Prereq: Completion of Introduction to Business Core and BUS 455; or Approval by instructor.

BUS #660 - Employment and Labor Law**Credits:** 4

This course includes a study of the organizational rights of employees and unions and the governance of the use of economic force by employers and unions. Also studied is the duty to bargain collectively, the manner in which collective bargaining is conducted, and the subjects to which it extends, as well as the manner in which collective bargaining agreements are administered and enforced. The relationship between a union and its members is also treated. Prereq: Completion of Introduction to Business Core and BUS 455.

BUS 661 - Integrated Marketing Communication**Credits:** 4

Integrated Marketing Communications (IMC) is a fast evolving field in business and marketing. This course covers the full spectrum of planning, budgeting, data collection and analysis, creative tools and models, including perspectives on both Business to Consumer and Business to Business, IMC. Special emphasis for: cultural, lifestyle and ethnic sensitivity, global versus individual country tactics, and the fast evolving techniques of social and mobile marketing. All of the above are in the context of building brands and customer loyalty. Prereq: BUS 400 and BUS 610. No credit earned if credit earned for BUS 675 or BUS 685 if listed as Marketing Communication.

BUS 663 - Services Marketing and Operations Management**Credits:** 4

This course is designed to prepare students for NH business and marketing careers by understanding the issues, challenges, and terminology inherent in industries as diverse as health care, construction, education, professional and technical offices, transportation, information and publishing, tourism, retailing, etc. Case studies are used throughout the term. We study many of these sectors, both as academicians and as consumers, to build a portfolio of understanding across divergent sectors. Students learn about services marketing strategies and management models that: increase customer satisfaction, improve customer retention and create dominant service brands that can create a competitive advantage for firms in any given industry. Prereq: BUS 400; BUS 610. No credit if credit earned for BUS 675 or BUS 685 if listed as Services Marketing.

BUS #665 - International Marketing Strategy Management**Credits:** 4

The primary missions of the International Marketing Strategy Management (IMSM) course are to help students to: (1) develop understanding and knowledge of the important role International marketing plays in business (2) develop and improve global thinking, problem solving and integrative skills in a case based context (3) learn and apply the varying tools and models for evaluating when, where are how international marketing investments should be made. (4) understand and implement special approaches for cultural and ethnic differences in taste and attitudes, including trade legalities and regulations. Prereq: BUS 400 and BUS 610. No credit if credit earned for BUS 675 or BUS 685 if listed as International Marketing.

BUS 675 - Special Topics in Business Administration**Credits:** 1-4

Provides students with an opportunity to explore a topic in business administration such as marketing, management, finance, or accounting. Topics will vary. Barring duplication of subject, may be repeated for credit. Prereq: Completion of Introductory Business Core or permission.

BUS 685 - Applications in Business Management**Credits:** 4

Selected topics. Topics will vary. Barring duplication of subject, may be repeated for credit.

BUS 690 - Business Program Internship**Credits:** 1-4

Supervised internship practicum within the private, public or non-profit sector. Focus is for the student to gain valuable insights into both professional and managerial positions, applying their college knowledge to a variety of roles and projects, influencing their career trajectory through 'real world' experience. Can be taken multiple times for credit, with credit varying from 1-4 hours based on time spent on the internship. For the 16 credit concentration, up to 4 BUS 690 credits can be applied. Credits beyond will be applied to general credits. Does not substitute for the internship required as part of the Business Capstone Course BUS 750 - Business Internship Senior Seminar. Offered, Fall, Spring and Summer. Cr/f.

BUS 691 - VITA Internship**Credits:** 1-4

Internship for the application/completion of the basics of federal income tax rules for individuals. Must have previously completed Federal Taxation course (BUS 535, 710, BUS 675).

BUS 695 - Independent Study in Business**Credits:** 1-4

Independent study exploring a special topic emphasizing the managerial, organizational, strategic, political or economic context(s) within which business decisions are made. Prereq: ADM 400 and permission of instructor. May be repeated for a maximum of 8 credits.

BUS #701 - Business, Government and Society**Credits:** 4

Examines relationships between business and its broader social, political and economic contexts. Topics include business ethics, social responsibilities, the impact of globalization, the impact of government policies, and how business influences government. Prereq: BUS 620 or permission. Writing intensive.

Attributes: Writing Intensive Course**BUS 705 - Business Ethics****Credits:** 4

Analysis of ethical issues that arise in contemporary business practice, both domestically and locally. Topics will include ethical issues concerning labor practices, marketing, financial services, environmental practices, human rights, and emerging technologies. Students will be taught to recognize, analyze, and address ethical challenges as they arise in their careers. Consideration will also be given to public policies and global ethics codes that inform business decision-making. Writing intensive.

Attributes: Writing Intensive Course**BUS 715 - Forensic Accounting/Fraud Examination****Credits:** 4

This course will develop the students' understanding of what forensic accounting is and how it pertains to both civil and criminal matters. The participant in this course will gain a basic understanding of the characteristics of forensic accounting, the tools used in this area and the applications in the business world today, including financial statement and tax fraud, bankruptcy, divorce, identity theft, organized crime and litigation services. Pre- or Coreq: BUS 720.

BUS 720 - Auditing**Credits:** 4

Introduction to the basics of auditing and other assurance services theory and practice. It provides an overview and understanding of the public accounting profession and the professional auditing standards. The class also integrates auditing material with previous financial and managerial accounting course. Prereq: BUS 532, BUS 533, BUS 603, BUS 615, BUS 629. No credit if credit received for BUS 675 Auditing.

BUS 725 - Financial Statement Analysis**Credits:** 4

This course will examine: financial reporting, the quality of accounting information, and US GAPP and IFRS. The flexibility which is built into GAAP will be examined, noting how firms may take advantage of this flexibility to manipulate financial information while staying within the bounds of the rules for proper reporting. Also examined will be the relationships found within the reported numbers by comparing various elements of the financial statements. Prereq: BUS 720.

BUS 750 - Business Internship Seminar**Credits:** 4

A seminar course in which students report on and discuss their business internship experiences. Selected group readings and written and oral student presentations. Prereq: ADM 620 and senior standing or permission. Special fee.

BUS 755 - Co-op Program**Credits:** 1

This is a program that enables students to integrate classroom learning with practical, professional, experience in their field of study. Students majoring in professional and liberal arts programs experience the working world through an educationally managed agreement between the employer, the student, and the institution. Students need to have a minimum 3.0 cumulative GPA and have junior or senior level status.

BUS 760 - Applied Senior Project**Credits:** 4

An independent study research project involving an in-depth exploration into a business topic chosen in consultation with a faculty member. Designed for students with extensive prior work experience. Prereq: BUS 620 and senior standing or permission. Special fee.

BUS 770 - Special Topics Senior Seminar**Credits:** 4

In-depth exploration into the theoretical and applied aspects of a special business topic. Topics vary according to instructor. Prereq: ADM 620 and senior standing or permission. Special fee.

Chemical Engineering (CHE)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

CHE 400 - Chemical Engineering Lectures**Credits:** 1

Introduces the profession, the process engineer as designer and problem solver; and the goals of the chemical engineering/bioengineering curriculum. Lectures by faculty and practitioners. Introduction to computer skills, engineering ethics, safety, and careers in chemical engineering and bioengineering. Cr/F.

CHE 410 - Energy and Environment**Credits:** 4

Energy supply in this country and the world; conventional fuel reserves: coal, oil, natural gas; alternative sources: nuclear, solar, geothermal, et. Forecasts and strategies to meet needs. Environmental pollution, sources, and economic and environmental impacts. Methods for pollution control. Regulatory standards for environmental protection.

Attributes: Physical Science(Discovery)**CHE 410H - Honors/Energy and Environment****Credits:** 4

Energy supply in this country and the world; conventional fuel reserves: coal, oil, natural gas; alternative sources: nuclear, solar, geothermal, et. Forecasts and strategies to meet needs. Environmental pollution, sources, and economic and environmental impacts. Methods for pollution control. Regulatory standards for environmental protection.

Attributes: Physical Science(Discovery)**CHE 501 - Introduction to Chemical Engineering I****Credits:** 3

Systems of units; material balances and chemical reactions; gas laws; phase phenomena.

CHE 502 - Introduction to Chemical Engineering II**Credits:** 3

Energy and material balances for systems with and without chemical reactions; design case studies.

Attributes: Inquiry (Discovery)

CHE 601 - Fluid Mechanics and Unit Operations**Credits:** 3

Continuity, momentum, and energy equations; laminar and turbulent flow in pipes; rheology. Applications to flow in porous media, filtration, and fluidization.

CHE 602 - Heat Transfer and Unit Operations**Credits:** 3

Thermal properties of materials, steady-state and transient conduction and convection; radiation; applications to heat exchangers and process equipment.

CHE 603 - Applied Mathematics for Chemical Engineers**Credits:** 4

Mathematical modeling and analysis of chemical engineering problems. Analytical methods for first- and second-order differential equations; numerical solutions; series solutions; Bessel functions; Laplace transforms; matrix algebra. Interpretation and solution of partial differential equations. Lab.

CHE 604 - Chemical Engineering Thermodynamics**Credits:** 3

Volumetric and phase behavior of ideal and real gases and liquids; cycles; steady-flow processes; chemical equilibrium.

CHE 612 - Chemical Engineering Laboratory I**Credits:** 3

Selected experiments in fluid mechanics, heat transfer, and unit operations. Writing intensive.

Attributes: Writing Intensive Course**CHE 614 - Separation Processes****Credits:** 3

Adsorption, Chromatography, Membrane Separations, Liquid-liquid, Extraction and Crystallization, requires junior level studies in chemical engineering or permission.

CHE 651 - Biotech Experience/Biomanufacturing**Credits:** 4

Course begins by introducing students to the proteins and companies of biotechnology and to current good manufacturing practices. For remainder of the course, students use cell culture of bacteria, mammalian and yeast cells to produce human proteins using the tools and manufacturing standards, operating procedures of biotechnology, including upstream and downstream processing of proteins, and quality control of protein production. Permission required. Also listed as ANSC 651 and MICR 651.

CHE 695 - Chemical Engineering Project**Credits:** 1-4

Independent research problems carried out under faculty supervision.

CHE 696 - Independent Study**Credits:** 1-4

Prereq: permission of the adviser and department chairperson; granted only to students having superior scholastic achievement.

CHE 703 - Mass Transfer and Stagewise Operations**Credits:** 3

Diffusion in gases, liquids, and solids; design and analysis of distillation, absorption, and other stagewise equipment and operations.

CHE 705 - Fossil Fuels and Renewable Energy Sources**Credits:** 4

Processing and refining of coal, crude oil, natural gas, tar sands and shale oil. Biomass co-combustion, biofuel extraction, impediments to widespread utilization. Exploration of environmental issues with energy generation and consumption. Lab.

CHE 706 - Electrochemical Methods for Energy Applications**Credits:** 4

Fundamentals and applications of thermodynamics of electrochemical processes; kinetics of electrochemical reactions; electrocatalysis basics and current technologies for batteries, supercapacitors and fuel cells.

Prereq: CHEM 683, CHEM 684.

CHE 707 - Chemical Engineering Kinetics**Credits:** 3

Use of laboratory data to design commercial reactors. Continuous, batch, plug-flow, and stirred-tank reactors for homogeneous and catalytic multiphase reactions.

CHE 708 - Chemical Engineering Design**Credits:** 4

Introduction to cost engineering. Application of acquired skills to design of chemical processes. Individual major design project required. Safety for industrial processes. Lab. Writing intensive.

Attributes: Writing Intensive Course**CHE 709 - Fundamentals of Air Pollution and Its Control****Credits:** 4

The origin and fate of air pollutants. Fundamentals of atmospheric meteorology, chemistry, and dispersion phenomena. Control of air pollutants and the related equipment. Current issues. Lab.

CHE 712 - Introduction to Nuclear Engineering**Credits:** 4

Development of nuclear reactors; binding-energy; radioactivity; elements of nuclear reactor theory; engineering problems of heat transfer, fluid flow, materials selection, and shielding; environmental impacts.

CHE 713 - Chemical Engineering Laboratory II**Credits:** 3

Selected experiments in mass transfer, stagewise operations, thermodynamics, and kinetics. Writing intensive.

Attributes: Writing Intensive Course**CHE 722 - Introduction to Microfluidics****Credits:** 4

Fundamentals and applications of microfluidics; scaling laws; microfabrication technology; hydrodynamics and electrofluidics; interfacial phenomena; capillary effects and diffusion; microvalves; micropumps; lab-on-a-chip systems; biochips. Prereq: fluids mechanics course or permission of instructor.

CHE 744 - Corrosion**Credits:** 4

Fundamentals of corrosion processes in industrial and environmental settings; thermodynamics, kinetics, and mass transport in local corrosion cells; protection by electrochemical, chemical, surface modification or barrier methods; instrumental methods in corrosion science. Lab.

CHE 752 - Process Dynamics and Control**Credits:** 4

Dynamic behavior of chemical engineering processes described by differential equations; feedback control concepts and techniques; stability analysis. Lab.

CHE 761 - Biochemical Engineering**Credits:** 4

Immobilized enzyme technology, microbial biomass production, transport phenomena in microbial systems, biological reactor design, process instrumentation and control, applications in separation and purification processes. Lab.

CHE 762 - Biomedical Engineering**Credits:** 4

Overview of the biomedical engineering through topical studies such as drug delivery and sensors. Discussion of modern engineering methods through primary research sources. Prereq: differential equations and statistics. Writing intensive. Also listed as BENG 762.

Attributes: Writing Intensive Course**CHE 766 - Biomaterials****Credits:** 4

Fundamental principles of biology and material science, along with latest topics in biomaterials research. Topics include cell biology, wound healing, host response to foreign materials, polymers, hydrogels, diffusion and methods of material characterization. Specific medical applications of biomaterials such as orthopedic and dental implants, heart valves, artificial blood vessels, cochlear and ophthalmic implants and tissue engineering. Laboratory. Students are expected to have some background in chemistry, mathematics, and high school biology. Also listed as BENG 766.

Chemistry (CHEM)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

CHEM 400 - Freshman Seminar**Credits:** 1

An introduction to the chemistry profession. Talks and workshops on the career of a chemist in academia, industry, medicine, law, teaching and government. Required for chemistry majors. May be repeated. Cr/F.

CHEM 403 - General Chemistry I**Credits:** 4

Fundamental laws and concepts applied to nonmetals, metals, and their compounds. For students who plan to take further chemistry courses. Previous chemistry recommended. Knowledge of algebra, exponentials, and logarithms required. Special fee. Lab. Cannot be taken for credit if credit received for CHEM 405. Required for chemistry majors.

Attributes: Discovery Lab Course; Physical Science(Discovery)**CHEM 404 - General Chemistry II****Credits:** 4

Fundamental laws and concepts applied to nonmetals, metals, and their compounds. For students who plan to take further chemistry courses. Previous chemistry recommended. Knowledge of algebra, exponentials, and logarithms required. Required for chemistry majors. Special fee. Lab. Prereq: CHEM 403 and 403L.

Attributes: Discovery Lab Course; Physical Science(Discovery)**CHEM 404H - Honors/General Chemistry II****Credits:** 4

Fundamental laws and concepts applied to nonmetals, metals, and their compounds. For students who plan to take further chemistry courses. Previous chemistry recommended. Knowledge of algebra, exponentials, and logarithms required. Required for chemistry majors. Special fee. Lab. Prereq: CHEM 403 and 403L. Honors course is designed for students who have enrolled in the honors degree program. Special fee. Lab. Cannot be taken for credit if credit received for CHEM 402. Prereq: CHEM 403.

Attributes: Discovery Lab Course; Physical Science(Discovery)**CHEM 405 - Chemical Principles for Engineers****Credits:** 4

Basic principles; atomic structure, bonding, equilibria, and thermodynamics. Prereq: one year of high school chemistry, algebra, and knowledge of logarithms. Cannot be taken for credit if credit received for CHEM 403 and CHEM 404. Required for chemical engineering, mechanical engineering, electrical and computer engineering, environmental engineering: industrial majors. Not applicable for credit for majors in chemistry or biochemistry.

Attributes: Discovery Lab Course; Physical Science(Discovery)**CHEM 408 - Green Goggles****Credits:** 4

In this course, we investigate the principles and practice of Green Chemistry. Green Chemistry is the field of science that uses a principle-based approach to design (or redesign) chemical reactions and processes to make them more sustainable. In exploring green chemistry, many of the fundamental concepts of a general chemistry course are investigated in order to understand how chemists "green" chemical reactions. A service learning project is a major component of this course, where students reach out to the community at large and practice discovering the world through their new "green goggles". Online technology is incorporated in this course to further disseminate student projects and work.

Attributes: Physical Science(Discovery)**CHEM 409 - Chemistry and Society****Credits:** 4

Elementary survey of chemistry; integrates principles and applications. For students who do not intend to take any other chemistry courses and those interested in satisfying a general education science requirement. Not a prerequisite for any other chemistry courses. (Not offered every year.) Chemistry majors are excluded from taking this course.

Attributes: Physical Science(Discovery); Inquiry (Discovery)**CHEM 411 - Introductory Chemistry for Life Sciences****Credits:** 4

Fundamental and pragmatic aspects of chemistry, particularly as foundation for nutritional biochemistry. Includes basics of bonding, acid/base behavior, reaction energy, intermolecular forces, stoichiometry, and equilibrium. High school chemistry not required. This course is not a replacement to CHEM 403 and is not an acceptable pre-requisite for CHEM 404. Special fee. Only open to the following majors: Dairy Management, Wildlife&Conservation Biology, Zoology, Nutrition, Nutr. Dietetics, Nutr. Nutrition & Wellness, Sust Agriculture& Food Systems, and Environmental Horticulture.

Attributes: Discovery Lab Course; Physical Science(Discovery)

CHEM 413 - General Chemistry Lecture I**Credits:** 3

Fundamental laws and concepts applied to nonmetals, metals, and their compounds. For students who plan to take further chemistry courses. Previous chemistry recommended. Knowledge of algebra, exponentials, and logarithms required. Special permission required. Not offered every summer. Cannot be taken for credit if credit received for CHEM 401, CHEM 403, CHEM 405, or CHEM 409.

CHEM 414 - General Chemistry Lab I**Credits:** 1

Lab application of fundamental laws and concepts applied to nonmetals, metals and their compounds. Previous general chemistry lecture required. Special permission. Special fee. Not offered every summer. Cannot be taken for credit if credit received for CHEM 401, CHEM 403, CHEM 405, or CHEM 409. Not open to Chemistry majors.

CHEM 415 - General Chemistry Lecture II**Credits:** 3

Fundamental laws and concepts applied to nonmetals, metals, and their compounds. For students who plan to take further chemistry courses. Previous chemistry recommended. Knowledge of algebra, exponentials, and logarithms required. Cannot be taken for credit if credit received for CHEM 402 or CHEM 404. Prereq: CHEM 403 or CHEM 413.

CHEM 416 - General Chemistry Lab II**Credits:** 1

Lab application of fundamental laws and concepts applied to nonmetals, metals and their compounds. Previous general chemistry lecture required. Special permission. Special fee. Not offered every summer. Cannot be taken for credit if credit received for CHEM 402 or CHEM 404. Prereq: CHEM 403 or CHEM 414. Not open to Chemistry majors.

CHEM #444A - Fire and Ice**Credits:** 4

Embodies a focus on the perception, movement, creation, understanding, and everyday use of heat. Examines historical evolution and controversy regarding the concept of heat across physical and life sciences.

Attributes: Physical Science(Discovery); Inquiry (Discovery)**CHEM #444B - Symmetry in Nature, The Arts, and Daily Life****Credits:** 4

The elements of symmetry and its occurrence and role in nature (bilateral symmetry in butterflies and animals; cylindrical symmetry in trees and volcanoes; helical symmetry in shells, proteins, and DNA; the role of symmetry in design of medicines); its role in art and design (textiles, advertising); and in our lives (design of houses, chairs, scissors).

The course is non-mathematical and is open to students having little background in science. Writing intensive.

Attributes: Physical Science(Discovery); Inquiry (Discovery); Writing Intensive Course**CHEM 4440 - The Story of Oxygen****Credits:** 4

The course will deal with a single element - oxygen. We will examine the role that oxygen compounds play in the atmosphere, including the ozone layer, global warming, and smog. In addition, the history of oxygen can be seen as emblematic of the development of chemistry from the mystical philosophy of alchemy to a quantitative science. We will discuss the development of chemistry by considering the history of our understanding of the element.

Attributes: Physical Science(Discovery); Inquiry (Discovery)**CHEM 496 - Freshman Independent Study****Credits:** 1-8

Independent study for students who have not had organic chemistry. Designed for students who wish to pursue independent study topics, but do not have the experience to pursue lab research. Cannot be counted toward the major. (Not offered every year.)

CHEM 501 - Peer-led Team Learning in Chemistry**Credits:** 2

Initial experience as peer instructional leader. Practical application of theories of cognition, group dynamics, learning, and motivation to helping other students learn chemistry in general chemistry. Requires one weekly meeting with students. Permission required. Prereq: CHEM 403 or CHEM 404.

CHEM 502 - Advanced Peer-led Team Leadership in Chemistry**Credits:** 1

Development and assessment of leadership skills. Practical application of theories of cognition, group dynamics, learning, and motivation to helping other students learn chemistry in general chemistry. Requires one weekly meeting with students. Permission required. Prereq: CHEM 403 and CHEM 501.

CHEM 503 - Mentoring for Peer Team Learning**Credits:** 1

Experienced leaders mentor a new leader in implementation of PLTL model, including initial co-leading and observational formative assessment. Mentors report on mentee development, visit other experienced leaders, and provide a final evaluation. Mentors lead their own weekly group and assist part-time in the PLTL leader meetings. Prereq: CHEM 501.

CHEM 517 - Quantitative Analysis**Credits:** 4

Combines lecture, laboratory, and in-class problem solving to study solubility, acid-base, redox, and complexation reactions and their application for quantitative chemical measurements. Prereq: CHEM 404 or CHEM 405. Lab.

Co-requisite: CHEM 518**CHEM 518 - Quantitative Analysis Laboratory****Credits:** 1

Volumetric methods with an emphasis on technique; separations; and selected instrumental methods such as potentiometry, spectrophotometry, atomic absorption, and gas chromatography. Prereq: CHEM 404 or CHEM 405. Special fee.

Co-requisite: CHEM 517**CHEM 545 - Organic Chemistry****Credits:** 3

Introductory study of carbon compounds for those who desire a brief terminal course. This course is a one semester course only. CHEM 545 and 546 are not applicable for pre-med, pre-vet, pharmacological majors or minors requiring a year long course of organic. CHEM 545 and CHEM 546 cannot be used to meet semester 1 of the year long-organic course (CHEM 547 or CHEM 651). Prereq: CHEM 403 and CHEM 403L and CHEM 404 and CHEM 404L or CHEM 405. CHEM 545 and CHEM 546L are co-requisites and must be taken together.

Co-requisite: CHEM 546**CHEM 546 - Organic Chemistry Laboratory****Credits:** 2

Introductory study of carbon compounds for those who desire a brief terminal course. Prereq: CHEM 404 or CHEM 405. Special fee. Lab.

Co-requisite: CHEM 545

CHEM 547 - Organic Chemistry I**Credits:** 3

Principal classes of organic compounds, aliphatic and aromatic; class reactions and structural theory. Intended primarily for chemistry and biochemistry majors. Prereq: CHEM 404; CHEM 405;/or permission. Students receiving credit for CHEM 547-548 may not receive credit for either CHEM 545 or CHEM 651 and CHEM 652.

Co-requisite: CHEM 549**CHEM 548 - Organic Chemistry II****Credits:** 3

Principal classes of organic compounds, aliphatic and aromatic; class reactions and structural theory. Intended primarily for chemistry and biochemistry majors. Prereq: CHEM 404; CHEM 405; and CHEM 547/or permission. Students receiving credit for CHEM 547 and CHEM 548 may not receive credit for either CHEM 545 or CHEM 651 and CHEM 652. Only listed majors allowed: Chemistry (BS), Chemistry (BA), Bchmmolcebio, and Biochemsitry.

Co-requisite: CHEM 550**CHEM 549 - Organic Chemistry Laboratory****Credits:** 2

Special fee. Lab.

Co-requisite: CHEM 547**CHEM 550 - Organic Chemistry Laboratory****Credits:** 2

Special fee. Lab.

Co-requisite: CHEM 548**CHEM 574 - Chemistry Across the Periodic Table****Credits:** 4

Ninety-eight elements form the building blocks of every substance on Earth-they are elegantly organized into what we now call The Periodic Table. This course will discuss the structure/property/reactivity patterns inherent in The Periodic Table, their origins according to the quantum mechanical model of the atom, and how they are manifest in current research advancements and modern applications of main group element chemistry, transition metal chemistry, and the chemistry of solids and materials. Prereq: CHEM 404 or CHEM 405.

Attributes: Inquiry (Discovery)**CHEM 576 - Experimental Inorganic Chemistry****Credits:** 2

This laboratory course is an introduction to synthetic methods in inorganic chemistry and the study of the elements across the periodic table. This course will emphasize the use of spectroscopic and analytical techniques specifically aimed at characterizing and identifying inorganic compounds, such as multi-nuclear NMR, UV\Vis, IR spectroscopy, X-ray diffraction and mass spectrometry. An introduction to scientific writing will be included. Special fee. CHEM 574 is a pre- or co-requisite.

CHEM 651 - Organic Chemistry I**Credits:** 3

Principal classes of organic compounds, aliphatic and aromatic, class reactions and structural theory. Intended primarily for pre-healing arts, biological science, and health science students. Prereq: CHEM 404; CHEM 405;/or permission. Students receiving credit for CHEM 651 and CHEM 652 may not receive credit for either CHEM 545 or CHEM 547 and CHEM 548.

Co-requisite: CHEM 653**CHEM 652 - Organic Chemistry II****Credits:** 3

Principal classes of organic compounds, aliphatic and aromatic, class reactions and structural theory. Intended primarily for pre-healing arts, biological science, and health science students. Prereq: CHEM 404; CHEM 405;and CHEM 651/or permission. Students receiving credit for CHEM 651 and CHEM 652 may not receive credit for either CHEM 545 or CHEM 547 and CHEM 548.

Co-requisite: CHEM 654**CHEM 652A - Organic Chemistry II****Credits:** 3

Principal classes of organic compounds, aliphatic and aromatic, class reactions, and structural theory. Intended primarily for pre-healing arts, biological science, and health science students. Prereq: CHEM 404; CHEM 405; and 651/or permission. Students receiving credit for CHEM 651 and CHEM 652 may not receive credit for either CHEM 545 or CHEM 547 and CHEM 548. This course is for Chemical Engineers only.

CHEM 653 - Organic Chemistry Laboratory**Credits:** 2

Special fee. Lab.

Co-requisite: CHEM 651**CHEM 654 - Organic Chemistry Laboratory****Credits:** 2

Special fee. Lab.

Co-requisite: CHEM 652**CHEM 683 - Physical Chemistry I****Credits:** 3

Topics may be chosen from: properties of gases, liquids, and solids; thermochemistry, and thermodynamics; chemical equilibria; reaction rates; quantum chemistry and spectroscopy. Prereq: CHEM 404 or CHEM 405; MATH 426. Pre- or Coreq: PHYS 402 or PHYS 407. Coreq: CHEM 685 and CHEM 686.

Co-requisite: CHEM 685**CHEM 684 - Physical Chemistry II****Credits:** 3

Topics may be chosen from: properties of gases, liquids, and solids; thermochemistry, and thermodynamics; chemical equilibria; reaction rates; quantum chemistry and spectroscopy. Prereq: CHEM 404 or CHEM 405 and CHEM 683; MATH 426. Pre- or Coreq: PHYS 402 or PHYS 407.

Co-requisite: CHEM 686**CHEM 685 - Physical Chemistry Laboratory****Credits:** 2

Measurement of thermodynamic properties, chemical kinetics, and methods of determining the structure of matter. Prereq: CHEM 404 or 405; MATH 426. Pre- or Coreq: PHYS 407 or PHYS 402. Coreq: CHEM 683 and CHEM 684. Special fee.

Co-requisite: CHEM 683**CHEM 686 - Physical Chemistry Laboratory****Credits:** 2

Measurement of thermodynamic properties, chemical kinetics, and methods of determining the structure of matter. Prereq: CHEM 404 or 405; MATH 426. Pre- or Coreq: PHYS 407 or PHYS 402. Coreq: CHEM 683 and CHEM 684. Special fee.

Co-requisite: CHEM 684

CHEM 696 - Independent Study**Credits:** 1-4

For exceptional students. Individual reading, writing, or laboratory work carried out under the tutelage of a faculty member. May be used to replace specific required courses in chemistry. Prereq: approval of the adviser and department chairperson. Credits to be arranged.

CHEM 708 - Spectroscopic Investigations of Organic Molecules**Credits:** 3

Identification and structural analysis of chemical compounds by selected instrumental methods. Typical topics include proton and carbon-13 NMR spectroscopy, IR and UV spectroscopy, and mass spectrometry.

CHEM 755 - Advanced Organic Chemistry**Credits:** 3

Methods of synthesis and determination of structure, including stereochemistry of complex organic compounds. Prereq: CHEM 548 or CHEM 652 or equivalent. Coreq for CHEM majors: CHEM 756.

Co-requisite: CHEM 756**CHEM 756 - Advanced Organic Chemistry Laboratory****Credits:** 2 or 3

Synthesis and structural determination of complex organic compounds, techniques for the separation, determination of purity, and identification of compounds by spectroscopic and chemical means. Coreq for CHEM majors: 755. Special fee.

Co-requisite: CHEM 755**CHEM 762 - Instrumental Methods of Chemical Analysis****Credits:** 3

Theory, instrumentation, and application of methods such as atomic absorption, coulometry, emission spectrography, gas and liquid chromatography, polarography, potentiometry, IR and UV-VIS absorption spectrophotometry, and mass spectrometry to chemical analysis. Prereq: CHEM 406 or CHEM 517; CHEM 684 as a pre- or co-requisite;/or permission.

Co-requisite: CHEM 763**CHEM 763 - Instrumental Methods of Chemical Analysis Laboratory****Credits:** 2 or 3

Experimental parameters, error analysis, and applications of the methods covered in CHEM 762. Special fee.

Co-requisite: CHEM 762**CHEM 774 - Inorganic Chemistry****Credits:** 3

Basic theoretical concepts and their applications to inorganic reactions and compounds. Prereq: organic chemistry; physical chemistry;/or permission.

Co-requisite: CHEM 775**CHEM 775 - Inorganic Chemistry Laboratory****Credits:** 2

In-depth instruction of selected techniques of synthesis and characterization of inorganic compounds. Emphasis on the analysis and presentation of results and experiment planning. Includes open-ended and collaborative projects. Special fee.

Co-requisite: CHEM 774**CHEM 776 - Physical Chemistry III****Credits:** 3

Application of quantum theory to atomic electron structure, molecular structure, and spectroscopy. Advanced topics in physical chemistry.

Prereq: CHEM 683-684. Special fee.

CHEM 777 - Advanced Synthesis and Characterization**Credits:** 3

This is an advanced laboratory course involving the synthesis and characterization of organic and inorganic compounds. Students will leave this course with sufficient proficiency to reproduce synthetic procedures and prepare compounds from the chemical literature. Special fee. Prereq: CHEM 550, CHEM 576.

CHEM 795 - Special Topics**Credits:** 2-4

New or specialized topics not covered in regular course offerings. May be repeated to a maximum of 4 credits. Prereq: permission.

CHEM 798 - Senior Seminar**Credits:** 1

Student reports on topics of interest. Writing intensive. Prereq: CHEM 548 or CHEM 652, CHEM 684. Cr/F.

Attributes: Writing Intensive Course**CHEM 799 - Senior Thesis****Credits:** 4

Yearlong investigation in a selected topic, with background and experimental investigation. For chemistry majors who have completed CHEM 548, CHEM 694, and CHEM 762. Required for B.S. majors. Strongly recommended for B.A. chemistry majors. Prereq: 2.50 average and approval of department chairperson. Prereq: CHEM 548, CHEM 684, CHEM 762. Permission required. Lab. Two semesters of 4 credits each are required. Writing intensive.

Attributes: Writing Intensive Course

Chinese (CHIN)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

CHIN 400 - Conversational Chinese**Credits:** 4

this course, for students with no previous training in Chinese, is designed to promote conversational skills in the target language. Communicative strategies are developed within the context of cultural components. Topics include those which enable students to function in China in everyday situations (e.g., food, leisure activities, transportation, business exchanges, tourism, and daily life). this course does not satisfy the foreign language requirement. It may be repeated for up to a maximum of 8 credits. Special fee.

CHIN 401 - Elementary Chinese I**Credits:** 4

Aural-oral practice in meaningful contexts of the fundamental vocabulary and grammar of Mandarin Chinese. Reading and writing in Romanization (pinyin) and in Chinese characters. Special fee.

CHIN 402 - Elementary Chinese II**Credits:** 4

Aural-oral practice in meaningful contexts of the fundamental vocabulary and grammar of Mandarin Chinese. Reading and writing in Romanization (pinyin) and in Chinese characters. Special fee.

Attributes: Foreign Language Requirement

CHIN 410 - Communicative Chinese for the Professions**Credits:** 4

A skill-based course for students who wish to focus on the Chinese language in relation to the health fields, business, law, tourism, and social service. Helps students develop a practical understanding of China through communicative activities in specific fields. Does not satisfy the foreign language requirement. Special fee.

CHIN 420 - Summer Experience in China**Credits:** 4

This course is designed to let students experience the Chinese language and culture first hand. It is conducted in China each summer. Students first travel to Beijing, Xian, Chengdu and Shanghai for about a week with a faculty. They then need to learn the basic Chinese conversation for two and a half weeks at Chengdu University. Students can choose to take either elementary or intermediate Chinese in Chengdu.

Co-requisite: INCO 589**CHIN 425 - Introduction to Chinese Culture****Credits:** 4

Taught in English. Aspects of the political, social and cultural life of China through readings, discussion, papers, and film. Strongly recommended for students planning an Asian Studies minor. Special fee.

Attributes: World Cultures(Discovery)**CHIN 503 - Intermediate Chinese I****Credits:** 4

Continuation of CHIN 401-402. Conducted entirely in Chinese, with work on listening comprehension, speech, reading, and writing of Chinese characters, with increasing attention to reading contemporary Chinese texts. Special fee.

Attributes: World Cultures(Discovery)**CHIN 504 - Intermediate Chinese II****Credits:** 4

Continuation of CHIN 401-402. Conducted entirely in Chinese, with work on listening comprehension, speech, reading, and writing of Chinese characters, with increasing attention to reading contemporary Chinese texts. Special fee.

Attributes: World Cultures(Discovery)**CHIN 521 - What does it Mean to be Modern? Lenses of Modern Chinese Literature and Film****Credits:** 4

What does it mean to be modern? For us who are used to calling ourselves the "moderns," this question might bring to mind a host of familiar ideas and experiences that we usually take for granted in our lives. To be modern, as the common wisdom goes, means to uphold the value of individuality and equality, to embrace science and technology, to question religion and authority, to be adapted to change and movement, etc. Yet the familiar is not necessarily the most well understood. What are the philosophical and socio-political significances of the modern values of rationality and individual freedom? How do various aspects of modern experience intertwine with each other? What are the benefits and potentials we enjoy as moderns? What are the problems and crisis we are facing in the modern time? Is modernity a European invention that has been replicated in the rest part of the world, or is it a universal phenomenon with different local variations that are rooted in different local cultures?.

Attributes: Humanities(Disc); Writing Intensive Course**CHIN 631 - Advanced Chinese Conversation and Composition I****Credits:** 4

Advanced spoken and written Chinese to attain aural-oral fluency. Advanced reading and composition. Prereq: CHIN 504 with a grade of C or better or permission of the instructor. Special fee.

CHIN 632 - Advanced Chinese Conversation and Composition II**Credits:** 4

Advanced spoken and written Chinese to attain aural-oral fluency. Advanced readings and composition. Prereq: CHIN 631 with a grade of C or better or permission of instructor. Special fee.

CHIN 686 - Spring Semester in Chengdu China**Credits:** 16

Discovery World Cultures fulfilled by length of time in county. The program provides a unique opportunity to study abroad in Chengdu, China during the spring semester. It enables upper-level students in the Chinese language program as well as students in other colleges to spend a full semester immersed in another language and culture. Special fee.

Co-requisite: INCO 588**Attributes:** World Cultures(Discovery)**CHIN 795 - Independent Study****Credits:** 1-4

Open to highly qualified juniors and seniors. To be taken only with the permission of department chairperson and of the supervising faculty member or members. Barring duplication of subject, may be repeated for credit. Special fee.

Civil & Environmental Engineering (CEE)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

CEE 400 - Introduction to Civil Engineering**Credits:** 4

Introduction to the civil engineering profession: structural, geotechnical, water resources, materials, and environmental. Overviews the civil project process including the creative design process, teamwork, bidding and construction. The relationship between civil engineering works and society including ethics, earthquakes, failures, successful signature structures, current events, and professional licensure. The production of professional engineering documents including writing tasks and calculations sets. Campus resources, the University system, and relationship between required curriculum, student objectives, and the civil engineering profession. Introduction to spreadsheet software, data analysis, and probability and statistics.

Attributes: Environment,TechSociety(Disc); Inquiry (Discovery)**CEE 404 - Surveying and Mapping****Credits:** 4

Principles of land measurements by ground, photogrammetric and satellite methods to model the environment. Application of theory of measurements to perform and adjust engineering survey. Conformal mapping and its application to state plane coordinates. Digital mapping and Geographic Information Systems. Construction and cadastral surveying. Pre- or Coreq: MATH 425 or permission. Lab. Writing intensive.

Attributes: Writing Intensive Course

CEE 420 - Environmental Engineering Lectures I**Credits:** 3

Introduces the profession, the environmental engineer as planner, designer, problem solver, and interdisciplinary team player; and the goals of the environmental engineering curriculum. Lectures by faculty and practitioners. Introduction to computer skills required for environmental engineering. Engineering ethics.

CEE 444 - Housing - Everyone Needs a Place to Live**Credits:** 4

A discussion of residential housing, whether from the larger societal view or from the viewpoint of an individual, involves more than just the concepts associated with engineering. In order for the discussion to be complete, one needs to include legislative issues, economic issues, land issue, energy issues and environmental issues along with a variety of engineering issues (construction, transportation, water, materials, environmental controls, etc.). Thus a major focus of the course will be to provide a student with an appreciation of breath and complexity of the issues associated with providing housing.

Attributes: Environment,TechSociety(Disc); Inquiry (Discovery)**CEE 500 - Statics for Civil Engineers****Credits:** 3

Introduction to statics with emphasis on civil engineering topics; two and three dimensional force systems; static equilibrium; friction; analysis of trusses and beams; centroids; and moment and shear diagrams for flexural members. Prereq: PHYS 407. Pre- or Coreq: MATH 426.

CEE 501 - Strength of Materials**Credits:** 3

Strength of materials with emphasis on civil engineering applications. Virtual work; work and energy relationships; analysis of members subjected to flexure, torsion, and axial loads; stresses and strains; and stability of columns. Prereq: CEE 500 or ME 525.

CEE 502 - Project Engineering**Credits:** 3

Techniques for financial analysis, and operation and management of engineering systems, engineering economics, material take-offs, estimating, scheduling, modeling physical systems, and decision-making. CEE major or permission.

CEE 520 - Environmental Pollution and Protection: A Global Context**Credits:** 4

Introduces environmental science and engineering and the anthropogenic causes of environmental change. Emphasizes the causes, effects, and controls of air, water, and land pollution. The political, ecological, economic, ethical, and engineering aspects of environmental pollution and control are discussed. Field trips. Writing intensive.

Attributes: Environment,TechSociety(Disc); Writing Intensive Course**CEE 620 - Fundamental Aspects of Environmental Engineering****Credits:** 4

Application of fundamental concepts of mass balance in treatment processes. Physical, chemical, and biological aspects of pollution control, and design concepts for operations and processes used in environmental engineering are discussed. Concepts of engineering ethics are presented. Students participate in a design project that involves an oral presentation and written report. Prereq: CHEM 404, CEE 650, CEE 520; or permission. Writing intensive.

Attributes: Writing Intensive Course**CEE 626 - Field Experience****Credits:** 1

Based on appropriate career-oriented work experience in environmental engineering. Student can get one credit for field experience. A written final report is required as well as permission of student's adviser.

CEE 627 - Internship**Credits:** 2

Off-campus work in the environmental engineering field for on-the-job skill development. Needs to be supervised by an environmental engineering faculty member; and a proposal for the internship must be submitted and have permission of the ENE faculty prior to the start of the internship. Prereq: permission. IA (continuous grading).

CEE 635 - Engineering Materials**Credits:** 4

Structural properties and applications of the various materials used in civil engineering projects, including steel, cement, mineral aggregates, concrete, timber, and bituminous materials. Microstructure and properties of common metals, plastics, and ceramics. Prereq: CEE major or permission, CEE 501 or ME 526. Lab. Writing intensive.

Attributes: Writing Intensive Course**CEE 650 - Fluid Mechanics****Credits:** 4

Properties of fluids, fluid statics, continuity, momentum and energy equations, resistance to flow, boundary layer theory, flow in open channels and piping systems, dimensional analysis, similitude, drag, and lift. Laboratory exercises on measurement of fluid properties, energy principles, flow resistance, discharge measurements, momentum, hydropower, groundwater flow, and settling of spheres. Prereq: PHYS 407, CEE Hydrology major; or permission. Lab. Writing intensive.

Attributes: Writing Intensive Course**CEE 665 - Soil Mechanics****Credits:** 4

Soil classification and physical properties. Permeability, compressibility, consolidation, and shearing resistance are related to the behavior of soils subjected to various loading conditions. Prereq: CEE 635, CEE 650, CEE major; or permission. Lab.

CEE 680 - Classical Structural Analysis**Credits:** 3

Analytical stress and deflection analysis of determinate and indeterminate structures under static and moving loads by classical methods. Prereq: CEE 501, CEE major; or permission.

CEE 700 - Building Information Modeling**Credits:** 3

Building Information Modeling (BIM) is the process of generating and managing project data during its life cycle by integrating 3D multidisciplinary drawings with dynamic scheduling and visualization. BIM provides a digital representation of project data to facilitate the exchange of information beyond the standard two dimensional plan set. This course introduces students to the fundamentals of model creation, scheduling, material take-offs, visualizations, and animations that improve the communication of information to potential clients. Pre- or Coreq: TECH 564. Open to CEE and EnvEngr.MunicipalProc majors only.

CEE 702 - Issues in Engineering Practice and Management**Credits: 3**

Non-technical professional engineering topics including: participation in multidisciplinary teams, interpersonal and human resources skills, verbal and written communication skills, project management, marketing, ethics, professional licensure, professional liability, and contract administration. Prereq: seniors only; juniors with permission.

CEE 703 - Residential Construction**Credits: 3**

Introduces innovations in residential design. Investigates heat loss, electrical usage, green energy alternatives, and construction procedures. Addresses private and subdivision construction and mortgage financing for residential properties. Considers planning, zoning and soil usage codes applicable to residential zoned areas. Each student prepares a set of construction drawings for a private home, and a subdivision layout.

CEE 704 - Transportation Eng & Planning**Credits: 3**

Fundamental relationships of traffic speed, density, and flow applied to public and private modes of transport. Principles of demand forecasting and urban systems planning. Prereq: permission.

CEE 705 - Introduction to Sustainable Engineering**Credits: 3**

This course begins with exploration of the precept that we live in, and must design engineering works for, a world with a finite supply of natural resources and with limited life support capacity. Tools for sustainability engineering are the focus of the course, which includes life cycle analysis and life cycle impact analysis, the metrics and mass and energy flow analyses used in the field of industrial ecology, and environmental management systems.

CEE 706 - Environmental Life Cycle Assessment**Credits: 3**

This course teaches knowledge and hands-on-skills in conducting environmental life cycle assessment (LCA), which is a widely used technique by industries, academics, and governments. Students will learn to use popular LCA software (e.g. SimaPro), apply proper LCA techniques, critically analyze LCA results, and provide client-oriented suggestions during this course. Class time is primarily devoted to a combination of lectures and computer labs.

CEE 719 - Green Building Design**Credits: 3**

This course gives an overview of green designs and sustainable practices in building construction. We will cover technical topics and requirements of a nationally recognized rating system (LEED), with a specific focus on Green Building Design and Construction. Students are introduced to basic building designs and systems related to sustainability. Additionally, they learn about green design topics such as site plans, water and energy efficiency, material and resources usage, environmental quality and renewable energy source. As an outcome of the course, students are able to assess and incorporate green technologies and designs into building projects.

CEE 720 - Solid and Hazardous Waste Engineering**Credits: 3**

A thorough examination of the problems that exist in hazardous and solid waste management are presented in terms of the current regulations and engineering approaches used to develop solutions. Topics include risk-based decision making, transport and fate of contaminants, and the fundamental physical, chemical, and biological concepts, which make up the basis for technological solutions to these waste management problems. Case studies are used throughout the course to highlight key concepts and provide real-world examples.

CEE 721 - Environmental Sampling and Analysis**Credits: 4**

Theory of analytical and sampling techniques used in environmental engineering. Topics include potentiometry, spectroscopy, chromatography, automated analysis, quality control, sampling design, and collection methods. Methods discussed in lecture are demonstrated in labs. Prereq: CHEM 404 and CEE 620 or permission. Lab.

CEE 722 - Introduction to Marine Pollution and Control**Credits: 4**

Introduces the sources, effects, and control of pollutants in the marine environment. Dynamic and kinetic modeling; ocean disposal of on-shore wastes, shipboard wastes, solid wastes, dredge spoils, and radioactive wastes; and oil spills. Prereq: CEE 620 or permission.

CEE 723 - Environmental Water Chemistry**Credits: 4**

Emphasizes the use of chemical equilibrium principles and theory, calculations, and applications of ionic equilibrium stresses. Topics include thermodynamics, kinetics, acid/base, complexation, precipitation/dissolution, and redox equilibria. Computer equilibrium modeling is presented. Prereq: CHEM 404 or CHEM 405.

CEE 724 - Environmental Engineering Microbiology**Credits: 4**

Concepts of environmental engineering microbiology. Topics include taxonomy of species important in environmental engineering processes; microbial metabolism, interaction, and growth kinetics in environmental treatment processes; biogeochemical cycling in water; and effects of environmental parameters on environmental engineering microbial processes. Laboratories focus on microbiological methods and laboratory-scale biological treatment experiments. Prereq: CEE 520 and CEE 650 or permission. Lab. Writing intensive.

Attributes: Writing Intensive Course

CEE 730 - Public Health Engineering for Rural and Developing Communities**Credits: 3**

The application of environmental health engineering and sanitation principles in disease prevention and control are discussed. Special emphasis is given to areas of the world where communicable and related diseases have not yet been brought under control and to what can happen in more advanced countries when basic sanitary safeguards are relaxed. The following topics are covered: water-related diseases to include their transmission and control; safe water development, treatment, distribution and storage; and on-site wastewater treatment and disposal system.

CEE 731 - Advanced Water Treatment Processes**Credits:** 4

The primary objective of this course is to provide the environmental engineer with an overview of physical-chemical and biological unit water treatment processes. Major emphasis is placed on the analysis and design of both conventional and advanced water treatment unit processes/operations.

CEE 732 - Solid and Hazardous Waste Design**Credits:** 4

Selection, design, and evaluation of unit processes employed in the treatment of solid wastes and hazardous wastes will be studied. Topics include design of materials recovery facilities, landfills, waste-to-energy facilities and hazardous waste site remedial technologies. A group term project taken from a real-world project will be required. An oral presentation by the group and preparation of a final written engineering report including alternative evaluation, permits, scheduling and economic analysis will be required from each group. Prereq: CEE 720 or permission. Writing intensive.

Attributes: Writing Intensive Course**CEE 733 - Public Infrastructure Asset Management****Credits:** 4

The course provides a thorough examination of the growing engineering field of Public Infrastructure Asset Management (IAM). The course enables the student to design an IAM system. It touches upon all types of public infrastructure with a particular focus on water infrastructure for the semester design project. Students build upon their engineering economics and project engineering skills and use simple IAM software along with GIS applications. Practice leaders from the industry provide guest lectures throughout the semester. A focus on triple bottom line or the Societal, Environmental and Economic aspects of IAM are included. The format is a modified team base design learning experience providing practice in processing of technical lecture material, personal performance evaluation (frequent quizzes) and team based performance evaluation. Student groups will present their design to the class and provide a written engineering report. Pre- or Coreq: CEE 502 and CEE 620.

CEE 734 - Bioenvironmental Engineering Design**Credits:** 4

Selection, design, and evaluation of unit processes employed in biological treatment of waters, wastewaters, and hazardous wastes. Preparation of engineering reports, including developing design alternatives and economic analysis, is required. Prereq: CEE 620 and CEE 724 or permission. Writing intensive.

Attributes: Writing Intensive Course**CEE 735 - Properties and Production of Concrete****Credits:** 3

Basic properties of hydraulic cements and mineral aggregates, and their interactions in the properties of plastic and hardened concrete; modifications through admixtures; production handling and placement problems; specifications; quality control and acceptance testing; lightweight, heavyweight, and other special concretes. Prereq: CEE 635 or permission.

CEE 736 - Asphalt Mixtures and Construction**Credits:** 3

Specification of asphalt cements, aggregates and proportioning of mixture constituents for paving applications. Asphalt mixture design methods, production, construction, and quality control are discussed. Current new material production and construction technologies are introduced. Prereq: CEE 635.

CEE 748 - Pavement Design Project**Credits:** 1

Semester long design project accompanying CEE 749 Pavement Design Analysis. The design project will require weekly meetings (either online or in person) for the duration of the semester. Meeting times will be arranged based on student schedules. This course, in combination with the 3-credit CEE 749 Pavement Design Analysis, will satisfy a senior level materials principal design elective in the CEE department.

Co-requisite: CEE 749**CEE 749 - Pavement Design and Analysis****Credits:** 3

Introduction to flexible and rigid pavement design and analysis for highways and airports. Examines design inputs, materials, analysis methods, design tools, and maintenance treatments. This course satisfies a senior level materials design elective in the CEE department. This course, in combination with the 1-credit CEE 748 Pavement Design Project, will satisfy a senior level materials principal design elective in the CEE department. Prereq: CEE 635 and CEE 665.

CEE 750 - Ecohydrology**Credits:** 3

Introduction to ecohydrological concepts in terrestrial and riverine systems. Topics include the historical practices, resource management impacts, hydrologic variability, and the relationships among water and ecology, vegetation, biology, geomorphology, and water quality. Prereq: CEE 754 or ESCI 705 or permission.

CEE 751 - Open Channel Flow**Credits:** 3

Energy and momentum principles in open channel flow; flow resistance; channel controls and transitions; unsteady flow concepts and dam failure studies. Modeling with HEC programs. Prereq: CEE 650 or permission.

CEE 754 - Engineering Hydrology**Credits:** 3

Hydrologic cycle, probability theory related to hydrology and the design of water resources structures, water law, flood discharge prediction, hydrograph development, hydraulic and hydrologic river routing, reservoir routing, theory of storage, reservoir operations, hydropower development, modeling of watershed hydrology with program HEC-1, HEC-HMS, multipurpose projects.

CEE 755 - Design of Pressurized Water Transmission Systems**Credits:** 4

Theory developed for individual components to large complex systems. Analysis and designs of components and systems. Topics include: steady and unsteady closed conduit flow, valves and meters, pump requirements, pump selection, system planning and layout, water hammer, and system operation and maintenance. Pressure system modeling with program EPANET. Prereq: CEE 650 or permission.

CEE 757 - Coastal Engineering and Processes**Credits:** 3

Introduction to small amplitude and finite amplitude wave theories. Wave forecasting by significant wave and wave spectrum method. Coastal processes and shoreline protection. Wave forces and wave-structure interaction. Design of coastal structures. Introduction to mathematical and physical modeling. Prereq: CEE 650 or permission.

CEE 758 - Stormwater Management Designs**Credits: 3**

Historic review of stormwater management leading up to the current regulatory framework. Overview of stormwater management strategies, strategy selection, and the targeting of specific contaminants, contaminant removal efficiencies, construction and site selection, and system maintenance. Hydrologic concepts including watershed and storm characteristics, design hydrology (peak flows, storm and treatment volumes), hydrograph routing, and critical review of hydrology and drainage reports. Design and sizing of treatment systems including: conventional, BMPs, low impact development, and manufactured devices. Rainfall runoff calculations with US SCS TR55 model. Prereq: CEE 650 or permission.

CEE 759 - Stream Restoration**Credits: 4**

The assessment, planning, design, engineering, and monitoring of stream and watershed practices intended to protect and restore the quality and quantity of flowing surface waters and stream corridors. Lecture material covers hydrology, geomorphology, and ecosystems, with the intent of understanding the variables associated with stream systems and their interplay. Students measure field variables and then are challenged with actual designs. Examples of stream restoration issues include: in-stream flow, dam removal, induced recharge, improvements to fish habitat, and channel stabilization. Prereq: CEE 650.

CEE 765 - Engineering Behavior of Soils**Credits: 4**

Review of stress and strain in soil. Introduction to continuum mechanics. Development of engineering soil properties. Application of soil mechanics to shear strength and stress-strain behaviors of soils. Failure states and residual strength. Application of stress paths in engineering problems. Unstaturated soil mechanics. Laboratory exercises using direct shear test, triaxial test, and soil-water retention measurements.

CEE 766 - Introduction to Geotechnical Earthquake Engineering**Credits: 3**

Overviews earthquake source mechanisms; magnitude and intensity; seismicity of the United States. Dynamics of simple structures; response spectra. Selection of design parameters; source, magnitude, input records. Measurement of dynamic characteristics of soils; site response, liquefaction, and ground deformation. Prereq: CEE 778 or permission.

CEE 767 - Geological Engineering**Credits: 3**

Functional classification of rocks and rock masses, stereographic projection, engineering properties of rocks, and rock mechanics. The influence of geology in the design of underground excavations, tunneling, foundations, and rock slope engineering. Prereq: ESCI 401 or permission.

CEE 768 - Geo-Environmental Engineering**Credits: 3**

Soil composition and structure; hydrogeology; attenuation and contaminant transport; containment design including landfills, geo-synthetics for liners and covers, leachate collection systems, vertical cutoff walls and stability analyses; geo-environmental site characterization and investigation using geotechnical and geophysical methods; ground water, soil and gas monitoring and sampling; remediation including in situ and ex situ techniques and treatment methods. Prereq: CEE 665 or permission.

CEE 778 - Foundation Design I**Credits: 4**

Foundation design based on subsurface investigation and characterization using current methods of laboratory and in situ testing. Use of consolidation theory and bearing capacity theory for the design of shallow foundations including footings and rafts. Basic design of pile foundations. Earth pressure theory applied to design of retaining walls. Slope stability theory and applications. Prereq: CEE 665 or permission.

CEE 779 - Foundation Design II**Credits: 3**

Advanced pile and pier design under vertical and lateral loads. Slope stability by circular and noncircular arc methods. Design of flexible bulkhead walls and mechanically stabilized walls. Excavation and dewatering. Soil and site improvement. Prereq: CEE 778 or permission.

CEE 780 - Matrix Structural Analysis and Modeling**Credits: 3**

Modeling and analysis of determinate and indeterminate structures by matrix computer methods. Creation of matrix elements using compatibility, equilibrium, and constitutive relationships. Plane trusses, beams, frames, and space trusses. Prereq: CEE 680 or permission.

CEE 781 - Dynamics of Structures**Credits: 3**

Dynamics of single- and multi-story buildings. Response due to earthquakes, blasting, traffic, and mechanical equipment. Analysis in the time domain and through the Fourier Transform. Fundamentals of structural vibration measurement. Prereq: CEE 780, permission.

CEE 789 - Timber Design**Credits: 3**

Introduces the design of timber structures. Structural properties of wood, determination of horizontal and vertical loads, horizontal and vertical load-resisting systems, and design of horizontal diaphragms, shear walls, beams, and columns. Bolted, screwed, and nailed connections. Prereq: CEE 680 or permission.

CEE 790 - Structural Design in Masonry**Credits: 3**

Introduces the design of reinforced masonry structural members by the stress and strength method and considering deflection and other serviceability performance criteria. Includes development of wind and seismic load, curtain wall, shear wall, lintels and columns. Prereq: CEE 635, CEE 680; or permission.

CEE 791 - Reinforced Concrete Design**Credits: 4**

Introduces the design of reinforced concrete structural members by the strength method and considering deflection performance. Includes loads, approximate analyses, slabs, beams, and columns. Prereq: CEE 635, CEE 680; or permission.

CEE 792 - Pre-stressed Concrete**Credits: 3**

Analysis and design of prestressed and post-tensioned concrete sections in flexure and shear. Strength, deflection, and losses in flexural members. Optimization of section and prestressing force selection. Prereq: CEE 791 or permission.

CEE 793 - Structural Design in Steel**Credits: 4**

Introduction to steel member design, including horizontal and vertical members for design and analysis of buildings. Examines design inputs, material choice, analysis methods and design and construction methodologies. Prereq: CEE 635 and CEE 680.

CEE 794 - Bridge Design**Credits:** 3

Analysis of two-span, continuous, slab and beam bridges using the AASHTO LRFD Bridge Design Specifications. Use of influence lines, load distribution, load factoring, deck design, analysis and design of composite beams and plate girders. Bridge aesthetics. Prereq: CEE 791. Pre- or Coreq: CEE 793.

CEE 795 - Independent Study**Credits:** 1-4

Seniors in good standing may pursue independent studies under faculty guidance. A written culminating report is required. Prereq: permission.

CEE 796 - Special Topics**Credits:** 1-4

Advanced or specialized topics not normally covered in regular course offerings. May be repeated, but not in duplicate areas. Prereq: permission. Special Fee.

CEE 797 - Introduction to Project Planning and Design**Credits:** 1

Part one of a two-part sequence. Student groups develop a project statement to address a large-scale civil engineering system design. Each team prepares a project plan to be executed in CEE 798, part two of this sequence. Cr/F.

CEE 798 - Project Planning and Design**Credits:** 3

Student groups are formed into design teams to prepare a design plan for a large-scale civil engineering system including consideration of budgetary constraints, building code criteria, and environmental impacts. Each team prepares a final written report and gives a formal presentation. Prereq: CEE 797; Civil Engineering and EnvEngr. Civil Engr majors only. Writing intensive.

Attributes: Writing Intensive Course**CEE 799H - Senior Honors Thesis****Credits:** 4

Students in the honors program in civil engineering complete a project under the direction of a faculty sponsor resulting in a written thesis which must be accepted by the sponsor by the end of the second semester, senior year. Four credits total during senior year; 3 of which may be used to fulfill a CEE non-design elective.

Civil Technology (CT)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

CT 423 - Introduction to Surveying and Mapping**Credits:** 3

An introduction to the field of surveying and mapping and its fundamental principles, theories and methods. Specifically: horizontal and vertical distance measurements, angle and direction measurements, determination of positions, areas and topographic contours. Includes mapping, geographic information systems and the Global Positioning System, measurement accuracy, and statistical analysis.

Co-requisite: CT 425**CT 425 - Surveying and Mapping Lab****Credits:** 2

A series of labs and recitations that provide an introduction to the field of surveying and mapping and its fundamental principles, theories and methods. Specifically: horizontal and vertical distance measurements, angle and direction measurements, determination of positions, areas and topographic contours. Includes mapping, geographic information systems and the Global Positioning System, measurement accuracy, and statistical analysis.

Co-requisite: CT 423**CT 427 - 2D Computer Aided Design****Credits:** 4

The student designs fundamental design project work including site work and buildings, prepares plans using computer software (AutoCAD). Emphasis is on learning the software, basic design and plan requirements. Students then apply this knowledge to produce presentation drawings and develop proficient skills with this software. The student also works concurrently on course projects. 2-hr lec/2-hr rec.

CT 428 - 3D Design, Modeling and Visualization**Credits:** 4

Provides foundational skills in critical thinking, design process and creative expression in three dimensions. Individual and group projects provide opportunities for enhancing spatial thinking, understanding and communication. Hand sketching, computer sketching, REVIT Building Information Modeling (BIM) software and ArcGIS Geographic Information System (GIS) software is utilized to develop a rich awareness of 3D spatial relationships in the natural and built environments.

CT 432 - Applied Environmental Technology**Credits:** 4

The technical and administrative issues inherent to the management of our impact on the environment are covered. Topics to be covered include: examination of the evolution, design, and processes inherent to manage and treat stormwater, deliver potable water, collect and treat wastewater discharge, manage solid and hazardous waste, and promote recycling. Global climate change monitoring is also discussed when appropriate.

CT 442 - Construction Surveying**Credits:** 4

This course applies methods and techniques learned in CT 423/424 to real world situations. The student works as part of a project team on a proposed construction site. Tasks and materials covered include: setting control, mapping of sites, design and layout of roadways, site planning, building and infrastructure layout, area and volume calculations. Class expands on use of survey equipment such as data collectors, RTK-GPS and land design computer software. Prereq: CT 423 and CT 424 with a grade of C- or better. 2-hr lec/1-hr rec/2-hr lab.

CT 483 - Mechanical and Electrical Systems**Credits:** 4

Description, analysis and design application of conventional heating, ventilating, air conditioning, lighting and plumbing systems for residences. Electrical principles, laws, and installation with emphasis on the National Electrical Code. 2-hr lec/2-hr rec.

CT 538 - Construction Contracting**Credits:** 4

Overview of administrative skills required to manage a construction concern. Emphasis on project management through the entire construction and design process. Building codes and the ADA code included. 2-hr lec/2-hr rec.

CT 541 - Legal Aspects of Surveying**Credits: 4**

The legal issues involved when performing a property boundary survey are presented. Ownership of land, the search for boundary evidence, methods of performing research and resolving conflicting information and disputes are discussed. Other topics include: An introduction to legal principles, statutes, case law, terminology, liability, ethics and standards relating to surveying. A course-long project is undertaken whereby research, the search for evidence, a field survey, boundary determination and a plat are completed. Prereq: CT 423 and CT 424 with a grade of C- or better. 2-hr lec/2-hr rec.

CT 543 - Advanced Surveying and Mapping**Credits: 4**

A continuation of surveying topics not covered in CT 423 and CT 424, CT 442 and CT 541. Specifically: Geodesy, Map Projection Systems, State Plane Coordinates, Control Surveys, Static and Real Time Satellite Positioning, Astronomic Observations, Equipment Testing, Site Detail Mapping, Laser Scanning, Observation Adjustment Theory and 3D Least Squares Adjustment. Prereq: C- or better in CT 423 and CT 424. 3-hr lec/3-hr lab.

CT 548 - Advanced Surveying Computation**Credits: 4**

Emphasis on how to perform the typical surveying computations encountered in the field. Use of surveying and mapping software and plotters for topographic mapping and subdivision design. Advanced GIS theory and applications including Photogrammetry and Remote Sensing. Field equipment testing and adjustment. Prereq: CT 423 and CT 424, CT 442, CT 543, minimum grade of C- or better in all, or permission. 3-hr lec/2-hr lab.

CT 551 - Statics and Materials**Credits: 4**

Determining and evaluating physical properties of common building construction materials: wood, steel and non-ferrous metals, cement, concrete, brick, and bituminous materials. Application of materials to design of structural elements in beam and column applications, under various load conditions. Emphasis on appropriate material selection and optimization of design. Prereq: MTH 203. 2-hr lec/2-hr rec.

CT 554 - Soils and Foundations**Credits: 4**

Subsurface exploration, soil sampling, testing and evaluating subsurface materials, and their effect on foundations, site development, and construction. Hands-on laboratory component. Introduction to site excavation methods and foundation design. 2-hr rec/2-hr lab/rec.

CT 557 - Land Design and Regulations**Credits: 4**

Hydrology of drainage and storm water runoff, basic concepts of hydraulic flow in pipes and channels, and overview of pump systems. Technical and regulatory requirements of designing residential water supply and septic disposal systems. Review of federal, state, and local ordinances with respect to construction and land development. 2-hr lec/2-hr rec.

CT 576 - Building Science/Residential Construction**Credits: 4**

The study of inter-relationship of physical principles that affect the functionality and life span of a building; foundations, floor and framing systems, roofing styles and options, siding and interior finish work, and fenestrations. The materials and methodologies of residential construction with an emphasis on energy efficiency, air quality management, and moisture control. Includes safe and efficient operation of industry-standard power tools in hands-on shop environment (table saw, jointer, miter saw, etc.).

CT 581 - Architecture I History and Design**Credits: 4**

Develops a basic understanding of American residential architectural history while developing architectural programming and design skills in a project based environment. Moderate CAD usage for project submissions 2-hr lec/2-hr rec.

CT 582 - Architecture II**Credits: 4**

Studio application of principles and skills developed in the architectural concentration. Design of a complete shelter system into the design development phase. Prereq: CT 581. 2-hr lec/2-hr rec.

CT 591 - Studies**Credits: 1-4**

Students who have the ability and adequate preparation to work independently may propose a contract to design a course or research project on a topic not available through existing course offerings. The purpose of this research is to explore new areas in the student's field of study or to pursue course material in greater depth. Work is supervised by an appropriate faculty/staff member and credit varies depending on the proposed project/research. Examples may include energy conservation, surveying, construction, or hydrographic surveying.

CT 592 - Studies**Credits: 1-4**

Students who have the ability and adequate preparation to work independently may propose a contract to design a course or research project on a topic not available through existing course offerings. The purpose of this research is to explore new areas in the student's field of study or to pursue course material in greater depth. Work is supervised by an appropriate faculty/staff member and credit varies depending on the proposed project/research. Examples may include energy conservation, surveying, construction, or hydrographic surveying.

CT 597 - Work Experience**Credits: 0**

Career-oriented work experience (10 weeks, full time) to include, but not limited to, architecture, construction, surveying, and mapping. Cr/F.

Classics (CLAS)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

CLAS 400 - Exploring and Experiencing the Ancient World and its Legacy**Credits: 2**

Covers aspects of the ancient world and its subsequent importance not found in the rest of the Classics curriculum or dealt with only briefly. Topics are chosen to be timely by connecting antiquity to current events, including pop culture, or to be enduring but under-appreciated. Emphasis on active and engaged learning and, where possible, experiential activities. May be repeated on different topics. Does not satisfy major requirements.

CLAS 401 - Classical Mythology**Credits:** 4

Survey of myths and sagas of ancient Greece and Rome. No classical preparation necessary. Background course for majors in English, the arts, music, history, modern languages, classics. Special fee.

Attributes: Humanities(Disc)**CLAS 401H - Honors/Classical Mythology****Credits:** 4

Survey of myths and sagas of ancient Greece and Rome. No classical preparation necessary. Background course for majors in English, the arts, music, history, modern languages, classics. Special fee. Writing intensive.

Attributes: Humanities(Disc); Writing Intensive Course**CLAS #402 - Hellenic and Roman Institutions****Credits:** 4

Lecture, discussion. Introduction to ancient Greek and Roman literature. Emphasis on the institutions from the earliest period to the end of the classical age. Open to all students.

CLAS 405 - Introduction to Greek Civilization**Credits:** 4

A broad historical exploration of Greek civilization. Topics include: architecture, art, law, literature, philosophy, poetry, politics, religion, society, warfare, and the Greek's legacy to the modern world. Open to all students. No prior knowledge of the ancient world assumed; all readings are in English. Ideal background for students of English, philosophy, history, Latin, Greek, the arts, music, modern languages. Special fee.

Attributes: Historical Perspectives(Disc)**CLAS 406 - Introduction to Roman Civilization****Credits:** 4

A broad historical exploration of Roman civilization. Topics include: architecture, art, law, literature, philosophy, poetry, politics, religion, society, warfare, and their legacy to the modern world. Open to all students. No prior knowledge of the ancient world assumed; all readings are in English. Ideal background for students of English, philosophy, history, Latin, Greek, the arts, music, modern languages. Special fee.

Attributes: Historical Perspectives(Disc)**CLAS 411 - Elementary Hittite I****Credits:** 4

Elements of grammar, reading of simple prose. Special fee.

CLAS 412 - Elementary Hittite II**Credits:** 4

Elements of grammar, reading of simple prose. Special fee.

CLAS #414 - Elementary Sanskrit II**Credits:** 4

Elements of grammar, reading of simple prose. Special fee.

CLAS #421 - Major Greek Authors in English**Credits:** 4

Major classical authors such as Homer, the Tragedians of Athens, Herodotus, Thucydides, and Plato in the context of their civilization, from which so much of our contemporary culture derives. For students unprepared to read Greek. Background for majors in English, history, Latin, Greek, the arts, music, philosophy, modern languages. Open to all students. Special fee. Writing intensive.

Attributes: Humanities(Disc); Writing Intensive Course**CLAS 444 - Individual and Society in the Ancient World****Credits:** 4

This class examines one of the major issues faced by people throughout history, whether and under what circumstances an individual should act against the wishes of society. The great philosophical and historical works of the ancient world shed light not only on how the Greeks and Romans approached the idea of personal responsibility but also on the assumptions we today make about human nature and the relationships on which society depends. No prior knowledge of the ancient world required. All readings are in English. Writing intensive.

Attributes: Humanities(Disc); Inquiry (Discovery); Writing Intensive Course**CLAS 444D - Athens, Rome, and the Birth of the United States****Credits:** 4

What did Washington, Jefferson, Adams (John and Abigail), Madison and Paine have in common? They were all instrumental in shaping the US political system, but they were also educated in the classics. When building the framework of our democratic republic, they continually looked to Athens and Rome as models, inspirations and warnings. The course examines ancient political systems and how they helped fashion our founder's notion of the ideal government and continue to do so.

Attributes: Historical Perspectives(Disc); Inquiry (Discovery); Writing Intensive Course**CLAS 500 - Classical Mythology: Topics in World Literature****Credits:** 4

Topics are chosen to introduce students to major themes and genres. (Also offered as FREN 500, GERM 500, ITAL 500, PORT 500, RUSS 500, SPAN 500.) May be repeated for credit. Writing intensive.

Attributes: Writing Intensive Course**CLAS #506 - Introduction to Comparative and Historical Linguistics****Credits:** 4

Major language families (primarily Indo-European) and the relationships among the languages within a family. Diachronic studies, methods of writing, linguistic change, glottochronology, etymological studies. Some language training and LING 505 desirable. (Also offered as LING 506.)

Attributes: Social Science (Discovery)**CLAS 510 - Building Rome****Credits:** 4

An introduction to the buildings and structures for which the Romans remain famous, such as the Pantheon, the Colosseum, and the aqueducts that allowed Rome to become a metropolis. A major focus is the connection between the changes in Roman society and the development of Roman architecture. Looks at both Rome and other important cities in the Roman Empire. All readings are in English. No prior knowledge of the ancient world required. Special fee.

Co-requisite: INCO 589**Attributes:** FinePerformingArts(Discovery)**CLAS 511 - Special Studies in Greek History****Credits:** 4

The course uses historical and literary sources in conjunction with the city of Athens itself and its archaeological remains to explore the history of a particular theme, cultural practice or institution in ancient Greek civilization. The topics changes with different instructors but always takes a fundamentally historical orientation to the material and the city, even if interdisciplinary approaches are incorporated into the coursework. CLAS 511 is offered only as part of a study abroad program.

Attributes: Historical Perspectives(Disc); Inquiry (Discovery)

CLAS 520A - Classical Society, Politics and Ethics: Democracies and Republics**Credits:** 4

We frequently use the terms "democracy" and "republic" to describe our own political system, but where did these words and ideas originally come from? This course examines the historical development of the original democracies in Greece (primarily Athens) and the Roman Republic, as well as the particular institutions and practices that were associated with each. Course will also cover the development of democratic and republican institutions in the modern world. No prerequisite. Open to all students.

Attributes: Historical Perspectives(Disc)**CLAS 520B - Classical Society, Politics and Ethics: Happiness and Ancient Views of the Good Life****Credits:** 4

How did the Greeks and Romans define happiness and was happiness considered an essential component of the "good life"? How do ancient concepts of the "good life" influence later views of human flourishing and how do specific historical circumstances alter utopian visions of a life well lived? This course traces the concept of the "good life" from ancient Greece to today and challenges students to create their own vision of a "good life".

Attributes: Historical Perspectives(Disc)**CLAS 520C - Classical Society, Politics and Ethics: Sports, Spectacle and Competition****Credits:** 4

This course treats the details of athletic training and competition, but it's primary focus is on investigating the importance of athletics to society and how athletics reflected the broader cultural values of the Greeks and Romans. Open to all students. All readings in English. Special fee.

Attributes: Historical Perspectives(Disc)**CLAS 520D - Classical Society, Politics and Ethics: Greek and Roman Religion****Credits:** 4

This course traces the historical development of ancient Greek and Roman religion from its antecedents in Near Eastern, Minoan, and Mycenaean culture to the rise of Christianity in Rome's early imperial period. This course also introduces students to the methods and materials of historians of religion. Topics covered in this course include: changing conceptions of divinity, animal sacrifice, sanctuaries, festivals, death and the afterlife, divination, magic, and mystery cults.

Attributes: Historical Perspectives(Disc)**CLAS 525 - Greek and Latin Origins of Medical Terms****Credits:** 4

Study of medical terminology. Exercises in etymology and the development of vocabulary in a context at once scientific, historical, and cultural. No knowledge of Greek or Latin is required. Useful to premedical, pre-dental, pre-veterinary, nursing, medical technology, and other students in the biological and physical sciences. Open to all students. Special fee.

CLAS 530A - Classical Literary Performance Genres: War and Adventure in Ancient Epic**Credits:** 4

Storytelling has long been one of the primary means to preserve and transmit cultural ideas and traditions. In this course students read and analyze the earliest epic tales from the Greek and Roman period with a view toward understanding the roots and nature of epic, the myths it told, and the influence it has had on subsequent literature. No credit earned if credit received for CLAS 444B. Writing intensive.

Attributes: Humanities(Disc); Writing Intensive Course**CLAS 530B - Classical Literary and Performance Genres: Tragedy and Comedy on the Ancient Stage****Credits:** 4

Investigations into the dramatic works of the Greek and Romans, the power of performance, and the cultural importance of stage productions. Readings include the tragedies of Aeschylus, Sophocles, and Euripides, and the comedies of Aristophanes, Menander, and Plautus. Ideal background for students of all theatrical and performance traditions. Open to all students. All readings in English. Special fee.

Attributes: Humanities(Disc)**CLAS 540A - Environment, Technology and Ancient Society: Sustaining Ancient Rome Ecology and Empire****Credits:** 4

This course examines the interplay between the ancient Roman environment, Roman technological innovations, and the values of Roman imperial society. Examining Roman innovations in water supply, building technology, mining, and more, this course explores the ethical questions that arise through the use of ancient Roman technology, evaluates the effects of these technologies on the environment and Roman society, and determines whether Roman values encouraged or discouraged a responsible approach to technology and the environment.

Attributes: Environment,TechSociety(Disc)**CLAS 540B - Environment, Technology and Ancient Society: Roman Houses, Domestic Space and Public Life****Credits:** 4

The Romans used the house as a communication technology for defining and expressing their identities in society and in the natural world. In this course, we examine literary and visual sources for Roman houses, apartments, villas, and palaces, and we compare and contrast the role of the house in the ancient world and in American society. We pay special attention to how domestic space shapes and is shaped by environment, politics, and culture.

Attributes: Environment,TechSociety(Disc)**CLAS 540C - Environment, Technology and Ancient Society: Tech, Tools and Engineering in the Ancient World****Credits:** 4

This course examines positive and negative impacts of ancient technological advances: engineering (fire, metallurgy), writing technology (scripts, including the alphabet, the emergence of papyrus and vellum), military technology (shipbuilding, defensive and offensive technologies, and navigation), artistic (invention of dyes, lost-wax methods of bronze casting), infrastructure (roads, bridges, and aqueducts), and monumentality (Stonehenge, Greek temples, and the Roman Colosseum). Focus on the ways in which societal and environmental factors influenced technological development and vice versa.

Attributes: Environment,TechSociety(Disc)

CLAS 550A - Identities and Difference in the Ancient World: Greek and Roman Women**Credits:** 4

The impact of women on society in Greece and Rome throughout Antiquity. The role of women in public, religious, and private life as well as their legal status through law codes. Men's views of women in different literary texts. Especially concentrating on the few existing texts written by women. All readings are in English. No prerequisite. Special fee. Writing intensive.

Attributes: Historical Perspectives(Disc); Writing Intensive Course**CLAS 550B - Identities and Difference in the Ancient World: Slaves and Masters****Credits:** 4

Students explore the different ways slavery developed in the Greek and Roman worlds with an emphasis on the connections to other historical developments such as the practice of warfare, changes in political systems, and ancient views about human rights. To better understand the development of Greek and Roman slavery, we look at how the ancient systems compare to slavery in the American South and modern human trafficking.

Attributes: Historical Perspectives(Disc)**CLAS 550C - Identities and Difference in the Ancient World: Sex and Desire in Greece and Rome****Credits:** 4

This course provides an introduction to ancient Greek and Roman conceptions of desire and sexuality, to how these conceptions developed and changed over time, and how they differ from modern ways of understanding sex, desire, and sexuality. Topics discussed include "romantic" love, attitudes towards homosexual practices, man-boy love, lesbianism, ancient views of "cross-dressing," and attitudes towards prostitution, among others. Writing intensive.

Attributes: Historical Perspectives(Disc); Writing Intensive Course**CLAS #551 - Greeks and Barbarians: Culture, Identity and Difference in the Ancient World****Credits:** 4

Exploration of how the ancient Greeks' conceptions of foreign ethnicities and cultures -- most notably a contrast between European Greeks and various peoples from Asia, especially the Persians--evolved and was expressed in ancient literary and historical sources. Course examines how the Greeks came to think of themselves as a distinct people with shared attributes amidst non-Greeks, to all of whom they applied the generic term "barbaroi," or barbarians.

Attributes: World Cultures(Discovery)**CLAS #560 - Sports, Spectacle, and Competition in the Ancient World****Credits:** 4

This course treats the details of athletic training and competition, but it's primary focus is on investigating the importance of athletics to society and how athletics reflected the broader cultural values of the Greeks and Romans. Open to all students. All readings in English. Students who have previously taken CLAS #402 cannot receive credit for CLAS 410A, although they may receive credit for CLAS 410B and CLAS 410C. Special fee.

Attributes: Historical Perspectives(Disc)**CLAS 595 - Topics****Credits:** 4

Introduction and elementary study related to linguistic study of Latin and Greek or relevant to Greco-Roman culture and history. Primarily for students unprepared to read Latin and Greek. Topics: A) Byzantine Heritage; B) Grammar: Comparative Study of English and the Classical Languages; C) Greek and Latin Origins of Legal Terms; D) Greek and Latin Origins within the English Language; E) Classical Backgrounds of Modern Literature; F) Classical Archaeology.

CLAS 596 - Topics**Credits:** 4

Introduction and elementary study related to linguistic study of Latin and Greek or relevant to Greco-Roman culture and history. Primarily for students unprepared to read Latin and Greek. Topics: A) Byzantine Heritage; B) Grammar: Comparative Study of English and the Classical Languages; C) Greek and Latin Origins of Legal Terms; D) Greek and Latin Origins within the English Language; E) Classical Backgrounds of Modern Literature; F) Classical Archaeology.

CLAS 601 - Classical Myth II: The Power and Persistence of Myth**Credits:** 4

An in-depth look at the myths of the Greeks and Romans, at the power of myth as a cultural force, and at the importance of myth both in the ancient period as well as the modern era. The focal point is on the myths of the Greeks and Romans, but the myths of other cultures are addressed. All readings are in English. Special fee. Writing intensive.

Attributes: Writing Intensive Course**CLAS 604 - Golden Age of Rome****Credits:** 4

A study of the early Roman Empire as created by Augustus and his immediate successors; glorified by Vergil, Horace, and the poets of the Golden Age; and described by Tacitus, Suetonius, and the prose writers of the Silver Age. Open to all students. Prereq: any CLAS course or permission of instructor. Writing intensive.

Attributes: Writing Intensive Course**CLAS 605 - Golden Age of Athens****Credits:** 4

A study of the city of Athens in the classical age incorporating a variety of approaches, including literary, historical, philosophical and art historical methods. Students will study both ancient authors and modern scholarship on Athens. Prereq: any CLAS course of permission of instructor.

Attributes: Writing Intensive Course**CLAS 686 - UNH in Greece Study Abroad****Credits:** 6

Study abroad in Greece. Interested students should consult a Classics advisor. Prereq: must satisfy university requirements for studying abroad. Special fee. Cr/F. (IA grade will be assigned until official transcript is received from the foreign institution.) Contact james.parsons@unh.edu at the COLA Center for Study Abroad or visit www.col.unh.edu/greece for more information.

Co-requisite: CLAS 511, INCO 589

CLAS 694 - Supervised Practicum**Credits:** 2 or 4

Participants earn credit for suitable pre-professional activities, including high school outreach, assisting in undergraduate courses and work with professional organizations, museum work. Enrollment limited to juniors and seniors who are Classics, Latin, or Greek majors or minors and have above-average G.P.A.s. Writing assignments are required. Prereq: permission of instructor and program coordinator. Course does not count toward Classics, Latin, or Greek major or minor requirements. May be repeated up to a maximum of 8 credits. Special fee. Cr/F.

CLAS 695 - Special Studies**Credits:** 2 or 4

Advanced work in classics. Research paper. Not open to freshmen and sophomores.

CLAS 696 - Special Studies**Credits:** 2 or 4

Advanced work in classics. Research paper. Not open to freshmen and sophomores. Special fee.

College of Liberal Arts (COLA)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

COLA 400 - Hired: A Career Boot Camp for Liberal Arts Majors**Credits:** 2

This 7-week boot camp style course equips students with the tools and resources needed to land a job or internship. Students will learn how to effectively communicate their values, interests, strengths, and the transferable skills they have gained throughout their academic and cocurricular experience. Students will also explore career paths, learn to conduct a productive job/internship search, hone interview techniques, craft resumes and cover letters, and expand their professional network through alumni connections. Cr/F.

COLA 401 - Undeclared Liberal Arts Advising Seminar**Credits:** 1

This course is an introduction to the nature of academic knowledge, academic standards, and academic management skills essential for success in the University. This course is the foundation of the Undeclared Liberal Arts Advising program. The course is focused on exploring majors, academic success, and building a 4 Year Plan. Cr/F.

COLA 653 - Introduction to British Culture**Credits:** 4

Why do the British say "Sorry" for everything? What is the role of the monarchy? Does the British class system still exist? What is it like being British-born of Indian parents? How many languages are spoken in London? What is a stiff upper lip anyway? These are only a tiny fraction of the questions that will surface during your stay in London. Through class discussions, readings, written ruminations, and excursions, you will in this course explore a range of cultural elements and challenges unique to the United Kingdom in general and London in particular, from the light (British etiquette) to the substantial (the impact of immigration).

Co-requisite: COLA 655, COLA 670, INCO 588**COLA 654 - Intro to British Culture****Credits:** 1

Students participating in the UNH London Program are required to take this course whose purpose is to familiarize them with British culture and the city of London. Variable topics.

Co-requisite: COLA 656, INCO 588**COLA 655 - London Program****Credits:** 18

Enables students to pursue a semester or academic year of in UNH's programs in London, England. Students must be admitted before enrolling in the course. For information and application forms, consult program secretary, 53 Hamilton Smith Hall. Special fee. IA (continuous grading) grade will be assigned until official transcript is received.

Program fee. Cr/F.

Co-requisite: COLA 653, INCO 588**Attributes:** World Cultures(Discovery)**COLA 656 - London Program****Credits:** 16

Enables students to pursue a semester or academic year of in UNH's programs in London, England. Students must be admitted before enrolling in the course. For information and application forms, consult program secretary, 53 Hamilton Smith Hall. Special fee. IA (continuous grading) grade will be assigned until official transcript is received.

Program fee. Cr/F.

Co-requisite: COLA 654, INCO 588**Attributes:** World Cultures(Discovery)**COLA 657 - Justice Studies Budapest Program****Credits:** 16

This program is designed to introduce students interested in the field to a broader appreciation of the cross-cultural perspective. Each fall, fifteen UNH students spend the semester in residence at the Budapest University of Economic Sciences in Budapest, Hungary, where they have an opportunity to witness first hand the evolution of a criminal justice system within a context of significant cultural, political, economic, and social change. Situated along the Danube in one of Europe's oldest cities, the program offers a unique educational experience to students interested in the study of criminology, law and society, and the administration of justice. Under the supervision of a UNH faculty member also in residence, students carry a four course load, two of which are taught by the UNH faculty member. All courses are taught in English. Eligible students must hold sophomore standing, have completed either SOC 515 or POLT 507 and one other course in the Justice Studies curriculum, and have a minimum cumulative grade point average of 2.50. Special fee. Cr/F.

Co-requisite: INCO 588**Attributes:** World Cultures(Discovery)**COLA 658 - Humanities Spring Budapest Program****Credits:** 16

Enables students to pursue a spring semester in UNH's program in Budapest, Hungary. The program is designed to provide undergraduates with an intensive study abroad experience focusing on modern Hungarian and Central European history and culture. Students study at Corvinus University and take courses taught by Hungarian and University of New Hampshire faculty. Under the supervision of a UNH faculty member in residence, students carry a four course load, two of which (HUMA 550 and HUMA 551) are taught by the UNH faculty member. All courses are taught in English. Students must be admitted before enrolling in this course. For information and application forms, consult the COLA Study Abroad Coordinator. IA (Continuous grading) grade is assigned until official transcript of courses taken at Corvinus University is received. Cr/F.

Attributes: World Cultures(Discovery)

COLA 670 - The London Project**Credits: 4**

The London Project will be one of the two UNH courses that UNH students participating in the UNH London Program will be required to take. This course will guide students through the research, writing/producing, and presentation of a project that explores one very narrow slice of London. The goal is to allow each student to gain insight and understanding of a subject that intrigues him/her and to present findings in a form that is appropriate for the subject and the talents of the author. Those forms could range from an academic research paper, a piece of creative writing, a multimedia slide show, a video, a podcast, or perhaps a Power Point presentation. By asking students to become fluent in one London issue, this course complements the other UNH course, Introduction to British Culture, which covers a range of British customs, challenges, and cultural elements.

Co-requisite: COLA 653

Communication (CMN)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

CMN 440A - Honors/Communication, Identity and Addiction**Credits: 4**

Exploration of how diverse ways of talking about addiction contribute to our understanding – and ultimate approach toward – addictive behaviors. Focus will be on a relational approach to understanding the complex lives of human in their social contexts; it is an approach that challenges the dominant individualistic and scientific models of a person. Examination of the ways in which the moral, disease, and psychosocial models of addiction invite us to ignore larger social, cultural, and global issues that contribute to addiction.

Attributes: Social Science (Discovery)

CMN 455 - Introduction to Media Studies**Credits: 4**

Nature, development, and the effects of mass media. Overview of mass communication history and theory.

Attributes: Social Science (Discovery)

CMN 455H - Honors/Introduction to Mass Communication**Credits: 4**

Nature, development, and the effects of mass media. Overview of mass communication history and theory.

Attributes: Social Science (Discovery)

CMN 456 - Propaganda and Persuasion**Credits: 4**

Introduction to theories of propaganda and persuasion. Examination of symbolic strategies designed to secure or resist social and institutional change. Attention given to case studies of social, political, economic, and religious reformation. Special consideration of the ethical ramifications of such efforts.

Attributes: Humanities(Disc)

CMN 456H - Honors/Propaganda and Persuasion**Credits: 4**

Introduction to theories of propaganda and persuasion. Examination of symbolic strategies designed to secure or resist social and institutional change. Attention given to case studies of social, political, economic, and religious reformation. Special consideration of the ethical ramifications of such efforts.

Attributes: Humanities(Disc)

CMN 457 - Introduction to Language and Social Interaction**Credits: 4**

An introduction to the study of the conversational basis of social reality. Presents an overview of interpersonal communication processes and the ways in which they influence the formation of identity, personal relationships, gender, interactional patterns, conflict, culture, and power. Readings and class material from a variety of authors in the communication discipline as well as related fields in the humanities and the social sciences.

Attributes: Social Science (Discovery)

CMN 500 - Public Speaking**Credits: 4**

Performance course buttressed by practical theories of public discourse. Focus on analysis of speaking situations and audiences, message construction, presentation, and critical evaluation. Does not count towards the CMN major.

CMN 504 - Introduction to Argumentation**Credits: 4**

Persuasive discourse as inquiry and advocacy grounded in practical inductive and deductive reasoning. Discovery, analysis, and testing of practical arguments. The nature and function of proof. Some emphasis on applied presentation. Prereq: CMN 456 with C or better, or by permission. Writing intensive.

Attributes: Inquiry (Discovery); Writing Intensive Course

CMN 505 - Analysis of Popular Culture**Credits: 4**

Locates the development of popular cultural artifacts and practices within the 20th-century social history of the U.S. Examines the political-economic forces that underpinned the commercialization of art, leisure, sports, and other elements of culture in industrial and postindustrial America. Prereq: CMN 456 with C or better, or by permission.

Attributes: Inquiry (Discovery)

CMN 507 - Introduction to Rhetorical Theory and Analysis**Credits: 4**

Major precepts of rhetorical theory. Application of those precepts in analysis and understanding of a wide range of human communication. Consideration of how precepts and issues of rhetorical theory apply to contemporary issues and problems. Prereq: CMN 456 with C or better, or by permission.

Attributes: Inquiry (Discovery)

CMN 515 - Analysis of News**Credits: 4**

Explores the psychological, social, economic, political, and cultural factors that influence the definition and reporting of news. Prereq: CMN 455 with C or better, or by permission.

CMN 519 - Advertising as Social Communication**Credits: 4**

Social role of advertising, public policy debates concerning advertising, influence of advertising on culture, and methods of analyzing advertising messages. Prereq: CMN 455 with C or better, or by permission.

CMN #556 - Persuasion and Public Problems**Credits: 4**

Examination of communication about public problems using major precepts from classical and contemporary rhetorical theory. Application of those precepts discloses how persuasive communication frames public problems and constrains responses to them. By the end of the course students will know how to conduct a rhetorical analysis of public discourse and how to use results from that analysis to criticize, improve, or participate in deliberations about public problems. Prereq: CMN 456; Communication, CMN: Media Practices, and CMN: Business Applications majors only. Writing intensive.

Attributes: Inquiry (Discovery); Writing Intensive Course

CMN 562 - Collaborative Leadership in the 21st Century**Credits: 4**

This course grounds the study of interaction in groups via theories of inter-organizational collaboration. Students will leave this course with a very specific set of knowledge and skills related to dialogue, principled negotiation, constructive conflict, consensus decision making and appreciative inquiry. Lessons focus on the development of a responsible ethic regarding how to share power among diverse group members. This ethic prepares you to lead collaborative groups in organizations, communities, and as family members. Prereq: CMN 457 with a grade of C or better or permission.

CMN 567 - Gender, Race, and Class in the Media**Credits: 4**

The purpose of this course is to introduce students to contemporary critical scholarship on the construction of gender, race, and class in the media - particularly popular media. Subjects such as the portrayal of ethnic groups, ideal body image, blue collar men, and gay, lesbian, bisexual, and transgender groups are case studies. This course is one that introduces students to performing communication analysis. Prereq: CMN 455; Communication, CMN: Media Practices, and CMN: Business Applications majors only.

CMN 572 - Analysis of Language and Social Interaction**Credits: 4**

In this mid-level course, students develop the observational and analytic skills necessary for the in-depth study of interaction in a variety of everyday and institutional social settings. Settings may include dialogue, multiparty interaction, non-verbal communication and embodiment, identity talk, and communication in organizations. Special attention to developing the reading and research skills used in upper level interpersonal communication courses. Prereq: CMN 457 with C or better, or by permission.

CMN 575 - Research Practicum**Credits: 1-4**

Student engagement through direct participation in faculty research projects. Elective credits which do not count towards the major. Instructor permission required. May be repeated for a maximum of 8 credits. Prereq: CMN 455, CMN 456, CMN 457, and permission. Cr/F. Communications majors only.

CMN 588 - Analyzing Institutional Interaction**Credits: 4**

Examinations of institutional interactions in emergency services, justice/law, medicine, family school encounters, journalism and politics. Shows how the work of society gets done through interaction. Students get hands-on experience analyzing persons' conduct in these interactions. This course is designed to develop students' analytic skills in studying social interaction in institutions, using recorded data in the form of naturally-occurring interactions in these settings. Prereq: CMN 457.

Attributes: Inquiry (Discovery)

CMN 596 - Special Topics in Media Studies**Credits: 4**

Selected topics not covered by existing courses in media studies. Topics vary; course descriptions are available in department office during preregistration. May be repeated for credit if topics differ. Prereq: CMN 455 with C or better, or by permission.

CMN 597 - Special Topics in Rhetorical Studies**Credits: 4**

Selected topics not covered by existing courses in rhetorical studies. Topics vary; course descriptions are available in department office during registration. May be repeated for credit if topics differ. Prereq: CMN 456 with C or better, or by permission.

CMN 598 - Special Topics in Interpersonal Studies**Credits: 4**

Selected topics not covered by existing courses in interpersonal communication. Topics vary; course descriptions are available in department office during registration. May be repeated for credit if topics differ. Prereq: CMN 457 with C or better, or by permission.

CMN 599 - Internship**Credits: 1-4**

Internships are designed to integrate classroom study and supervised practical experience in a work setting. Each student is required to write a series of reports focusing on aspects of the work experience that are related to coursework in the Communications Department. These assignments are designed to enhance a student's ability to reflect critically on the internship experience and to merge theory and practice. Assignments are available, depending on the number of credits granted (1-4). Students are expected to hold the common exam time (TR, 1240-2) open for occasional meetings. Before starting the internship, students must submit a written proposal to both the work supervisor and the faculty sponsor. The proposal should include detailed information on the duties and responsibilities to be undertaken at the internship site and on the goals and learning objectives as relevant to the Communication Department curriculum. May be repeated for a maximum of 8 credits. Prereq: CMN 455, CMN 456, CMN 457, or permission. Cr/F.

CMN 600 - Public Speaking as a Civic Art**Credits: 4**

Performance course buttressed by the traditional civic art of rhetoric. Focuses on analysis of speaking situations and audiences, message of construction, presentation, and critical evaluation using major precepts of rhetorical theory. Theoretical and critical issues in the context of rhetorical practices. Prereq for CMN majors: CMN 455, CMN 456, CMN 457, and 500-level courses, or permission; prereq for non-majors: junior or senior standing. Writing intensive.

Attributes: Writing Intensive Course

CMN 602 - Theories of Interpersonal Communication**Credits:** 4

Analysis and criticism of contemporary perspectives on interpersonal communication. Theories and concepts, issues, and research models are examined as they contribute to our understanding of social interaction. Prereq: CMN 455, CMN 456, CMN 457 and two 500-level courses, or permission. Writing intensive.

Attributes: Writing Intensive Course**CMN 607 - Persuasion in American Politics****Credits:** 4

Study of the forms and strategies of persuasive discourse employed by contemporary American political leaders. Analysis of important political addresses of the 20th century, with attention to theoretical and critical issues in political communication and public address. Discussion of the status of rhetoric in modern politics, and the impact of persuasive discourse on campaigns, policy decisions, crisis management, political scandal, and the national identity. Prereq: CMN 455, CMN 456, CMN 457 and two 500-level courses, or permission. Writing intensive.

Attributes: Writing Intensive Course**CMN 615 - Public Opinion and Mass Communication****Credits:** 4

Examines the historical development of the 18th century public sphere and its relationship to the press. Traces the transformation of the press from an ideological grounding to a commercial base. Analyzes the consequences of contemporary mass consumer-oriented media on the public sphere and democratic life. Prereq: CMN 455, CMN 456, CMN 457 and two 500-level courses, or permission. Writing intensive.

Attributes: Writing Intensive Course**CMN 627 - Great Speakers and Speeches****Credits:** 4

Historical and critical survey of masterpieces of oratory examining the rhetorical situation and artistic features of great works of spoken discourse. Demosthenes, Cicero, Edmund Burke, Daniel Webster, Frederick Douglass, Abraham Lincoln, and Elizabeth Cady Stanton may be among the orators studied. The course will engage students in critical assessment of eloquence by emphasizing study of historical circumstances, ethical choices, and artistic virtue of the most effective and admired public speakers in Western tradition. Prereq: CMN 455, CMN 456, CMN 457, and two 500-level courses, or permission. Writing intensive.

Attributes: Writing Intensive Course**CMN 630 - Psychology of Communication****Credits:** 4

Recasts human psychology as a communicative accomplishment, offering a critique of the individualist tradition. Emphasis on the ways in which identity, knowledge, values, and beliefs are constructed in daily social engagements and the pragmatic, political, and moral implications of this view. Implications for our major cultural institutions such as education, health, and politics. Prereq: CMN 455, CMN 456, and CMN 457 with C or better and two 500-level courses with a C- or better, or by permission. Writing intensive.

Attributes: Writing Intensive Course**CMN 634 - Media and Politics****Credits:** 4

The goal of this course is to study the role of the media in American politics, and what media evolution means for future politics. Topics such as political campaigns, media effects, news reporting, framing terrorists, etc. are studied in depth. Timely topics such as "are the media liberal or conservative?" are debated in class. Research projects and papers study questions related to important social issues such as women in the media. Prereq: CMN 455, CMN 456, CMN 457 and two 500-level CMN courses; Only open to Communication, CMN: Media Practices, and CMN: Business Applications majors. . Writing intensive.

Attributes: Writing Intensive Course**CMN 637 - Controversy and Reasoning in Law****Credits:** 4

Uses rhetorical analysis and criticism to evaluate communication practices in courtroom disputes. Compares conventional American litigation to alternative methods. Explains how stages of a trial shape communication options and norms. Illustrates common subjects and forms for judicial reasoning. Prereq: CMN 455, CMN 456, CMN 457, and two CMN 500-level courses. Writing intensive.

Attributes: Writing Intensive Course**CMN 647 - Rhetorical Criticism of Media****Credits:** 4

Use of rhetorical approaches and methods in the analysis and criticism of contemporary forms of visual media culture. Students examine the social, political, and aesthetic implications of contemporary media forms from within a framework of rhetorical theory. Emphasis on practical analysis employing various rhetorical approaches with a goal of understanding persuasive elements in contemporary media (including television, film, print & broadcast advertising, internet, and social media). Prereq: CMN 455, CMN 456, CMN 457, and two 500-level communication courses. Writing intensive.

Attributes: Writing Intensive Course**CMN 650 - Critical Perspectives on Film****Credits:** 4

Advanced, focused study of film theory as cultural practice. Topics vary from year to year and with instructor. May be repeated for different topics. Focus may range from general considerations of film theory, criticism, and history, to specific analyses of selected genres, directors, national cinemas, and periods. Course descriptions available in department office during preregistration. Prereq: CMN 455, CMN 456, CMN 457, CMN 550, ENGL 533, or permission. Special fee. May be repeated for credit.

CMN 650W - Critical Perspectives on Film**Credits:** 4

Advanced, focused study of film theory as cultural practice. Topics vary from year to year and with instructor. May be repeated for different topics. Focus may range from general considerations of film theory, criticism, and history, to specific analyses of selected genres, directors, national cinemas, and periods. Course descriptions available in department office during preregistration. Prereq: CMN 455, CMN 456, CMN 457, CMN 550, ENGL 533, or permission. Special fee. Writing intensive. May be repeated for credit.

Attributes: Writing Intensive Course

CMN 666 - Conversation Analysis**Credits: 4**

Exploration in how participants in interpersonal communication display their orientation to the fundamental orderliness of conversational sequences in everyday, institutional, and mass media settings. Basic concepts covered include the interactional co-construction of turn-taking, repair, overlap, openings, closings, silences, adjacency, pairs, disagreement, preference, and the role of various linguistic, paralinguistic, and nonlinguistic features in the conversation process. Prereq: CMN 455, CMN 456, CMN 457 and two 500-level courses, or permission. Only open to Communication majors. Writing intensive.

Attributes: Writing Intensive Course

CMN 680 - Perspectives on Culture and Communication**Credits: 4**

Critical interpretation of culture focused on the communication practices and resources of diverse groups. Examination of the reciprocal relationship between communication practices, forms of culture, and cultural identity. Exploration of the conditions necessary for dialogue between differing cultural groups. Emphasis on the role of communication in constructing race, power, cultural domination, and globalization. Prereq: CMN 455, CMN 456, and CMN 457 with C or better and two 500-level courses with a C- or better, or by permission. Writing intensive.

Attributes: Writing Intensive Course

CMN 696 - Seminar in Media Studies**Credits: 4**

Variable topics in media research, theory, and practice. May be repeated for different topics. Topic descriptions available in department office during preregistration. Prereq: CMN 455, CMN 456, CMN 457 and two 500-level courses, or permission.

CMN 696W - Seminar in Media Studies**Credits: 4**

Variable topics in media research, theory, and practice. May be repeated for different topics. Topic descriptions available in department office during preregistration. Prereq: CMN 455, CMN 456, CMN 457 and two 500-level courses, or permission. Writing intensive.

Attributes: Writing Intensive Course

CMN 697 - Seminar in Rhetorical Study**Credits: 4**

Variable topics in rhetorical research, theory, and practice. May be repeated for different topics. Topic descriptions available in department office during preregistration. Prereq: CMN 455, CMN 456, CMN 457 and two 500-level courses, or permission. Writing intensive.

Attributes: Writing Intensive Course

CMN 697H - Honors/Seminar in Rhetorical Study**Credits: 4**

Variable topics in rhetorical research, theory, and practice. May be repeated for different topics. Topic descriptions available in department office during preregistration. Prereq: CMN 455, CMN 456, CMN 457 and two 500-level courses, or permission. Writing intensive.

Attributes: Writing Intensive Course

CMN 698 - Seminar Interpersonal Studies**Credits: 4**

Variable topics in interpersonal research, theory, and practice. May be repeated for different topics. Topic descriptions available in department office during preregistration. Prereq: CMN 455, CMN 456, CMN 457 and two 500-level courses, or permission. Writing intensive.

Attributes: Writing Intensive Course

CMN 702 - Seminar in Interpersonal Communication Theory**Credits: 4**

In-depth concentration on a particular theoretical orientation in interpersonal communication. Original works are read. Theoretical orientation varies by semester. May be repeated for different topics. Prereq: CMN 455, CMN 456, and CMN 457 and two 500-level CMN courses. Writing intensive.

Attributes: Writing Intensive Course

CMN 703 - Seminar in Rhetorical Theory**Credits: 4**

Focused study of problems in rhetorical theory construction through examination and criticism of selected theoretical frameworks used to explain or interpret rhetorical phenomena. May be repeated for different topics. Prereq: permission. Writing intensive.

Attributes: Writing Intensive Course

CMN 730 - Family Communication**Credits: 4**

Exploration of the patterned communication in families and the ways in which our understanding of these patterns can be utilized to understand and transform unwanted family interactions. Varying cultural discourses of family communication are used to explore the dialogic construction of family and self. Prereq: CMN 455, CMN 456, CMN 457, and two 500-level CMN courses, or permission. Writing intensive.

Attributes: Writing Intensive Course

CMN #732 - Communication Theory**Credits: 4**

Terminology, concepts, theoretical models, functions, levels, modes, and media in human communication. Prereq: CMN 455, CMN 456, CMN 457, and two 500-level CMN courses, or permission. Writing intensive.

Attributes: Writing Intensive Course

CMN 737 - Principles of Rhetorical Crit**Credits: 4**

Application of critical principles to message evaluation. Consideration of the varying roles, methods, and standards of rhetorical critics. Special attention to major perspectives on rhetorical criticism including Neo-Aristotelian, historical, dramatic, generic, literary, and psychological. Prereq: CMN 455, CMN 456, CMN 457, and two 500-level CMN courses, or permission. CMN majors only. Writing intensive.

Attributes: Writing Intensive Course

CMN 742 - Dialogue and Teamwork**Credits:** 4

This course is about team building, alternative conflict resolution, and creative problem solving. We will explore the idea that, contrary to prevailing cultural assumptions, a significant factor in our achievements at work and play can be traced not to our individual attributes but rather to the relationships that we develop in our conversations with others. We will examine the dialogic basis of these relationships, drawing on a range of philosophic traditions and practical activities that highlight the social basis of thought. Prereq: CMN 455, CMN 456, CMN 457, and two 500-level CMN courses, or permission. CMN majors only. Writing intensive.

Attributes: Writing Intensive Course**CMN 756 - Rhetorics of Display****Credits:** 4

This course examines a selection of displays with the goal of acquiring perspective for understanding and evaluating how they engage with people who come into contact with them. Displays examined range among oratory, photographs, advertisements, films, architecture, monuments, and statuary, public demonstrations, and presentations of self. Attention is given to questions about identity and belonging, authenticity and simulation, and public memory. Prereq: CMN 455, CMN 456, CMN 457, and two 500-level courses, or permission. CMN majors only. Writing intensive.

Attributes: Writing Intensive Course**CMN 757 - Public Address and the American Experience****Credits:** 4

Study of persuasive texts set firmly in their historical and social contexts. Discussion of the impact of popular discourse on historically significant political and social events. Analysis of how leading persuasive speakers and writers responded to the fundamental questions confronting their age and articulated ideas in a manner that provoked or motivated their community, state, or nation. Historical period studied will vary. May be repeated for credit to a maximum of 12 credits when topic varies. Prereq: CMN 455, CMN 456, CMN 457 and two 500-level CMN course or permission. CMN majors only. Special fee. Writing intensive.

Attributes: Writing Intensive Course**CMN 758 - Media Analysis and Criticism****Credits:** 4

Approaches and methodologies for media criticism. Analysis of sample studies. Students work on original media analysis projects. Prereq: CMN 455, CMN 456, CMN 457 and any two 500-level CMN courses, or permission. CMN majors only. Writing intensive.

Attributes: Writing Intensive Course**CMN 760 - Mediation****Credits:** 4

This course will explore different theories and models of mediation as they inform the broader topic of conflict resolution. Emphasis will be on models that examine relational processes as opposed to models that provide a list of skills or techniques for mediation. To that end, the course will focus on transformative dialogue as a mode of mediation and conflict resolution rather than on compromise or consensus models. Prereq: CMN 455, CMN 456, CMN 457, and two 500-level CMN courses, or permission. CMN majors only. Writing intensive.

Attributes: Writing Intensive Course**CMN 762 - Organizational Communication and Society: What to Expect "Out There"****Credits:** 4

This course will demonstrate how communication is key to understanding how organizations work. Through such topics as culture, identity, structure, systems, globalization, and change, the course examines the ways individuals and society are shaped by interactions with the organizations. Through case studies, we examine the way people communicate in organizational contexts, and the social, ethical, and sometimes political implications. Prereq: CMN 455, 456, 457 and any 2 500-level classes.

CMN #765 - Police Talk**Credits:** 4

How do police get people to comply with a communicative action? How do they ask questions to investigate, to problem-solve, and to get a confession during an interrogation? How do citizens resist or cooperate with police action? This course examines questions such as these to understand basic communication processes, and how these processes are utilized in talk-in-interaction between police and citizens. This is a hands-on research methods course that instructs students in the methodology of video analysis, and has students pursue their own research projects in the content area of police-citizen interaction. Prereq: CMN 455, CMN 456, CMN 457, and two 500-level CMN courses, or permission; CMN majors only. Writing intensive.

Attributes: Writing Intensive Course**CMN 772 - Seminar in Media Theory****Credits:** 4

Detailed analysis of major theories related to the interaction of communication technologies and society. Application to current examples in politics, advertising, and entertainment. May be repeated for a different topic. Prereq: at least one 600-level course or permission. Writing intensive.

Attributes: Writing Intensive Course**CMN 788 - Opening Everyday Interaction****Credits:** 4

Examination of how everyday human social interactions begin. Provides hands-on experience analyzing verbal and nonverbal social actions during naturally occurring interactions, including telephone conversations and especially face-to-face encounters between previously acquainted and unacquainted persons socializing and/or doing work. Explores how parties use the openings of interactions to (re)-create and maintain social relationships. Encourages students to develop intellectual curiosity about everyday social life. Prereq: CMN 455, CMN 456, CMN 457, (2)-CMN 500 levels or permission. Open to CMN majors only. Writing intensive.

Attributes: Writing Intensive Course**CMN 795 - Independent Study****Credits:** 1-4

Advanced individual study in rhetoric, media, or interpersonal communication. Project to be developed with supervising instructor. May be repeated up to a maximum of 8 credits. Prereq: permission.

CMN 795W - Independent Study**Credits:** 1-4

Advanced individual study in rhetoric, media, or interpersonal communication. Project to be developed with supervising instructor. May be repeated up to a maximum of 8 credits. Prereq: permission. Writing intensive.

Attributes: Writing Intensive Course

CMN 796 - Comm-Entary Journal**Credits:** 1

Serve on the editorial board of student run communication journal. Elective credit which does not count toward the major. May be repeated for a maximum of 2 credits. Prereq: CMN 455, CMN 456, CMN 457, or permission. CMN majors only. Cr/F.

CMN 799H - Honors Thesis**Credits:** 4

Written thesis based on substantial and original research under the direction of a full-time member of the communication faculty. Thesis must be in the form and style of a publishable, scholarly work. Restricted to seniors seeking honors in major.

Communication Arts (CA)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

CA #444 - Manipulating Media: Exploring Image and Sound Aesthetics**Credits:** 4

An introductory exploration of moving image and sound with an emphasis on discovering how aesthetic choices impact media messages. Students investigate aesthetic principles by finding, making, and working with digital media, animation, video, audio, and film. This is not a production class, but rudimentary, hands-on production is taught. No credit earned if credit received for CA 502. Special fee.

Attributes: FinePerformingArts(Discovery); Inquiry (Discovery)

CA 450 - Introduction to Public Speaking**Credits:** 4

Theories of rhetoric applied to the practice of speech composition, oral performance, and critical evaluation. Focus on student speeches for a variety of situations and audiences. Not for credit if credit earned for CMN 500.

CA 500 - Media Writing**Credits:** 4

An introduction to business, creative and freelance writing for a variety of media. Writing, editing and rewriting in areas such as video scripts, short magazine articles, audio scripts, ads, press releases, news, short one-act plays, blogs and more. Prereq: ENG 401. Writing intensive.

Attributes: Writing Intensive Course

CA 501 - Internship/Communication in the Urban Community**Credits:** 1-4

Field-based learning experiences. Connects students to the urban community and integrates their classroom education within a business or organizational setting. Students work under the direction of a faculty advisor and workplace supervisor to fulfill the obligations of the workplace internship plan and to complete individually-designed academic projects. Projects must be approved in advance by the faculty advisor. Open to matriculated students with a GPA of 2.50 or better and junior standing. Permission of instructor required. May be repeated for up to 8 credits, with 4 credits maximum accepted toward satisfaction of requirements for the CA major. Cr/F.

CA 502 - Image and Sound**Credits:** 4

Image and Sound is a foundation course in the aesthetics of motion picture and sound production. This course explores the aesthetic principles that are used to communicate stories, emotions and messages in popular media. Students will study film, television and new media and survey production methods. This is not a production course per se, but is particularly helpful to students interested in video and film production. No credit for students who have completed CA #444.

Attributes: FinePerformingArts(Discovery)

CA #503 - Techniques for News Reporting**Credits:** 4

Focuses on the essential elements of fact-based reporting and discussion of the principles and ethics of independent journalism. Techniques include determining the different perspectives and voices that belong in a story, developing research skills for locating information, strategies for reconciling conflicting information, and procedures for effective interviewing. Prereq: ENGL 401 plus CMN 455; or permission.

CA #504 - Film Criticism**Credits:** 4

An introduction to the practice of film criticism. Critique of film as both art form and medium of communication. Examines the process of film production, basic principles of film form, techniques of film style, and major approaches to film criticism. Prereq: ENGL 401 and CMN 455 or permission. Special fee.

CA 506 - Gender**Credits:** 4

How gender is created, maintained, repaired, and transformed through communication in particular historical, cultural, and relational contexts. Examines a variety of topics including the relationship between sex and gender, language, cultural mythologies, identity, health care, sexuality, and strategies for resisting conventional gender definitions. Prereq: CMN 457 or permission.

CA 507 - Relational Violence**Credits:** 4

This course explores relational violence and its impact on individuals, families, and communities. Topics include relational violence as a continuum, types of relational violence (domestic, gangs, hate crimes), causes of relational violence, PTSD, responding to relational violence, silencing, compassion fatigue, and restorative justice. Prereq: CMN 457 or permission of the instructor.

CA 508 - Conflict in Relational Communication**Credits:** 4

Introduces communication theories relevant to the study of conflict interaction in interpersonal relationships. Considers interpersonal concerns contributing to conflict such as power, face-saving, and goals. Examines behaviors that affect our ability to resolve conflict, and strategies, such as mediation, to resolve conflict. Develops the ability to diagnose productive and destructive conflict patterns in relationships. The course is both theoretical and practical in orientation. A combination of lecture, discussion, case studies, and in-class group assignments are employed. Prereq: CMN 457.

CA 512 - Screenwriting**Credits: 4**

Examines the preproduction phase of moving image media, focusing especially on the art and business of writing for the screen. Covers the process of developing student work from original story idea to completed, first draft screenplay. Topics include script formats, narrative structure, plot development, characterization, style, and marketing strategies.

Prereq: ENGL 401, CMN 455 or CMN 456; or permission. Cannot receive credit if credit received for CA 512 Scriptwriting. Writing intensive.

Attributes: Writing Intensive Course

CA 514 - Fundamentals of Video Production**Credits: 4**

Beginning electronic field production using digital video and nonlinear editing formats. Covers basic aesthetic principles and practices of video communication. Introduces techniques for effective image and sound recording in the field, fundamentals of shot and sequence construction, and basic postproduction practices on nonlinear editing systems. Prereq: ENGL 401, CA 502 or CA #444, CMN 455, or permission. Preference given to CA majors. Special fee.

CA 515 - Advanced Video Production**Credits: 4**

Advanced electronic field production and post production using digital video and nonlinear editing formats. Emphasizes original student work of increasing conceptual, formal, and technical complexity that begins to incorporate a wider range of images, sounds, and editing techniques. Prereq: CA 514 or permission. Preference given to CA majors. May be repeated, with permission, to a maximum of 8 credits. Special fee.

CA #516 - Speechwriting**Credits: 4**

The strategies of art and persuasion in the craft of professional speechwriting for a variety of modes, audiences, and exigencies. Examines a wide array of famous speeches from political, literary and cinematic sources to uncover the fundamental theories of rhetoric and persuasion at work in these texts. Application of these theories and strategies of persuasion in original speechwriting projects. Prereq: ENGL 401 plus CMN 456; or permission.

CA 517 - Fundamentals of Audio Prod**Credits: 4**

This course provides students with an introduction to the history, principles, and techniques of audio production. Through hands-on experience, class projects, and homework assignments, student learn how to use voice, music, writing, sound effects, and audio hardware and software to design sound and tell a story. This class will also look at the radio industry and how sound design is being used by a variety of industries. Special fee.

CA 518 - Advanced Topics in Digital Media Production**Credits: 1-4**

Advanced topics in digital media production not covered in depth in other course offerings. Topics vary and change. May be repeated for up to 12 credits if topics differ. Prereq: CA 514 or CIS 515 or permission.

CA 519 - Advanced Screenwriting**Credits: 4**

Advanced examination of the preproduction phase of moving image media, focusing on the art and business of screenwriting. Develops students works from original idea through the numerous steps to completed, second draft screenplay. Advanced topics and genres may vary. Prereq: CA 512. May be repeated, with permission, to a maximum of 8 credits. Cannot receive credit if credit earned for CA 520 Special Topics in Communication: Advanced Screenwriting.

CA 520 - Special Topics in Applied Communication**Credits: 1-4**

New or specialized topics in applied communication not covered in regular course offerings. Topics vary; descriptions listing course content and any prerequisites are available during preregistration. May be repeated for credit if topics differ for a maximum of 12 credits. Prereq: contingent on topic. Writing intensive when topic is advanced feature scriptwriting.

CA 522 - Graphic Design I**Credits: 4**

Presents fundamentals of Graphic Design while touching on foundation art theories and vocabulary. Through examination and analysis of professional graphic design, students become familiar with the relationship between graphic design process, creative solutions and critical thinking. Students work with a variety of traditional and digital media, with an emphasis on the process of design, composition and typography. Class includes a significant amount of computer lab and creative studio time.

CA 523 - Graphic Design II**Credits: 4**

Students explore the creative process that helps them communicate ideas and information to a target audience. Higher level, theoretical ideas related to communication, design and cognitive theories will be introduced. Students will engage in intermediate design projects through software and traditional media. Class includes a significant amount of computer lab and creative studio time. Prereq: CA 522, or permission of instructor.

CA #525 - Media Programming**Credits: 4**

Process of program planning for electronic media. Covers the contexts – social, cultural, institutional, economic, technical, regulatory – within which decisions concerning program selection, form, content, and scheduling are made. Prereq: CMN 455 or permission.

CA #526 - Organization of Newswork**Credits: 4**

Examines news as socially situated discourse. The professional norms, work routines, representational practices, ideologies, and ethics of news producing organizations. Prereq: CMN 455 or permission.

CA 527 - History of Film**Credits: 4**

The history of film since 1948. Historical analysis of the development of cinema since the emergence of television, both in the United States and abroad. Selected topics include cinema and the cold war, international stylistic movements, film exhibition, the decline of the studio system, new technologies, third cinema, globalization and economic consolidation. Prereq: CMN 455 or permission. Special fee.

CA 531 - History and Organization of Advertising**Credits: 4**

Examines the development of advertising in historical context, focusing on the evolving structure and function of advertising agencies, market research practices, advertising design, anthropological approaches to advertising and consumer culture, and contemporary policy issues. Prereq: CMN 455 or permission.

CA 532 - Typography I**Credits: 4**

Typography is the formal study of letterforms. Students gain perspective into this important field by starting with a focus on early visual communication, symbols, handwritten letterforms, calligraphy and the development of movable type. Students explore ways to categorize type into families and identify and define similarities and subtle differences in classical typefaces. Class discussions, projects, critiques and lectures focus on typography terminology, as well as the aesthetic discipline of using type effectively as designer.

CA 533 - Typography II**Credits: 4**

This course builds on skills learned in Typography I. The goal is to explore type as a two dimensional element and to explore the elements and components needed to design multiple page projects. Emphasis given to both the creative process and the production/printing process. Students learn to communicate with graphic design using page layout, hierarchy, grids, and the relationship of typography and imagery. Students learn how to use InDesign, Illustrator and Photoshop. Prereq: CA 532, or instructor permission.

CA 536 - LGBT Images and Perspectives**Credits: 4**

This course explores the perspectives and images of lesbian, gay, bisexual, trans, and queer individuals, from antiquity through modern day. Topics include: history, aging, religion, the media, and the law. Prereq: CMN 457 or permission of the instructor; majors only.

CA #537 - Health Communication**Credits: 4**

Introduces students to foundation concepts and theories in health communication, and their application to real-world settings. Explores how health communication is embedded in social, cultural, economic, political, technological, and historical contexts. Examines a range of issues, including the meaning of health and illness; physician-patient interactions; caregiving; the impact of illness on identity; media campaigns; popular cultural narratives; end of life; and ethics. Discusses healthcare careers. Prereq: CMN 457 or permission.

CA 539 - Communicating in Families**Credits: 4**

Explores the role of communication in the creation, maintenance, and transformation of family systems. Focus on how meanings of "family" are constructed through familial and popular discourses, and the consequences these communication practices have for lived experience. Prereq: CMN 457 or permission.

CA 540 - Public Relations**Credits: 4**

This course provides students with an overview of the field of public relations, including its history, ethics, and current practices. Will include case studies of major public relations issues that have occurred both historically and in recent years; individual and class projects that enable students to determine how best to plan for and respond to public relations issues; and quest practitioners who work in various fields, including business, government, the non-profit sector, and education. Prereq: CMN 456 or CMN 455 or permission.

CA 542 - Social Media for Organizations and Business**Credits: 4**

Focuses on the history, development and practical use of social media for organizational and business communications. A primary focus is on the latest social media tools and their use in developing social media campaigns. Hands-on student work is an important part of the course. Prereq: ENGL 401, CMN 455 or CA 500 - or permission. Cannot receive credit if earned for CA 520 Social Media for Organizations and Business.

CA 550 - Special Topics in Communication Organization, History, and Policy**Credits: 1-4**

New or specialized topics in the organization, history, and policy of communication practices not covered in regular course offerings. Topics vary; descriptions of course content and any prerequisites are available during preregistration. May be repeated for a maximum of 12 credits if topics differ. Prereq: contingent on topic.

CA #600 - Research Methods in Media**Credits: 4**

Qualitative research practices for the study of mass communication. Tools for investigating the production contexts of media institutions, the cultural and ideological meanings of media texts, and the social dimensions of media consumption in home and family. Emphasis on how to review literature, develop a research question, define a unit of analysis, select and apply method, interpret data, and draw conclusions grounded in theory. Prereq: any two 500 level CA courses (excluding CA 501), one of which must have CMN 455 is prerequisite or permission. Writing intensive.

Attributes: Writing Intensive Course

CA 601 - Exploring Relationships**Credits: 4**

Critically examines the myriad ways qualitative researchers approach the study of interpersonal communication. With an emphasis on the artistic practice of fieldwork, the course considers the process of research design, the relationship between researcher and researched, the moral and ethical aspects of research, issues of representation and audience, and evaluation strategies. Students design, conduct, and present original qualitative research projects. Prereq: any two 500 level CA courses (excluding CA 501), one of which must have CMN 457 as a prerequisite or permission. Writing intensive.

Attributes: Writing Intensive Course

CA 610 - Communication Technologies and Culture**Credits: 4**

The role of communication technologies in shaping cultural meanings and human consciousness. Covers the work of Innis, McLuhan, Ong, Postman, Carey and others to understand the historical development of shifting communication technologies and patterns of culture from orality to computer communication. Also explores the dynamic between mass culture and sub-cultural appropriations of media forms and content. Prereq: any two CA courses (excluding CA 501), one of which must have CMN 455 as a prerequisite or permission. Writing intensive.

Attributes: Writing Intensive Course

CA #611 - Theories of Relational Communication**Credits: 4**

Critically examines a variety of theories which seek to explain the dynamics of interpersonal relationships including performance theory, social construction theory, systems theory, feminist theory, and narrative theory. Prereq: any two 500 level courses (excluding CA 501), one of which must have CMN 457 as a prerequisite, or permission. Writing intensive.

Attributes: Writing Intensive Course

CA 612 - Narrative**Credits: 4**

Considers the ways humans make sense of experience through the stories we construct within particular relational, cultural, and historical contexts. Explores a variety of topics including narrative conventions, canonical stories, subjectivity and reflexivity, the relationship between story and audience, space and time, memory and imagination, and narrative truth. Each student will conduct an original narrative research project. Prereq: any two 500 level CA courses (excluding CA 501), one of which must have CMN 457 as a prerequisite, or permission. Writing intensive.

Attributes: Writing Intensive Course

CA #614 - Communication and Power**Credits: 4**

Explores the concept of power – how we conceive of power, how we enact power, and the effects of power in our interpersonal relationships. Using a variety of theoretical approaches such as relational theory, feminist theory, and social constructionist, we will consider the idea that the expression of power is an act of self-definition, that power resides in the ability to define one's reality while identifying and choosing courses of action, and that disempowerment is the end result of the loss of freedom of action. Prereq: Any two 500 level CA courses (excluding CA 501), one of which must have CMN 457 as a prerequisite, or permission. Writing intensive.

Attributes: Writing Intensive Course

CA 615 - Film History/Theory and Method**Credits: 4**

Intensive study of philosophical, rhetorical, and methodological issues in film history research. Examines a series of selected historical problems in the areas of social, aesthetic, industrial, and technological film history up to 1948 and reviews existing historiography on these problems. Focus is on original student research. Prereq: any two 500 level CA courses (excluding CA 501), one of which must have CMN 455 as a prerequisite, or permission. Special fee. Writing intensive.

Attributes: Writing Intensive Course

CA 618 - Documentary**Credits: 4**

Exploration of the historical development, ethics, funding, socio-cultural significance, and communication strategies of documentary film and video. May focus on a particular genre or genres. Prereq: any two 500 level CA courses (excluding CA 501), one of which must have CMN 455 as a prerequisite, or permission. Special fee. Writing intensive.

Attributes: Writing Intensive Course

CA 720 - Seminar**Credits: 4**

Intensive readings and research course in a highly focused area of study. Topics vary. Descriptions of course content and any prerequisites are available during preregistration. May be repeated for credit to a maximum of 12 credits if topics differ. Prereq: contingent on topic. Writing intensive.

Attributes: Writing Intensive Course

CA 795 - Independent Study**Credits: 1-4**

Advanced individual study under the direction of a faculty member. Content area and research project to be developed in consultation with faculty supervisor. Prereq: permission. May be repeated for up to 8 credits, with 4 credits maximum accepted toward satisfaction of requirements for the CA major.

Communication Sciences & Disorders (COMM)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

COMM 401 - American Sign Language I**Credits: 4**

This course provides an introduction to the vocabulary, finger spelling, grammar, phonology, syntax and semantics of American Sign Language. Emphasis is on applying language-learning principles through discourse. Introduction to Deaf Culture and its community will be explored. This course is taught in a language-immersion environment and taught primarily in ASL. One-hour lab required per week in conjunction with course. 4 credits and meets the language requirement for some majors.

COMM 405 - Introduction to the Deaf World**Credits: 4**

This course addresses various aspects of the Deaf community, including the value of American Sign Language and the culture it reflects, professions within the Deaf community, legislation affecting Deaf people, educational approaches and controversies, activities and events relating to the population, and hearing-related issues.

COMM 420 - Survey of Communication Disorders**Credits: 4**

The use of language to communicate is a uniquely human capability. Language is part of our cultural identities and can be expressed through many modalities such as speech, sign and writing. Disorders of communication have profound effects on an individual's ability to function and impact family, friends, learning and professional choices. It has been said that "life without communication is scarcely better than death." This course provides an overview of human communication disorders across the life span. The course includes information about the various types of communication disorders and how they are diagnosed and treated.

COMM 475 - Have you Heard: Fundamentals of Hearing Loss**Credits: 4**

This course will provide an overview of hearing loss including current issues and technology. Areas of study will focus on the incidence of hearing loss, terminology and definitions, service delivery models, educational trends, accessibility regulations and the impact of noise. Information about the various professionals, who work with individuals with hearing loss, and their respective roles, will also be provided. This 4 credit course is open to all undergraduates and it has no prerequisites.

COMM 502 - American Sign Language II**Credits: 4**

This course is a continuation of ASL I with an emphasis on the advanced linguistic principles of ASL including vocabulary, grammar, the non-manual signals of ASL such as facial expression and shoulder shifting. Improvement of speed and accuracy in receptive and expressive skills are stressed. Assignments in and outside the classroom assist the student in learning about the Deaf community and culture. This course is taught in a language-immersion environment and taught primarily in ASL. One-hour lab required per week in conjunction with this course. For the online version of this course the lab component is completed on-line. 4 credits and meets the language requirement for some majors. Prereq: COMM 401.

COMM 504 - Basic Audiology**Credits: 4**

Normal hearing process and pathologies of the auditory system. Hearing screening, pure-tone testing, and speech audiometry. Prereq: COMM 521 or permission.

COMM 521 - Anatomy and Physiology of the Speech and Hearing Mechanisms**Credits: 4**

Anatomy, physiology, neurology, and function of the mechanisms for the production and perception of speech.

COMM 522 - Language Acquisition**Credits: 4**

This course is an introduction to typical language acquisition. The progression of language development is examined within a linguistic framework, phonology, morphology, syntax, semantics, and pragmatics. Theories of language acquisition overviewed. Prereq: COMM 524.

COMM 524 - Clinical Phonetics**Credits: 4**

Application of the International Phonetic Alphabet to normal and clinical populations; use of broad and narrow transcriptions. Basic speech science, acoustic phonetics, and acoustic analysis of speech production.

COMM 605 - American Sign Language III**Credits: 4**

Builds upon the information covered in Introductory ASL I and II. Development of basic grammatical rules, vocabulary, manual alphabet/numbers, visual-gestural communication, and information related to Deaf Culture are covered. All lectures, laboratory activities, outside assignments build upon rudimentary competency in receptive and expressive use of ASL and develop fluency and competency. Class is conducted using ASL only. Prereq: American Sign Language I and II.

COMM 610 - Voodoo Science**Credits: 4**

This course will allow students to develop an understanding of evidence-based practice in the modern health care arena. This course offers a unique opportunity to learn critical thinking skills, evaluate scientific inquiry and discern information that has evidence from that with no support. The ability to evaluate ideas, and in particular, distinguishing scientific evidence from fiction is critical to success in any scholarly discipline, different ideas, such as perpetual motion machines, cold fusion, homeopathy, the role of media in spreading voodoo and scientific misconduct will be explored. Many of these have started out as sincere attempts to understand various phenomena, but at some point were found to not be supported by evidence. Unfortunately, these ideas continued to be promoted for a variety of reasons including financial gain, professional name, or social prominence and as such became fraudulent. As part of this course, we will study evidence-based practice in health care in relation to Voodoo Science.

COMM 634 - Conversational American Sign Language**Credits: 4**

Builds upon the information covered in Introductory ASL I and II. Development of basic grammatical rules, vocabulary, manual alphabet/numbers, visual-gestural communication, and information related to Deaf Culture are covered. All lectures, laboratory activities, outside assignments build upon rudimentary competency in receptive and expressive use of ASL and develop fluency and competency. Class is conducted using ASL only. Prereq: American Sign Language I and II.

COMM 636 - Speech and Hearing Science**Credits: 4**

Physical, acoustical, and perceptual correlates of normal speech production and audition. Includes theoretical models with the generation, transmission, detection, and analysis of speech signals.

COMM 705 - Introduction to Auditory Perception and Aural Rehabilitation**Credits: 4**

Research, testing, and clinical procedures of auditory perception, applied to the communicatively impaired. Prereq: COMM 704 or permission.

COMM 723 - Observation Skills in Speech-Language Pathology**Credits: 2**

This guided observation course is designed to acquaint students with intervention and assessment while providing opportunity to begin to develop systematic observation skills. Students successfully completing this course will accrue a minimum of 25 observation hours. Cr/F.

COMM 724 - Senior Capstone: Professional Issues in Speech-Language Pathology**Credits: 4**

Introduction to the profession of speech-language pathology; review of issues related to scope of practice; professional ethics, certification/licensure, and current challenges facing the profession. Discussion of employment opportunities for speech-language pathologists. Prereq: COMM 420, 504, 521, 522, and 604. Seniors only. Writing intensive.

Attributes: Writing Intensive Course

COMM 725 - Cued Speech**Credits: 4**

This course covers the fundamentals of the Cued Speech system, its applications and research as well as its relevance to other communication options for children who are deaf or hard of hearing. Various topics are covered, including CS and language development, reading, auditory and speech skill development, auditory processing, bilingualism, Down Syndrome, Autism, cochlear implants and transliteration.

COMM #735 - American Sign Language IV**Credits:** 4

Builds upon the information covered in Introductory ASL I, II, and III. Development of basic grammatical rules, vocabulary, manual alphabet/numbers, visual-gestural communication and information related to Deaf Culture are covered. All lectures, laboratory activities, outside assignments build upon rudimentary competency in receptive and expressive use of ASL and develop fluency and competency. Class is conducted using ASL only. Prereq: American Sign Language I, II, and III.

COMM 738 - Linguistics of American Sign Language**Credits:** 4

This course provides linguistic study of the major structural aspects of phonology, morphology, syntax, lexicology, and discourse in American Sign Language. Concepts of language variation, dialect, creolization, and bilingualism are studied. Taught primarily in ASL. Prerequisites/Proficiencies: COMM 402 - Elementary American Sign Language II Minimum grade of: C.

COMM 740 - Treatment of Adults with Acquired Brain Injury**Credits:** 4

This "hands-on" interdisciplinary experience enables students to acquire clinical skills and professional competence in a community-based day program where they assist adults with acquired brain injury meet their physical, emotional, cognitive-linguistic, social, spiritual, recreational, and vocational needs. Permission required. CSD majors only.

COMM 741 - Speech-Language Pathology I**Credits:** 4

Research, diagnosis, and therapy procedures as applied to articulation and language disorders. Prereq: BMS 507, KIN 706, COMM 521, and COMM 522.

COMM 742 - Speech-Language Pathology II**Credits:** 4

Neurologic bases, diagnoses and treatment of communication disorders; emphasis on motor speech disorders and aphasia from young adulthood to geriatrics. Prereq: BMS 507, KIN 706, COMM 741, COMM 604.

COMM 779 - Community Based Learning for Deaf and Hard of Hearing Studies**Credits:** 4

This internship will allow students in the Deaf and Hard of Hearing Minor to expand their knowledge about the needs, challenges and experiences of deaf and hard of hearing individuals. The internship locations will be varied and matched, as closely as possible, to the student's particular interests. Potential placement opportunities include a school for the deaf, a public agency or vocational setting which provides services for deaf and hard of hearing individuals. Prereq: COMM 401, COMM 475; permission. Cr/F.

COMM 795 - Independent Study**Credits:** 1-8

Individual or group projects involving directed study of an area of communication sciences and disorders that students wish to explore in greater depth than is covered in the required curriculum. May be repeated to a maximum of 8 credits. Prereq: permission.

COMM 798 - Special Topics**Credits:** 1-4

New or specialized topics not covered in regular course offerings. May be repeated for a total of 8 credits. Special fee on some topics.

COMM 799 - Honors Thesis**Credits:** 1-4

Supervised research leading to the completion of an honors thesis required for graduation from the university honors program in major. Permission required.

Community & Environmental Planning (CEP)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

CEP 415 - Community Development Perspectives**Credits:** 4

Introduces students to a range of community development and environmental planning issues facing communities as they undergo social, economic, and environmental change. Through class discussion and examination of case studies, this course instills basic principles and processes of community development and environmental planning, formulation, and conflict resolution. Community and environmental planning topics covered in the course include land use conflict, urban/suburban sprawl, rural development, economic development, local food systems, community infrastructure, and environmental stewardship. Emphasis is placed on the roles and responsibilities of community development professionals, including land use planners, municipal administrators, and community leaders.

Attributes: Social Science (Discovery)**CEP 508 - Applied Community Development****Credits:** 4

Students work in an actual community, assisting individuals and groups to identify needs and problems, establish attainable and objective goals, assess requirements and resources, and formulate programs for development and methods of collection, analysis, and integration of pertinent primary and secondary economic, social, political, and physical data for community development. Prereq: CEP 415 or permission. Lab.

CEP 614 - Fundamentals of Planning**Credits:** 4

Community planning process in nonmetropolitan communities; practical application of planning techniques. Communities' components: housing, jobs, schools, recreation, transportation, community appearance, and the administrative structure for planning. Use of planning tools: data gathering and analysis, the master plan, zoning and subdivision regulations, community development programs. Prereq: EREC 411; CEP 415;/or permission. (Offered every other year.) Writing intensive.

Attributes: Writing Intensive Course**CEP 672 - Fundamentals of Real Estate****Credits:** 4

This course covers timely subjects in National and regional real estate, such as types of property ownership, easements, financing, contracts, appraisal, brokerage, property listings, commissions, fair housing, and property management. The goal of this class is to prepare students to pass the New Hampshire Real Estate Sales Agent License Exam and/or be knowledgeable real estate investors. Prereq: MATH 420 or higher.

CEP 673 - Green Real Estate**Credits:** 4

This class covers issues related to existing and new real estate development with respect to history, law (state statutes and federal legislation), economics, and technology. The course looks at impacts of green development from an individual building level, and out to regional and global levels. We look at common problems and solutions, review case studies, and discuss emerging trends in "green development."

CEP 710 - Seminar**Credits:** 2-4

Seminars arranged to students' needs and offered as demand warrants: in-depth treatment of area, including classic work. May be repeated.

CEP 777 - Topics in Community Planning**Credits:** 4

Advanced treatment of the concepts and tools required for effective local and regional planning to guide land use, capital investment in infrastructure, and organization for service delivery. Prereq: CEP 614 or permission. (Also listed as RAM 877.) (Offered every other year.) Writing intensive.

Attributes: Writing Intensive Course**CEP 794 - Community and Environmental Planning Internship****Credits:** 4-12

Fieldwork in a planning office for student's professional development. Student must be supervised by a qualified planner or faculty-approved supervisor throughout the internship and remain in consultation with a faculty advisor. A Memorandum of Understanding between the student, the internship supervisor, and the faculty advisor, as well as midterm and final written reports are required. May be taken for 4 credits with 150 hours of internship up to a maximum of 12 credits for 450 hours of internship. Cr/F.

CEP 795 - Investigations**Credits:** 2-4

Special assignments in readings, investigations, or field problems, or teaching experience. May be repeated. Prereq: permission.

CEP 795W - Investigations**Credits:** 2-4

Special assignments in readings, investigations, or field problems, or teaching experience. May be repeated. Prereq: permission. Writing intensive.

Attributes: Writing Intensive Course

Community Leadership (CSL)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

CSL 401 - Introduction to Community Service and Leadership**Credits:** 4

Students are introduced to differing concepts of community and influence within communities, and to the challenges facing leaders within community organizations as they work to address key problems. All students participate in a significant community project which serves as the basis for both learning specific community organizing skills and for reflecting on the rewards and challenges of community leadership. Writing intensive.

Attributes: Social Science (Discovery); Writing Intensive Course**CSL #402 - Introduction to Nonprofit Organizations****Credits:** 4

This practical course provides an overview of the unique responsibilities and practices needed to effectively manage a community-based nonprofit organization. Topics include: issues of organizational structure and staffing, strategic planning, board effectiveness, financial management, leadership roles and responsibilities, and public accountability.

CSL #403 - Organizing and Supervising Volunteers**Credits:** 4

This course provides students with the knowledge and skills necessary to design, organize, and manage effective volunteer programs. Topics covered include: identifying organizational volunteer needs, recruiting, supervising, and motivating volunteers, integrating volunteers into the overall goals and services of an organization, and creating effective volunteer training programs. Students will explore resources available for creating a successful volunteer program and will research the variety of approaches to volunteer management that organizations currently use. All students also volunteer with a community organization.

CSL 405 - Communication Within Communities**Credits:** 4

This course focuses on the ways we influence—and are influenced by—others within the communities in which we live and participate. Students have the opportunity to analyze how a specific "real life" community issue is presented, interpreted, and resolved through various written and oral mediums. Additional coursework involves frequent writing and speaking assignments, with particular emphasis on the forms of persuasion that most commonly shape "community opinion." Students will also examine on-line forms of communication such as web sites and e-newsletters and contribute to at least one of these as a service to a community organization.

CSL 491 - Studies in Community Service and Leadership**Credits:** 1-4

Students who have the ability and adequate preparation to work independently may propose a contract to design a course or research project on a topic not available through existing course offerings. The purpose of this research is to explore new areas in the student's field of study or to pursue course material in greater depth. Work is supervised by an appropriate faculty/staff member and credit varies depending on the proposed project/research. Areas may include a specific community leadership/organizing topic. Prereq: CSL 401 or equivalent.

CSL 492 - Studies in Community Service and Leadership**Credits:** 1-4

Students who have the ability and adequate preparation to work independently may propose a contract to design a course or research project on a topic not available through existing course offerings. The purpose of this research is to explore new areas in the student's field of study or to pursue course material in greater depth. Work is supervised by an appropriate faculty/staff member and credit varies depending on the proposed project/research. Areas may include a specific community leadership/organizing topic. Prereq: CSL 401 or equivalent.

CSL 504 - Managing Change and Conflict in Communities**Credits:** 4

This course examines a variety of approaches to promoting and responding to community change. Through active participation and analysis of specific community initiatives, students will explore such topics as issue-identification, planning for change, power dynamics and conflict within diverse groups, strategies for action, lobbying, and influencing political action. Prereq: CSL 401, permission.

CSL 506 - Literature of Family and Community**Credits:** 4

Through a wide range of readings, primarily fiction, this course examines what it means to be an individual living in the context of family and community. Students use these readings both to examine differing concepts of community and to explore how individuals and groups respond to the challenges of creating as well as changing their communities. Coursework involves critical analysis, group-led discussions, and frequent short papers. Prereq: COM 211 or instructor permission. Writing intensive.

Attributes: Humanities(Disc); Writing Intensive Course**CSL 508 - Essentials of Fundraising for Community-Based Organizations****Credits:** 2

The ability to raise funds is essential to all community-based and nonprofit organizations. This course is designed to provide students with the essential knowledge and skills to develop and execute a successful fundraising program. Topics covered include: prospect research, choosing fundraising strategies, common fundraising mistakes, maintaining relationships with donors, raising money by mail, personal solicitation, event planning, and other key approaches to raising money.

CSL 509 - Essentials of Grant Writing for Community-Based Organizations**Credits:** 2

This course provides the information and skills necessary to research and apply for grants from government agencies, foundations, corporations, and other sources. Students will follow the process of grant-seeking from identifying need through application and follow up.

CSL 510 - Civic and Community Internship**Credits:** 4

This internship is designed to promote experiential learning about community service and leadership through active involvement within a community organization. It provides students with an opportunity to build upon their skills and interests while developing an awareness of civic and community issues. In addition to participating in community projects, students are expected to reflect upon their experiences and to relate them to assigned reading. Each student will also complete a research project based on a problem encountered at the service site. Prereq: CSL 401 or permission of instructor. May be repeated for up to 8 credits.

CSL 520 - Capstone Seminar**Credits:** 4

This seminar provides the opportunity for students in their final semester to synthesize their learning and skills as they broaden their understanding of the political and social policy dimensions of community organizing and leadership. Each student will engage in a significant service project that will serve as the focal point for both skill application and issue analysis. Prereq: CSL 401, CSL #402, CSL #403, and CSL 405.

Computer Science (CS)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

CS 400 - Introduction to Computing**Credits:** 1

Initial exploration of computing, including comparison of the various subfields. A wide range of issues, including fundamental concepts, selected current topics and the role of both computing and computing professionals in organizations and in society are also discussed. Cr/F.

CS 401 - Computers and Their Applications**Credits:** 4

Use of computers to manage and analyze information across a variety of settings and disciplines. Introduces major categories of computer software, including word processing, spreadsheets and database systems. Covers basic computer concepts and the computer's role in today's society. Significant hands-on work required outside of the class. Not open to CS majors. CEPS students should check with their major department for approval.

Attributes: Environment,TechSociety(Disc)**CS 401H - Honors/Computers & Their Appl****Credits:** 4

Use of computers to manage and analyze information across a variety of settings and disciplines. Introduces major categories of computer software, including word processing, spreadsheets and database systems. Covers basic computer concepts and the computer's role in today's society. Significant hands-on work required outside of the class. Not open to CS majors. CEPS students should check with their major department for approval.

Attributes: Environment,TechSociety(Disc)**CS 404 - Do-It-Yourself Internet****Credits:** 4

The objective of this course is to demystify the design process that leads to the evolution of the Internet. In doing so, we investigate the ways that technology changes to meet the needs of society, how society changes in response to these new technologies and how these societal changes create pressures that produce needs for new technologies.

Attributes: Environment,TechSociety(Disc)**CS 405 - Introduction to Applications Programming****Credits:** 4

Introduces the concepts and techniques of computer programming. Particular emphasis on computer programming as a problem-solving technique for business applications. The basic software development process (modeling, algorithm design, programming, testing and debugging) is illustrated. CEPS students should check with their major department for approval. Not open to CS and IT majors.

CS 408 - Living in a Networked World: The Good, the Bad, and the Ugly**Credits:** 4

The objective of this course is to explore the implications of living in a networked world. The course surveys the fundamental technologies and practices that make up the Internet and then ask the student to examine the ramifications of using the technologies. Users of the technologies should understand the technology in order to make educated decisions about how to use it safely and effectively. Students have the opportunity to self-publish by using various current technologies including blogs, discussion boards, email and creating web pages using xhtml.

Attributes: Environment,TechSociety(Disc)**CS 410 - Introduction to Scientific Programming****Credits:** 4

Introduces the concepts and techniques of computer programming. Particular emphasis on computer programming as a problem-solving technique in science and engineering applications. Either the C language or Python is taught and used for assignments. Good programming style is stressed. Significant out-of-class programming required. Not open to students who have completed CS 407, 415, or the equivalent.

CS 410C - Introduction to Scientific Programming/C**Credits:** 4

Introduces the concepts and techniques of computer programming. Particular emphasis on computer programming as a problem-solving technique in science and engineering applications. Good programming style is stressed. Significant out-of-class programming required. Not open to students who have completed CS 415 or equivalent.

CS 410P - Introduction to Scientific Programming/Python**Credits:** 4

Introduces the concepts and techniques of computer programming. Particular emphasis on computer programming as a problem-solving technique in science and engineering applications. Good programming style is stressed. Significant out-of-class programming required. Not open to students who have completed CS 415 or the equivalent.

CS 414 - From Problems to Algorithms to Programs**Credits:** 4

This course is an introduction to the design and implementation of computer programs. The basic software development process (modeling, algorithm design, programming, testing and debugging) is illustrated through problem examples. Programming techniques are introduced to allow students to implement and evaluate solutions as programs.

Attributes: Quantitative Reasoning(Disc)**CS 415 - Introduction to Computer Science I****Credits:** 4

Theory and practice of computer science. Algorithm development and analysis; data abstraction techniques; elementary data structures; dynamic memory manipulation; debugging; and program design issues. Computer systems and applications. Intended for CS majors.

CS 416 - Introduction to Computer Science II**Credits:** 4

Theory and practice of computer science. Algorithm development and analysis; data abstraction techniques; elementary data structures; dynamic memory manipulation; debugging; and program design issues. Computer systems and applications. Intended for CS majors. Prereq: CS 415.

CS 417 - From Programs to Computer Science**Credits:** 4

Accelerated coverage of programming techniques for students with experience equivalent to CS410 or CS 414. Covers basic algorithm analysis. Topics include basics of classes, inheritance, and data abstraction; linear data structures (vectors, lists, stacks and queues); trees and simple graphs; hash tables; sorting and searching; recursion; and basic graph traversal algorithms. Numerous labs and programming assignments build skills in planning, problem solving, and debugging: this is a hands on course. Prereq: CS 410 or CS 414 or equivalent.

CS 501 - Professional Ethics and Communication in Technology-related Fields**Credits:** 4

A mixed lecture/seminar course intended to improve both reasoning and ability to communicate effectively in front of an audience. Students learn basic forms of ethical argument, they read about ethical situations in which technology and technology professions play a key role, and they participate in student-led discussions about the reading. Students also make oral presentations about both ethical and technical topics, and evaluate each other's presentations in order to improve their sense for what makes a good presentation. Prereq: ENGL 401.

Attributes: Environment,TechSociety(Disc); Inquiry (Discovery)**CS 515 - Data Structures and Introduction to Algorithms****Credits:** 4

Reviews basic data structures; advanced data structures such as graphs, B-trees, and AVL trees; abstract data structure design and programming techniques; use of data abstraction language. Introduction to algorithm analysis. Prereq: CS 416 or CS 417.

CS 520 - Assembly Language Programming and Machine Organization**Credits:** 4

Assembly language programming and machine organization: program and data representation; registers, instructions, and addressing modes; assemblers and linkers. Impact of hardware on software and software on hardware. Historical perspectives. Prereq: CS 416 or CS 417.

CS 580 - Introduction to Topics in Computing**Credits:** 1-2

Introductory material not normally covered in regular course offerings, but of value to students prior to internships or senior-level courses. May be repeated for credit.

CS #595 - Professional Ethics and Communication in Computer Science**Credits:** 2

A seminar course intended to improve both reasoning and ability to communicate effectively in front of an audience. Students learn basic forms of ethical argument, they read about ethical situations in which technology and technology professions play a key role, and they participate in student-led discussions about the reading. Students also make oral presentations about both ethical and technical topics, and evaluate each others' presentations in order to improve their sense for what makes a good presentation.

CS 619 - Introduction to Object-Oriented Design and Development**Credits:** 4

Principles of problem analysis and software design applied to the development cycle of a software system (i.e. from system requirements specification to design, implementation, and system test). Design and implementation using object-oriented principles, patterns, and tools. Experience in understanding and debugging software systems. Experience in working in groups. Prereq: CS 515.

CS 620 - Operating System Fundamentals**Credits:** 4

Introduces operating system concepts and design. Process and memory management; scheduling; file systems; storage devices; inter-process communication. Prereq: CS 520.

CS 659 - Introduction to the Theory of Computation**Credits:** 4

Review of sets, relations, and languages. Induction and diagonalization. Finite automata, context-free languages, pushdown automata. Basic complexity theory. Prereq: MATH 531.

CS 671 - Programming Language Concepts and Features**Credits:** 4

Explores the main features of modern, high-level, general purpose programming languages from the user (programmer) point of view. Provides students with an opportunity to use non-imperative programming paradigms, such as object-oriented, functional, and logical, and to learn how specific features of such languages can be used efficiently in solving programming problems. Prereq: CS 520.

CS 696 - Independent Study**Credits:** 1-6

Individual projects developed and conducted under the supervision of a faculty member. Prereq: permission of faculty supervisor and department chairperson. May be repeated for credit.

CS 696W - Independent Study**Credits:** 1-6

Individual projects developed and conducted under the supervision of a faculty member. Prereq: permission of faculty supervisor and department chairperson. May be repeated for credit. Writing intensive.

Attributes: Writing Intensive Course**CS 699 - Internship****Credits:** 1

Provides the opportunity to apply academic experience in settings associated with future professional employment. A written proposal for the internship must be approved by the instructor. The proposal must specify what the student will learn from the internship, why the student is properly prepared for the internship and what supervision is available during the internship. A mid-semester report and final report are required. Prereq: permission. May be repeated for a maximum of 4 credits. Only open to Computer Science majors. Cr/F.

CS 712 - Compiler Design**Credits:** 4

Formal languages and formal techniques for syntax analysis and parsing; organization of the compiler and its data structures; code generation. LL and LR parsing; automatic generation of scanners and parsers from high level descriptions. Implementation of features from imperative and object-oriented languages. Students required to design and implement a compiler for a simple language. Prereq: CS 520.

CS #720 - Operating System Programming**Credits:** 4

Detailed discussion of operating system concepts and features. Practical examples and exercises that utilize advanced operating system features, including inter-process communication, synchronization, client-server communication, shared memory, threads, remote procedure calls, and device-level I/O. Discussion of POSIX 1003.1 Part I Standards. Prereq: CS 520 and CS 619.

CS 723 - Performance Evaluation of Computer Systems**Credits:** 4

Introduces the main concepts, techniques, and tools needed to evaluate the performance of computer systems under various configurations and workloads. The techniques allow one to perform capacity planning based on quality of service requirements of users and workload characteristics. Course is mainly based on the use of analytic queuing network models of computers systems. The performance techniques are applied to study the performance of centralized, distributed, parallel, and client/server systems. The course also discusses performance measuring tools for operating systems such as Unix and Windows NT. Prereq: CS 620 and (MATH 539 or MATH 644).

CS 725 - Computer Networks**Credits:** 4

Introduction to fundamental concepts of computer networks and exploration of widely-used networking technologies. Topics include principles of congestion and error control; network routing; local, wireless and access networks; application protocol design; and network programming. In-depth discussion of the Internet suite of protocols. Prereq: CS 520.

CS 730 - Introduction to Artificial Intelligence**Credits:** 4

In-depth introduction to artificial intelligence, concentrating on aspects of intelligent problem-solving. Topics include situated agents, advanced search techniques, knowledge representation, logical reasoning techniques, reasoning under uncertainty, advanced planning and control, and learning. Prereq: CS 515.

CS 730W - Introduction to Artificial Intelligence**Credits:** 4

In-depth introduction to artificial intelligence, concentrating on aspects of intelligent problem-solving. Topics include situated agents, advanced search techniques, knowledge representation, logical reasoning techniques, reasoning under uncertainty, advanced planning and control, and learning. Prereq: CS 671. Writing intensive.

Attributes: Writing Intensive Course**CS 733 - Mobile Robotics****Credits:** 4

An introduction to the foundational theory and practices in mobile robotics. Topics include Kinematics of wheeled mobile robots, Sensors for mobile robots, Robot navigation and perception, Robot vision, Localization and mapping of mobile robots. Hands-on experience directed towards implementation with a real robot. Prereq: Programming course of Permission of instructor.

CS 735 - Introduction to Parallel and Distributed Programming**Credits:** 4

Programming with multiple processes and threads on distributed and parallel computer systems. Introduces programming tools and techniques for building applications on such platforms. Course requirements consist primarily of programming assignments. Prereq: CS 520.

CS 745 - Formal Specifications and Verification of Software Systems**Credits:** 4

Course focuses on the formal specification and verification of reactive systems, most notably concurrent and distributed systems. Topics relevant to these systems, such as non-determinism, safety and liveness properties, asynchronous communication or compositional reasoning, as discussed. We rely on a notation (TLA+, the Temporal Logic of Actions) and a support tool (TLC, the TLA+ Model Checker). Prereq: CS 520 and CS 659.

CS 750 - Machine Learning**Credits:** 4

An introduction to fundamental concepts and common methods in machine learning. In addition to theoretical topics, the course involves hands-on experience in making predictions using synthetic and real-world datasets. Prereq: MATH 539 or MATH 644, and Programming course or Permission of instructor.

CS 753 - Information Retrieval**Credits:** 4

Fundamental algorithms and techniques for text processing and text-based information retrieval systems. Topics include how to build an end-to-end information retrieval system, such as a Web search engine. Prereq: CS 515.

CS 757 - Mathematical Optimization for Applications**Credits:** 4

This course introduces the foundations of mathematical optimization and reinforces them via applications. The content includes convex optimization, first and second-order methods, constrained problems, duality, linear and quadratic programming, as well as discrete and non-convex optimization. Applications will focus on machine learning methods but also include problems from engineering and operations research. Prereq: MATH 426; Programming proficiency in MATLAB, R, Java, C, Python, or equivalent.

CS 758 - Algorithms**Credits:** 4

An introduction to important concepts in the design and analysis of algorithms and data structures, including implementation, complexity analysis, and proofs of correctness. Prereq: CS 515 and CS 659.

CS 760W - Introduction to Human-Computer Interaction**Credits:** 4

Human-computer interaction is a discipline concerned with the design, evaluation, and implementation of interactive computing systems for human use and with the study of major phenomena surrounding them. Prereq: CS 619 and CS 620. Writing intensive.

Attributes: Writing Intensive Course**CS #767 - Interactive Data Visualization****Credits:** 4

Detailed discussion of how an understanding of human perception can help us design better interactive displays of data. Topics include color, space perception, object perception and interactive techniques. Students write interactive programs, give presentations and undertake a project designing and evaluating a novel display technique. Prereq: instructor's permission.

CS 767W - Interactive Data Visualization**Credits:** 4

Detailed discussion of how an understanding of human perception can help us design better interactive displays of data. Topics include color, space perception, object perception and interactive techniques. Students write interactive programs, give presentations and undertake a project designing and evaluating a novel display technique. Prereq: instructor's permission. Writing intensive.

Attributes: Writing Intensive Course**CS 770 - Computer Graphics****Credits:** 4

Input-output and representation of pictures from hardware and software points of view; interactive techniques and their applications; three-dimensional image synthesis techniques and their applications. Prereq: CS 671.

CS 771 - Web Programming Paradigms**Credits:** 4

In this course you will learn languages to program the Web. Languages integrated into browsers, like JavaScript, and languages invoked on the server, like Ruby. You will also learn about frameworks, like Rails, and various techniques used to support the programming process. In addition, you will learn languages you will need to create, modify, and process Web documents. Although we will learn how to read and write in these languages, our primary goal will be an understanding of how the design of these multi-paradigm dynamic languages support the process of developing Web applications. Prereq: CS 671.

CS 775 - Database Systems**Credits:** 4

Introduction to database management systems — design, implementation, and usage — with focus on the relational model. Data description, manipulation, and query language in the context of MySQL. Schema design and normalization; indexes, transaction processing. Web access of databases (PHP); overview of XML and noSQL systems. No credit if credit earned for IT 775. Prereq: CS 515 and MATH 531.

CS 780 - Topics**Credits:** 1-4

Material not normally covered in regular course offerings. May be repeated for credit.

CS 791 - Senior Project I**Credits:** 2

The principal goal of CS 791 is to develop precise functional specifications for the senior projects as well as a complete software design specification. The course will review and expand upon design concepts presented in previous courses, including UML, and CRC approach, and design patterns. Students apply these concepts to the design of their own senior projects. A significant component of the design includes specifications of the testing methodology to be used. Prereq: CS 619. Computer Science and CS: Bioinformatics majors only.

CS 792 - Senior Project II**Credits:** 2

Continuation of CS 791: Senior Project I. Students complete the project by implementing their design. Students work in teams. Successful completion of this course fulfills the Capstone Experience requirement for Computer Science majors. Prereq: CS 791. Writing intensive.

Attributes: Writing Intensive Course**CS 799 - Thesis****Credits:** 4

Students work under the direction of a faculty sponsor to plan and carry out independent research resulting in a written thesis. Required for honors-in-major. Prereq: Permission. May be repeated to 8 credits.

Attributes: Writing Intensive Course

Computing Technology (COMP)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

COMP 405 - Introduction to Internet and Web Authoring**Credits:** 4

The fundamental technologies, protocols, and practices that make up the Internet. The Internet as a global information system that has transformed the current business environment. Additional topics include: Internet structure; applications; business uses; legal and ethical issues introduced by networked computers such as privacy, fraud, and security. A significant portion of the course covers Web authoring procedures and languages. Students create a Web site using xhtml language and are introduced to JavaScript. No prior computer experience is required. Cannot receive credit if credit earned for CS 403.

Attributes: Environment,TechSociety(Disc)**COMP 415 - Mobile Computing First and For Most****Credits:** 4

This course examines how mobile computing is transforming our everyday lives and the society and environment in which we live. In this course the students will engage the mobile ecosystem by inventing apps and solving problems of personal, social, and environmental relevance. Students will learn computational thinking skills and create mobile apps using AppInventor, a free and open source visual blocks-based programming environment. Students will share their creative apps with peers and communities. They will also exercise inclusion, civic engagement, and peer learning in the context of innovating with free and open source software that empower individuals and communities.

Attributes: Environment,TechSociety(Disc)

COMP 425 - Introduction to Programming**Credits:** 4

An introduction to problem solving and object-oriented programming. Emphasis is on programming concepts and techniques and their application to software development. Students learn to write, review, document, share, and demonstrate interactive applications and participate in pair programming, peer-led tutoring, and collaborative learning throughout the course.

COMP 430 - Systems Fundamentals**Credits:** 4

The underlying hardware and software infrastructure upon which applications are constructed is collectively described by the term "computer systems." Computer systems broadly span the subdisciplines of operating systems, parallel and distributed systems, communications networks, and computer architecture. The class will present an integrative view of these fundamental concepts in a unified albeit simplified fashion, providing a common foundation for the different specialized mechanisms and policies appropriate to the particular domain area.

COMP 490 - Statistics in Computing and Engineering**Credits:** 4

An introduction to tools from probability and statistics that are needed by computing and engineering professionals. Exploratory data analysis including graphic data analysis, discrete and continuous probability distributions, inference, linear regression, and analysis of variance, with applications from artificial intelligence, machine learning, data mining, and related topics. Project work and use of statistical software are an integral part of the course. Prereq: MATH 425\MATH 424B\MATH 424A.

COMP 500 - Discrete Structures**Credits:** 4

This course prepares students for understanding computational complexity; i.e., what makes a given task/problem hard and how hardness is measured. It accomplishes this through the study of algorithms, permutations, combinations, probability, graph theory, and trees. Prereq: MATH 425.

COMP #505 - Advanced Web Authoring**Credits:** 4

An introduction to web applications development. The course builds on introductory programming and web authoring. Emphasis is on dynamic web concepts and advanced programming techniques using markup languages and client-side and server-side scripting. Students learn to develop interactive web pages and integrate them with web-based systems. Students participate in real-world team projects. Prereq: COMP 405 and COMP 425, or permission.

COMP #515 - Multimedia: Introduction and Applications**Credits:** 4

Examines the history and underlying theory behind computer integration of text, sound, video, and graphics. Topics include: hardware and software requirements, design criteria, analysis of current hypertext, and multimedia applications in education and business. Students gain practical experience in developing multimedia applications on the Macintosh platform.

COMP 520 - Database Design and Development**Credits:** 4

An introduction to developing database applications with business users. Topics include fundamentals of the relational model, structured query language, data modeling and database design and implementation. Students use a variety of database management system tools to model, code, debug, document, and test database applications. Students complete real-world team projects. Prereq: COMP #505 and COMP 510, or permission.

COMP 525 - Data Structures Fundamentals**Credits:** 4

Data structures and algorithms are fundamental to developing solutions for computational problems. In this course students design and implement data and functional abstractions; analyze and select appropriate data structures to solve computational problems; practice programming and software development techniques to implement computational solutions. Prereq: COMP 425.

COMP 530 - Machine and Network Architecture**Credits:** 4

Examines the following topics. Machine organization: program and data representation; registers, instructions, and addressing modes; assemblers and linkers. Impact of hardware on software and software on hardware. Introduces the Internet protocol suite and network tools and programming and discusses various networking technologies.

COMP 550 - Networking Concepts**Credits:** 4

Explores the fundamentals of data communications and networking requirements for an organization, including the standard layers of network organization; network technologies; and protocols for LANs, WANs, wireless networks, and switched and routed networks. Includes issues of security, topology, management, and future developments. Prereq: COMP 542 or permission.

COMP 560 - Ethics and the Law in the Digital Age**Credits:** 4

Examines classical and ethical and legal constructs as they pertain to current and topical issues. Students develop and articulate a personal point of view on a broad range of issues based on sound ethical principles and consider the impact of such views on co-workers, employers, and society in general. Topics also include: major social issues involving intellectual property, privacy, current U.S. and international relations relevant to ethical theories. The interplay between ethics and law is explored through current case studies and students formulate and support conclusions based on ethical constructs presented in class. Case study analysis is a major component in course delivery. Writing intensive.

Attributes: Humanities(Disc); Writing Intensive Course**COMP 590 - Entrepreneurship Project****Credits:** 4

This course requires the development of a conceptual business plan for a proposed real world project undertaken by a team of students. An iterative approach is used to incrementally address the project requirements while constructing and refining original proposed plan. Prereq: COMP 525.

COMP 625 - Data Structures and Algorithms**Credits: 4**

An introduction to object-oriented design, analysis, and implementation of data structures and algorithms. Students apply concepts and techniques to develop information processing applications. Best programming practices of editing, debugging, documentation, testing, and code review are stressed. Familiarity with an object-oriented programming language and experience with application development are required. Prereq: COMP 425 and COMP #505, or permission.

COMP 640 - Human Computer Interaction**Credits: 4**

This course familiarizes students with Human Computer Interaction and the significant role it plays in product design and development. The principles of HCI, examples of good and bad applications, and factors that determine a design's effectiveness are covered. Stages of the product development life cycle are discussed to understand the progression of a project from conception to delivery and the impact it has on HCI. No credit for students who took CIS 599 Special Topics: Human Computer Interaction.

COMP 650 - Network Administration and Maintenance**Credits: 4**

Advances the understanding of networks through practical application of administering and maintaining an intranet and its servers. Students use a modern server operating system and network management tools. Routine tasks include: install and configure servers, setup directory services and access privileges, tune network services, understand and implement network security, perform routine maintenance, and practice troubleshooting techniques. Prereq: COMP 550 or permission.

COMP 685 - Professional Development Seminar**Credits: 1**

The Professional Development Seminar is designed to prepare students for successful internship placement and future work opportunities in the computer profession. You will learn the tools to effectively market yourself, manage job fairs, practice informational interviews, prepare for interviews, and learn about the workplace in general. You will also actively seek a work experience for the following semester. Prereq: Majors must complete 40 CIS credits, or have permission from the program coordinator. Not open to students who passed CIS 680.

COMP 690 - Internship Experience**Credits: 4**

The internship provides field-based learning experience through placement in a computing field. Students gain practical computing experience in a business, non-profit, or government organization. Under the direction of a faculty advisor and workplace supervisor, the student is expected to contribute to the information technology products, processes, or services of the organization. Prereq: COMP 685 and instructor permission. Majors only. May be repeated up to 8 credits but no more than 4 credits may fill major requirements.

COMP 698 - Special Topics**Credits: 1-4**

Course topics not offered in other courses. Topics covered vary depending on contemporary computing topics, programmatic need, and availability and expertise of faculty. Barring duplication of subject, may be repeated for credit. Prereq: permission.

COMP 705 - Web Application Development**Credits: 4**

Students work in teams and implement, test, document, demonstrate, and deploy web systems that solve organizational needs expressed by real clients. Emphasis is on advanced server-side and client-side programming and integration of web application with database and web server applications. Free and open source development and communication tools are used to carry out the course project. Prereq: Senior status or permission. No credit for students who have completed CIS 605.

COMP 715 - Information Security**Credits: 4**

Topics include general security principals and practices, network and system security, access control methodology, and cryptography. Students develop a simple cryptographic system based on sound mathematical principals, work to improve it, and find ways to attack it. Some programming required. Prereq: Senior status or permission. No credit for students who have completed CIS 615.

COMP 720 - Database Application Development**Credits: 4**

This is a project course that provides practical experience with developing a storage subsystem of a computer information system. Topics include data modeling, database design, system implementation, and integration with a target application. Emphasis is on implementation activities, database application development artifacts, project communication, and supporting system development and project management tools. Prereq: Senior status or permission. No credit for students who have completed CIS 650.

COMP 721 - Big Data for Data Engineers**Credits: 4**

In this course students gain practical experience developing data-oriented applications in modern infrastructure frameworks, also known as the cloud data solutions. Guided by what a data scientist profile is, students become familiar with the use cases of data oriented applications. They will apply key data modeling and data design concepts to meet business requirements. Students will also apply modern software development to iteratively construct solutions using established reference architectures. Project work will be based in Google Cloud Platform and Amazon Web Services. Prereq: COMP 525 and COMP 530 or equivalent. Special fee.

COMP 725 - Programming Languages**Credits: 4**

Explores the main features of modern, high-level, general purpose programming languages from the user point of view. Provides students with an opportunity to use non-imperative programming paradigms, such as object-oriented, functional, and visual, and to learn how specific features of such languages can be used efficiently in solving problems. The purpose is to gain knowledge regarding the languages studied as well as providing the basis to conduct analysis related to comparisons and divergence in capabilities. Prereq: COMP 425 or equivalent. No credit earned if credit received for ET #647, CIS 698 Adv Perspectives on Programming, or COMP 698 Adv Perspectives on Programming.

COMP 730 - Object-Oriented Software Development**Credits:** 4

Presents an iterative methodology for developing software systems. Development activities include requirements elicitation and analysis, system and object design, implementation and testing, project and configuration management, infrastructure maintenance, and system deployment to end user. Students work in team, assume developer roles, build models of a real-world system, and deliver a proof-of-concept or prototype. Prereq: Senior status or permission. No credit for students who have completed CIS 610. Writing intensive.

Attributes: Writing Intensive Course**COMP 750 - Neural Networks****Credits:** 4

Artificial neural networks power the recent advances in computer vision, speech recognition, and machine translation. This is a first course on neural networks with a focus on applications in computer vision and natural language processing. Topics will include generic feedforward neural networks, convolutional neural networks for computer vision tasks and recurrent neural networks with application to natural language processing, with other topics to be selected based on the interests of the instructor and the class. Prereq: MATH 425, MATH 545 or MATH 645, COMP 490, or permission of the instructor. Also listed as DATA 750.

COMP 780 - Advanced Topics in Computing**Credits:** 1-4

The course includes advanced topics and emerging areas in computing. Barring duplication of subject, the course may be repeated for credit. Prereq: Senior status or permission.

COMP 790 - Capstone Project**Credits:** 4

This course requires the development of a real world project that responds to an IT organizational need. The project is undertaken by a team of students. An iterative approach is used to incrementally address the project requirements while constructing a prototype of the IT solution to the original problem. Prereq: COMP 690 and CIS 610. Writing intensive.

Attributes: Writing Intensive Course**COMP 795 - Independent Study****Credits:** 1-4

Advanced individual study under the direction of a faculty mentor. Content area to be determined in consultation with faculty mentor. Prereq: permission. May be repeated.

Culinary Arts & Nutrition (CAN)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

CAN 401 - Food Preparation Fundamentals**Credits:** 2 or 3

Preparation techniques, knife skills, measurements, food handling, selection, and classification. CAN majors only. 2hr lec. Students in both Restaurant Management and Dietetic Technician concentrations must also complete a lab. Practical application of skills and techniques utilized in a professional kitchen. 2hr lab.

CAN 402 - Quantity Food Practicum**Credits:** 3

Students utilize cooking principles and food preparation techniques learned in CAN 401 to produce foods in a quantity food setting. Elements of food sanitation and workplace safety in the operation of commercial cooking equipment are stressed. Students operate Stacey's Express, open to the public and participate in various positions such as production manager, cashier, production cooks, and utility workers. Students standardize, cost, and assign selling prices for all menu items prepared for Stacey's Express. Prereq: CAN 401. Culinary Arts & Nutrition majors only.

CAN 403 - Culinary Arts and Baking Skills Development**Credits:** 4

This laboratory class explores classical culinary and pastry arts and basic cooking techniques. Classical recipes for stocks, mother sauces, soups and pie crust, quick and yeast breads are featured with hands-on experiential learning using common practices and techniques of the food service industry. Students will gain an understanding of basic ingredients, fabrication, storage, cooking, hygiene and sanitation, equipment usage in modern culinary and pastry arts through demonstration, practice and evaluation. Special fee.

Co-requisite: CAN 401**CAN 404 - Baking and Pastry Fundamentals****Credits:** 4

Baking and Pastry Fundamentals is an introductory-level baking course exploring the science and art of small-scale and high-volume commercial production of classical and modern pastries and baked goods. Students will gain an understanding of basic ingredients, equipment and techniques used in the production and presentation of plated desserts, as well as the display and storage of pastries and baked goods. Special fee.

Co-requisite: CAN 401**CAN 405 - Retail Baking and Merchandising****Credits:** 4

This course educates and exposes the students to quantity production of baked goods for retail sale. Students will gain understanding of basic ingredients, equipment and techniques used in the production of pastries and baked goods, as well as experience in the presentation, display and storage of baked goods for sale to customers. The student will experience the baker's contribution to a retail bakery, a restaurant, catering business, event businesses (wedding cakes), cottage industries, etc. Special fee. Prereq: CAN 401, 403, and 404.

CAN 407 - Hospitality Sanitation and Safety**Credits:** 1

This course covers the responsibilities of food service operators for food safety and sanitation. Students learn safe food production policies and procedures, how to implement HACCP standards, pest control, and crisis management, with an overall focus on learning to take a proactive approach to maintaining a safe food environment. Students sit for the National Restaurant ServSafe Exam.

CAN #410 - Introduction to the Dietetic Technician Profession**Credits:** 1

This course provides an introduction to the dietetics profession with an emphasis on dietetic technician practice. Topics include educational requirements, credentialing, nutrition resources and professional development. Students participate in a health and wellness project.

CAN 422 - Cuisine and Culture**Credits: 4**

Focuses on the history of people by examining cuisines and cultures from the African savanna to the kitchens of California. Students study various cultures from around the world and learn how the same foods demonstrate profound differences in attitudes to those foods, nature, and the environment. Using this approach, students understand how historical events have affected and defined culinary traditions in different societies around the world.

CAN 426 - Dining Room Practicum**Credits: 3**

A front-of-the house supervised training experience with an emphasis on customer service and table service techniques in one of the TSAS restaurants. Students also take the Serve Safe Alcohol Examination and, upon successful completion of the exam, are awarded a certificate from the National Restaurant Association. Culinary Arts & Nutrition majors not allowed.

CAN 443 - Quantity Food Production and Display Cooking**Credits: 4**

Students gain practical-based experiential learning in quantity food production working directly with chefs in the Holloway Commons (one of UNH's dining commons) facility. Students also prepare cooked-to-order menu items in front of customers while rotating through the eight culinary concepts at Holloway; including stir-fry, sushi, brick oven pizza, vegan, vegetarian and gluten free stations. 1 hr lec/6 hr lab.

CAN 504 - Intermediate Baking**Credits: 4**

This course builds upon the foundational baking courses through applications of American and International baking and pastry formulas with applications of yeast breads, lamination of doughs, pastry elements, pastry doughs, batters, sauces and creams. Students experience production of pastries and baked goods and restaurant finishing techniques for sale of goods through catering and retail operations, such as 180 Blue, the student-run restaurant that serves American Regional and International Cuisines. Special fee. Prereq: CAN 401, CAN 403, CAN 404, and CAN 405.

CAN 506 - Food and Beverage Cost Control**Credits: 4**

Course places emphasis on methods used to solve mathematical problems that relate to food service operations as they apply to controls. Topics: weights and measures, recipe conversion, menu pricing, purchasing, food costs, inventories, break-even analysis, and financial statements.

CAN 507 - Advanced Baking**Credits: 4**

Advanced Pastry Arts expands upon the basics of piping learned in the introductory-level and intermediate baking and pastry classes and delves further into the history of this intricate art, including instruction in celebrated traditions of advanced cake design from around the world. Students will also train in various methods of contemporary cake decorating from advanced sugar work, blown sugar and pastillage, to hand-sculpting, airbrushing, hand-painting and novelty cakes. Special fee. Prereq: CAN 401, CAN 403, CAN 404, CAN 405, and CAN 504.

CAN 508 - Baking and Pastry Externship**Credits: 5**

This externship introduces the student to the activities of the professional pastry kitchen as they relate to the overall operation of a licensed food service establishment. Students participate in a variety of activities including, but not limited to proper sanitation and safety practices, baking preparation and scaling methods, working with standardized formulas, proper receiving, storage and inventory techniques, effective utilization of leftovers, and active participation as a contributing member of a professional culinary team. Prereq: CAN 401, CAN 403, CAN 404, CAN 405, and CAN 504.

Co-requisite: CAN 507

CAN 512 - Hospitality Human Resources Management**Credits: 3**

Designed to teach the first-line hospitality supervisor how to create a positive work climate to assist identifying and keeping employees who cook, serve and tend bar. Students learn and develop skills, attitudes and abilities needed to lead and manage in an industry with numerous demands. Course focuses on employee recruitment, training and development, performance evaluation, disciplinary action, and wage and fringe benefit administration. Through case studies, students practice planning, organizing, communicating effectively, delegating and decision-making. 2 lec.

CAN 525 - American and Regional Cuisine**Credits: 5**

Students apply and enhance skills in advanced aspects of a la carte cooking. Course introduces students to foods available in the United States and prepare meals for service in 180 Blue restaurant. Students are also introduced to the art of pairing foods with fine wines for special events. Prereq: CAN 401, CAN 407, CAN 403, CAN 443. Majors only. 1 hour lecture/6 hour lab.

CAN 528 - Culinary Nutrition**Credits: 2**

The study of dietary needs from a culinary perspective. The focus is on basic nutrition and health with an emphasis on healthy menu and recipe development. Students research, evaluate, plan and prepare healthy menus and recipes using healthy cooking techniques. Course will culminate in students completing a healthy cooking demonstration. Pre- or Coreq: CAN 401, CAN 407. 1hr lec/2 hr lab.

CAN 535 - International Cuisine**Credits: 5**

International Cuisine allows students to explore different cultures and cuisines of the world. Students study a different country or region each week and learn how history, geography, and main ingredients influence the different cuisines. Students prepare multi-course international menus one evening a week in the dining room at Cole Hall. Prereq: CAN 401, CAN 404, CAN 403, CAN 443. Majors only. Pre- or Coreq: CAN 544, CAN 525. 2 hr lec/6 hr lab. Culinary Arts & Nutrition majors only.

CAN 544 - Catering and Garde Manger**Credits: 4**

Students apply skills and techniques learned in prior courses and enhance skills in advanced aspects of culinary preparation and management such as garde manger, buffet presentation, event booking, scheduling, and buffet staging. Advanced techniques of garde manger include production of canapes, savory pastries, charcuterie, farces, and sculptured centerpieces. Prereq: CAN 401, CAN 407, CAN 403, CAN 443. CAN Major Only. 2 hours lecture, 4 hours lab.

CAN 591 - Independent Studies in Culinary Arts**Credits:** 1-4

Students who have the ability and adequate preparation to work independently may propose a contract to design a course or research project on a topic not available through existing course offerings. The purpose of this research is to explore new areas in the student's field of study or to pursue course material in greater depth. Work is supervised by an appropriate faculty/staff member and credit varies depending on the proposed project/research.

CAN 596 - Dietetic Technician Independent Study - Dietetic Technician Practicum**Credits:** 3-6

For Dietetic Technician students who need to take practica at alternate times. There are two practica in the Dietetic Technician major: CAN 290 Clinical Nutrition Practicum 7 cr.; and CAN 260 Community Nutrition Practicum 5 cr. May be repeated for a maximum of 13 credits. Prereq: permission.

CAN 597 - Culinary Arts Internship**Credits:** 5

Supervised internship of a minimum of 255 hours at a pre-approved property which introduces students to the culinary activities of a licensed food service establishment. Students must be available to participate on weekends and will participate in a variety of on-site activities including proper sanitation, food preparation and handling, knife skills, and line cooking. Students are required to attend a weekly lecture and complete a semester portfolio of activities and assignments. Prereq: CAN 401, CAN 404, CAN 403, CAN 443, CAN 407. Culinary Arts & Nutrition majors only.

CAN 598 - Work Experience**Credits:** 0

This course enables students to enhance basic cooking skills and techniques learned in the first year. Students obtain industry related employment over the summer generally between the first and second year of academic course work. Documentation of the work experience is required as well as a final written paper. Prereq: CAN 401, CAN 404, CAN 407, CAN 214, CAN 443. Majors only. Cr/F. Culinary Arts & Nutrition majors only.

Cybersecurity Policy & Risk Management (CPRM)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

CPRM 710 - Foundations of Cybersecurity Policy**Credits:** 4

Examine the societal and organizational impacts of cybersecurity policy in our interconnected world that is increasingly dependent on advanced technologies and systems for communications and control. Explore the components of information systems and control systems and review the history and development of cybersecurity. Gain an appreciation of policy as one tool for managing risk and start to consider the challenges of cybersecurity policy-making.

CPRM 720 - Policy Development and Communications**Credits:** 4

Discover the fundamental concepts and practices for developing and drafting organizational policy, including related documents to support implementation. Explore how to communicate policies to internal and external audiences (in both written and oral communications). Learn how to incorporate organizational priorities and mandates into managerial policies. Case studies are primarily based in security studies, but other professional fields are welcomed.

CPRM 730 - Security Measures I**Credits:** 4

This course introduces common technological and organizational measures for cybersecurity, with a focus on protection concepts. Students added the organizational impacts of security measures, and explore how best practices, standards, and organizational policy can help manage such measures. Topics include identity management, authentication, access control, data and system security and availability, encryption, integrity mechanisms, system maintenance, and continuity of operations. Note that we do not focus on how to technically implement these security measures.

CPRM 740 - Cybersecurity Standards, Regulations, and Laws**Credits:** 4

We survey laws, regulations, and standards for cybersecurity in the United States, including "soft law" and self-regulation. Topics include the pros and cons of regulatory solutions and market solutions; the different approach to data protection regulation in the European Union; and cybersecurity concerns and regulatory authorities in various U.S. industries and sectors. Students become familiar with key standards bodies involve in cybersecurity, and explore organizational processes for remaining current with industry best practices.

CPRM 750 - Security Measures II**Credits:** 4

This course continues surveying common technologies and organizational measures for cybersecurity, with a focus on detection and organizational relationships. Topics include auditing and log records; monitoring and testing for threat detection; vulnerability scans; and the security of external services (e.g., cloud providers) and supply chains. We do not focus on how to technically implement these measures. Students assess organizational impacts and explore how best practices and standards can help manage such measures.

CPRM 790 - Organizations, Change Management, and Leadership**Credits:** 4

This course examines both private and public institutions as systems whose effectiveness depends on how an organization adapts to opportunities, threats, and demands (external and internal). Students explore the design and leadership of ethical and socially responsible organizations. In course examples and exercises, students will apply this knowledge to their respective research interests (e.g., cybersecurity, analytics, criminal justice, public health, etc.).

Decision Sciences (DS)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

DS 444 - Meaning of Entrepreneurship**Credits:** 4

This course explores the idea and ideals of entrepreneurship, the creating of value through individual initiative, creativity and innovation. The idea of entrepreneurship is of significant relevance in the highly dynamic and competitive 21st century global economy. It is an idea that is important for students to understand and to critically consider and apply. Encourages the development of multiple views of entrepreneurship, and uses a broad, not just business, approach to the study as it engages students in the subject matter. Open to all majors. (Also offered as MGT 444.) Writing intensive.

Attributes: Environment, TechSociety(Disc); Inquiry (Discovery); Writing Intensive Course

DS 562 - Business Applications Development**Credits:** 4

The course focuses on topics related to designing and using information technology in a business setting. Students gain knowledge and skills in application design, development, deployment, and management. A hands-on approach is used, providing students with opportunities to develop and refine their knowledge and skills. The course introduces software engineering concepts using movie metaphors, and students develop fun, socially-relevant three-dimensional animations. Students also gain experience with object oriented programming using the Java programming language. Prereq: ADMN 410.

DS 598 - Topics in Decision Sciences**Credits:** 4

Special topics; may be repeated.

DS 650 - The Mel Rines Student Angel Investment Fund**Credits:** 2

The Mel Rines Student Angel Investment Fund is a cross-disciplinary, undergraduate, student-managed private equity fund. The fund allows students to learn angel and venture capital investment strategies through the first-hand experience of investing in start-up companies. Students evaluate entrepreneur pitches, conduct due diligence projects on potential investments, and work with angel partners. An officer corps is responsible for structuring and coordinating the class. Students in good standing may retake the course up to a maximum of 12 credits. Prereq: permission.

DS 698 - Topics**Credits:** 1-4

Special topics; may be repeated up to a maximum of 12 credits. Prereq: permission.

DS 741 - Private Equity/Venture Capital**Credits:** 4

This course will notably increase knowledge and understanding of the private equity financing market, develop analytical skills in evaluating private equity financing details, learn from the experience of market practitioners, and enhance oral and written presentation skills. Prereq: ADMN 570 and senior standing.

DS 742 - Internship in Entrepreneurial and Management Practice**Credits:** 4

Involves working for leading companies and dynamic entrepreneurs, as well as classroom instruction. The priority experiential, real-world, and real-time learning in the high-growth environment of entrepreneurial ventures. Focus on several topic areas, including venture capital. Prereq: senior standing; permission.

DS 766 - Business Analytics and Spreadsheet Modeling**Credits:** 4

The course focuses primarily on Descriptive and Prescriptive Analytics. Students gain modeling and analysis skills necessary to address a wide variety of business problems. Topics covered include general modeling and analysis principles, principles and practices of good spreadsheet model design, optimization, simulation, decision analysis, and Visual Basic for Applications. Students develop a decision support tool for a real-world problem. Prereq: ADMN 410, ADMN 420.

DS 768 - Forecasting Analytics**Credits:** 4

The course focuses on Predictive Analytics. Businesses and organizations need to be able to forecast effectively in order to make decisions. Students learn the background necessary to develop forecasts for real-world business situations. An applied, hands-on approach is used in the course. Students learn and use SAS to analyze data and fit models. Topics include regression analysis in forecasting, model building, residual checking, analysis of seasonal and cyclical trends, and times series models. Prereq: ADMN 420.

DS 773 - Database Management and Systems Analysis**Credits:** 4

Provides students with the skills necessary to understand the database environment of the firm and a background to develop moderately complex, stand-alone databases. Gives the foundation to study database development in multiuser, client/server environments. Prereq: ADMN 410 and junior standing.

DS 774 - E-Business**Credits:** 4

Covers the concepts, tools, and strategies for understanding the challenges and exploiting the opportunities associated with e-commerce/e-business. Provides an understanding of the technology platform and its components. Additional material covers various models of e-commerce/e-business and its impacts on the firm's performance. Prereq: ADMN 410 and junior standing. DS 562 or CS 405 is strongly recommended.

DS 775 - Corporate Project Experience**Credits:** 4

Provides real-life experience in organizations. Work in groups on information systems and/or projects identified by sponsoring organizations. Integrate concepts and skills learned in prior business and technology courses. Learn project management concepts, work with project management tools, and use presentation techniques. Prereq: senior standing, DS 773, two additional Information Systems & Business Analytics Option courses.

DS 798 - Topics**Credits:** 4

Special topics; may be repeated.

Earth Sciences (ESCI)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

ESCI 400 - Freshman Field Seminar**Credits:** 1

A field introduction for new or prospective majors to New Hampshire's mountains, rivers, estuaries, and beaches. Field excursions (approximately five) are scheduled on Friday afternoons. Special fee. Cr/F.

ESCI 401 - Dynamic Earth**Credits: 4**

In this course we study the minerals, rocks and fluids which make up the Earth; the landforms on the surface of the Earth such as mountains, flood plains and stratovolcanoes; and processes such as volcanism, earthquakes, erosion and glaciation that create and alter them. The rock cycle and plate tectonics are used to integrate activity at the surface of the Earth with processes in the Earth's interior. Campus field exercises. Special fee. Lab. Students may not receive credit for both ESCI 401 and ESCI 409.

Attributes: Discovery Lab Course; Physical Science(Discovery)

ESCI 402 - Earth History**Credits: 4**

Course provides knowledge and skills necessary to interpret, understand, and appreciate the Earth's 4.6 billion-year history. The first third of the course introduces basic principles, including geological materials, plate tectonics, geological time, fossil preservation, and biological evolution. The remainder of the course tells the story of Earth history through case studies that illustrate scientific methods used to reconstruct critical events in our planet's evolution through time. Topics include the origin of the Earth, the Cambrian explosion of life, building of the Appalachians, assembly of Pangaea, the rise and fall of dinosaurs, the formation of the Rocky Mountains, mammalian evolution, human origins, and Pleistocene glaciation. Students gain experience in making geological observations through laboratory exercises and during one afternoon field trip. Special fee. Lab.

Attributes: Discovery Lab Course; Physical Science(Discovery)

ESCI 405 - Global Environmental Change**Credits: 4**

Human activity rivals nature as an agent of change in the global environment. Explores evidence of environmental degradation in Earth's crust, hydrosphere, and atmosphere; considers prospects for future sustainable human health, diversity, and economic development. Problem solving through critical analysis of environmental variables. Special fee.

Attributes: Physical Science(Discovery)

ESCI 409 - Geology and the Environment**Credits: 4**

Environmental impact of geologic processes; natural hazards, landslides, earthquakes, volcanoes, flooding, erosion, and sedimentation; land exploitation and site investigations; environmental considerations of water-supply problems; the recovery of energy and mineral resources. Special fee. Lab. Students may not receive credit for both ESCI 401 and ESCI 409.

Attributes: Discovery Lab Course; Physical Science(Discovery)

ESCI 410 - Earth Hazards**Credits: 4**

Introductory-level physical science course concerning Earth processes that impact humanity, with natural disasters as the focus. Topics include the causes and effects of earthquakes, tsunamis, volcanic eruptions, floods, and landslides. The course covers basic concepts of physical geology using hands-on-activities, small-group discussions, and in-class demonstrations and is intended for students with little or no previous experience in Earth sciences. No prerequisites. Special fee.

Attributes: Discovery Lab Course; Physical Science(Discovery)

ESCI 420 - Our Solar System**Credits: 4**

Course focuses on the nature and formation of our solar system and the planets associated bodies it contains, with emphasis on the physical and chemical processes significant in the system's origin and evolutionary history. Our approach provides the basis for understanding key differences between the Earth-like terrestrial planets and those farther out in the solar system (the gas giants). We also explore recent discoveries on Mars and moons of the gas giant planets and their implications for the search for life elsewhere in our solar system. Special fee.

Attributes: Discovery Lab Course; Physical Science(Discovery)

ESCI 444 - Water - How Much is Enough?**Credits: 4**

The natural distribution of water is not adequate to sustain modern civilization. As water mining and redistribution projects continue to grow in number and size, so do the concomitant stresses on the environment. Through a detailed look at the unique properties of water and the processes that drive the earth's hydrologic cycle; this course will explore the concepts of water stress, water scarcity, and safe yield.

Attributes: Physical Science(Discovery); Inquiry (Discovery)

ESCI 444A - Philosophy of Earth Science**Credits: 4**

Course provides an introduction to the discipline of Philosophy of Science, but from an Earth Science perspective. Considers various philosophical perspectives on the nature of science and scientific progress, drawing from works by thinkers such as Aristotle, Popper, Kuhn and Lakatos. Particular attention is given to the following questions: What is scientific knowledge? Is the acquisition of scientific knowledge a rational process? And, what makes some scientific discoveries "revolutionary"? These questions are considered using examples from the history of scientific progress in the Earth Sciences, focusing on groundbreaking discoveries such as the age of the earth, the evolution of organisms as observed in the fossil record, sea-floor spreading, and modern-day global warming.

Attributes: Environment,TechSociety(Disc); Inquiry (Discovery)

ESCI 451 - Earth in Film**Credits: 4**

Introductory-level focusing on interactions between Earth system and its inhabitants, with special emphasis on understanding societal implications of Earth system processes. Topics include Earth's interior processes, volcanism, earthquakes, climate change, storms, tornadoes, and biological change. Students are expected to learn about Earth system processes and critique cinematic portrayal of such processes. Taken together this approach affords building a foundation in the natural sciences and provides insights into societal portrayal of scientific ideas.

Attributes: Physical Science(Discovery)

ESCI 501 - Introduction to Oceanography**Credits: 4**

Introduces students to the four oceanographic disciplines: the geology of the ocean basins, including the creation of oceans and continents. The physics of the seas, including the origin of the ocean currents and their effect on the Earth's climate. The chemistry of the ocean waters, including how the distribution of elements reflects circulation and biology. The life in the ocean, including animals, plants and microbes, and humanity's influence on them. Special fee. Lab.

Attributes: Discovery Lab Course; Physical Science(Discovery); Inquiry (Discovery)

ESCI 502 - Beaches and Coasts**Credits: 4**

Introductory-level physical science course on ocean, air, and landform dynamics affecting beaches and coasts, with considerations of natural processes associated with waves and currents, wind and rain, sediments and rocks, and ecology. Emphasis is placed on impacts on ecosystem and human health, the economics of coastal industry, and consequences of pollution and engineering practices. Topics are approached via real world examples, small-group discussions, and field trips to local sites. No prerequisites. Recitation. Special fee.

Attributes: Physical Science(Discovery)

ESCI 512 - Principles of Mineralogy**Credits: 4**

Minerals record variations in chemistry, pressure, temperature, and time in the Earth. This course emphasizes minerals and mineral assemblages in rocks, sediments and soils; their identification, symmetry, chemistry, equilibria, and physical properties. Introduction to x-ray diffraction and optical techniques. Prereq: CHEM 403 or CHEM 405. Special fee for field trips. Lab.

ESCI 514 - Introduction to Climate**Credits: 3**

The climate as a system controlled by the fluid, chemical, geological, and biological dynamics of the earth. Investigation of natural and man-made climate change over the period of 100 to 100 million years, including the greenhouse effects, tectonic climate forcing, astronomic (Milankovitch) cycles, deep ocean circulation, and biological feedback. How past climate is measured. Prereq: one introductory course in Earth Sciences or permission.

ESCI 530 - Geological Field Methods**Credits: 4**

An introduction to basic geologic field mapping of bedrock and surficial materials using pace and compass, surveying and GPS techniques. Observational data plotted on topographic maps and/or aerial photographs, accompanied with stratigraphic measurements and sampling sites where appropriate, provide the basis for interpretative maps, cross sections and written reports and a field context for more advanced Earth sciences course work and independent research. One weekend field trip to western or northern New England. Prereq: ESCI 401 or ESCI 409, ESCI 402. Special fee. Writing intensive.

Attributes: Writing Intensive Course

ESCI 534 - Techniques in Environmental Sciences**Credits: 3**

Elementary mapping and monitoring methods. Map interpretation, preparation of maps; survey techniques including pace and compass, leveling, and global positioning systems; environmental monitoring. Field lab. Cannot receive credit if taken after receiving credit for ESCI 530 or NR #542. Special fee.

Attributes: Writing Intensive Course

ESCI 561 - Landscape Evolution**Credits: 4**

Course focuses on the processes that shape the Earth's surface. Lectures discuss the development of landscapes in a wide variety of climatic and geologic settings, with an emphasis on understanding the process mechanics that create landforms and surficial deposits. Labs involve topographic map interpretation, geomorphic data analysis, and short field exercises. Course incorporates one weekend field trip that explores the landscapes of Cape Cod. Students also gain practical experience in geomorphic research by teaming up and completing a required lab- or field-based project. Prereq: ESCI 401, ESCI 402, or permission. Lab. Special fee.

ESCI 595 - Introductory Investigations**Credits: 1-4**

Special topics by means of lectures, conferences, assigned readings, and/or field or laboratory work in the areas of geology, hydrology, or oceanography. May be repeated up to a maximum of 8 credits.

ESCI 596 - Introductory Investigations**Credits: 1-4**

Special topics by means of lectures, conferences, assigned readings, and/or field or laboratory work in the areas of geology, hydrology, or oceanography. May be repeated up to a maximum of 8 credits.

ESCI 614 - Introduction to Petrology**Credits: 4**

Description, classification and formation of igneous, sedimentary, and metamorphic rocks in the field, hand specimen, and thin section. Prereq: ESCI 401, ESCI 409, or ESCI 501; and ESCI 512. Special fee. Lab and field trips.

ESCI 631 - Structural Geology**Credits: 4**

Structural units of the Earth's crust and mechanics of their formation. Prereq: ESCI 530. Special fee. Lab and fieldwork.

ESCI 642 - Biogeosciences in the Earth System**Credits: 3**

This interdisciplinary course applies concepts from chemistry, physics, biology and geology to understand biogeochemical cycles in the Earth system. Course topics includes terrestrial, ocean and freshwater environments; water and energy cycles; carbon, nitrogen, phosphorous and sulfur cycles; biogeochemical cycles through Earth history and a synthesis of how humans have impacted the Earth system. Students will use quantitative methods to explore relationships between causes and effects, positive and negative feedbacks, and thresholds in the Earth systems. Prereq: calculus, two semesters of chemistry or permission.

ESCI 652 - Paleontology**Credits: 4**

Use of the fossil record to address current problems in Earth history, paleoecology, and evolutionary biology. Examples are drawn from both vertebrates and invertebrates. Lab combines analytical paleontological methods with a systematic survey of important fossil groups. Prereq: ESCI 402 or permission. Special fee. Lab.

ESCI 654 - Fate and Transport in the Environment**Credits: 4**

An introduction to the basic processes controlling the migration and transformation of chemicals in surface water, groundwater, and the atmosphere, including advection, diffusion, dispersion, retardation, and chemical reaction. Extensive practice with quantitative problem solving in the environmental sciences, including constructing and using box models. Prereq: CHEM 404 or CHEM 405, MATH 425 or MATH 424B.

ESCI 701 - Quantitative Methods in Earth Sciences**Credits: 4**

Introduces quantitative tools necessary for upper level Earth Science courses. Includes basic statistical descriptions of spatially and temporally varying data, curve fitting, and time-series analysis with emphasis on atmospheric, oceanic and terrestrial data sets. Students learn to construct simple numerical models of Earth Systems. Instruction in data and analysis and modeling in Matlab. Prereq: MATH 426, and ESCI 401, ESCI 402 or ESCI 501; or permission.

ESCI 705 - Principles of Hydrology**Credits: 4**

Basic physical principles important in the land phase of the hydrologic cycle, including precipitation, snowmelt, infiltration and soil physics, evapotranspiration, and surface and subsurface flow to streams. Problems of measurement and aspects of statistical treatment of hydrologic data. Field trips. Prereq: ESCI 654. Special fee. Lab. Writing intensive.

Attributes: Writing Intensive Course

ESCI 710 - Groundwater Hydrology**Credits: 4**

Principles for fluid flow in porous media with emphasis on occurrence, location, and development of groundwater but with consideration of groundwater as a transporting medium. Major topics include well hydraulics, regional groundwater flow, exploration techniques, and groundwater modeling. Laboratory exercises involve use of fluid, electrical, and digital computer models to illustrate key concepts. Prereq: ESCI 654. Special fee. Lab.

ESCI 726 - Igneous and Metamorphic Petrology**Credits: 4**

This course focuses on the origin and evolution of igneous and metamorphic rocks from field, petrographic mineral chemistry, experimental, and theoretical studies. Igneous systems include volcanic and plutonic suites, with emphasis on mineralogic records of magma chamber systematics. Metamorphic systems include pelitic, mafic, and calc silicate rocks, with special emphasis on closed- and open-system reactions, multi-systems, reaction space, and pressure-temperature-time paths. Prereq: ESCI 614; adequate calculus, chemistry, and physics. Field trips. Special fee. Lab. Writing intensive.

Attributes: Writing Intensive Course

ESCI #731 - Geodynamics**Credits: 4**

Application of quantitative methods to geologically motivated problems, focusing on lithospheric deformation, topography, and fluid flow. Students acquire geophysical and geochemical techniques used to address dynamics in the Earth system. Includes biweekly recitation sessions for working through problemsets and facilitating discussions of relevant papers from the literature. Prereq: CHEM 404 or ESCI 512 and ESCI 658 or permission.

ESCI 734 - Geophysics**Credits: 4**

The structure of the solid Earth, including the continental and oceanic lithosphere and the deep interior as revealed by investigations of seismic waves, the Earth's gravitational and magnetic fields, heat flow, and earthquakes. Prereq: ESCI 401; one year of calculus; one year of college physics; ESCI 658; or permission. Special fee. Lab.

ESCI #735 - Earthquakes and Faulting**Credits: 4**

This course provides an introduction to the principles of brittle faulting and earthquake mechanics. We discuss classic theory and current topics in earthquake science based on observations from laboratory experiments, seismology, geodesy, and geology. Prereq: MATH 425 and MATH 426, PHYS 407, and ESCI 631 or permission. Writing intensive.

Attributes: Writing Intensive Course

ESCI 741 - Geochemistry**Credits: 4**

Course focuses on the application of chemical principles to solve problems in the Earth sciences. Students learn the chemical tools of thermodynamics and kinetics, element partitioning, conservation of mass, and isotope geochemistry. Explore geochemical properties/processes in the deep Earth and the Earth surface, atmosphere and marine systems, and cosmo-chemistry and investigate the interactions between these components of the Earth system. Prereq: MATH 426; CHEM 404 or permission. Lab. Writing intensive.

Attributes: Writing Intensive Course

ESCI 745 - Isotope Geochemistry**Credits: 4**

Course focuses on the application of radiogenic, radioactive and stable isotopes to improve students' knowledge about the processes and timescales relevant to the formation of the planet and solar system, the evolution of the Earth system and interactions in the hydrosphere and biosphere. Topics include geochronology, tracer applications, Earth surface applications, as well as applications in the hydrosphere and biosphere. Systems discussed include the classic radiogenic systems (K-Ar, Rb-Sr, Sm-Nd, Lu-Hf and U-Th-Pb), traditional (H, C, N, O) as well as nontraditional (e.g., Mg, Ca, Fe) stable isotope systems, and radioactive isotopes (e.g., radiocarbon). Course consists of lecture, where students are exposed to these applications, and a lab section to work through any questions on the homework assignments, discuss relevant papers from the literature, and carry out a project. Prereq: MATH 426, CHEM 404. Special fee. Lab.

ESCI 747 - Aqueous Geochemistry**Credits: 4**

The chemical processes that determine the composition of aquatic systems such as rivers, lakes, groundwater and the ocean. The goal is to quantitatively understand the behavior of inorganic species such as carbon dioxide, nutrients, trace metals and inorganic pollutants in natural waters. Topics include, acid-based equilibria, carbonate chemistry, reduction-oxidation reactions, organic complexation and mineral precipitation and dissolution. Lab. Prereq: one year college chemistry or geochemistry or permission. Prereq: CHEM 404 and MATH 426.

ESCI 750 - Biological Oceanography**Credits: 4**

Biological processes of the oceans, including primary and secondary production, trophodynamics, plankton diversity, zooplankton ecology, ecosystems and global ocean dynamics. Field trips on R/V Gulf Challenger and to the Jackson Estuarine Laboratory. Prereq: one year of biology or permission of the instructor. (Also offered as ZOO 750.) Special fee. Lab. (Not offered every year.)

ESCI 752 - Chemical Oceanography**Credits: 3**

This course investigates the physical and biogeochemical processes that determine the composition of seawater. Topics include biological effects on chemistry, ocean nutrient cycles, air-sea gas exchange, radiogenic and stable isotopes as tracers of ocean processes, sediment and trace-metal chemistry. Prereq: MATH 426 and CHEM 404.

ESCI 754 - Sedimentology**Credits: 4**

This course focuses on modern sedimentary processes and ancient sedimentary records through the examination, identification, and interpretation of sediments and sedimentary rocks. Topics such as sediment transport mechanisms, depositional environments, and time in sedimentary records will provide a strong framework for any student studying Earth processes and sedimentary systems. Prereq: ESCI 401 or ESCI 402 or ESCI 501, and ESCI 512; or permission. Special fee. Lab and field trips.

ESCI 756 - Geotectonics**Credits: 3**

The geological record of plate tectonics past and present. The first part of the course focuses on modern tectonic settings with an emphasis on plate geometries, geodynamical processes, and sedimentary products. The second part of the course focuses on reconstructing ancient tectonic settings with an emphasis on methodology (paleomagnetism, basin analysis, provenance) and case studies (e.g. India-Asia collision). Field trip. Prereq: ESCI 614 or ESCI 631 or permission. Special fee. Writing intensive.

Attributes: Writing Intensive Course

ESCI 758 - Introductory Physical Oceanography**Credits: 3**

Descriptive treatment of atmosphere-ocean interaction; general wind-driven and thermo-haline ocean circulation; waves and tides; continental shelf and near-shore processes; instrumentation and methods used in ocean research. Simplified conceptual models demonstrate the important principles. Prereq: PHYS 407; ESCI 501;/or permission.

ESCI 759 - Geological Oceanography**Credits: 4**

Major geological features and processes of the ocean floor; geological and geophysical methods; composition of the earth, sedimentary processes, plate tectonics and paleoceanography. Prereq: Senior standing in Earth Science major or permission. Writing intensive.

Attributes: Writing Intensive Course

ESCI 760 - Paleoceanography**Credits: 3**

This course introduces the basic principles of paleoceanography, such as the preservation of ocean history in sediment archives and the analysis/interpretation of paleoceanographic data. The course focuses on the capabilities and limitations of paleoceanographic techniques, and empowers students to critically assess the strengths and weaknesses of results presented in scientific journals. Topics include Milankovitch cycles, faunal assemblages, temperature and circulation proxies, linear and non-linear responses to climate forcings, abrupt climate events, atmospheric teleconnections and monsoons. Prereq: Introductory Chemistry, Introductory Geology.

ESCI 762 - Glacial Geology**Credits: 4**

Course provides a survey of glacier dynamics and processes, with an emphasis on understanding the origin and significance of glacial deposits and landforms. The first half of the course examines the physics of glaciers, and the second half focuses on glacial geologic processes. Lectures discuss glaciers and ice sheets as key agents of large-scale geomorphic change, as well as their central role in the Earth's past and present climate system. Labs involve analysis of glaciological data, glacial-geologic map interpretation, and short field exercises. Course incorporates one mandatory weekend field trip that explores the glacial landscapes of New England. Prereq: ESCI 561 or permission. Special fee. Lab. Writing intensive.

Attributes: Writing Intensive Course

ESCI 764 - Spectral Analysis of Geophysical Time Series Data**Credits: 4**

This course considers basic exploratory techniques and in-depth spectral analysis for estimation with geophysical time series data, including calculations of confidence intervals and significance testing. This course prepares students for interpreting time series data with science and engineering applications. Topics include sampling theory, filtering, statistics, probability, spectral analysis, and empirical orthogonal functions. Students gain experience in code-writing for the analysis of time series data. Prereq: MATH 426.

ESCI 765 - Paleoclimatology**Credits: 3**

Course reviews the study of past changes in the Earth's climate system. Main discussion topics include astronomical theories of ice ages, Quaternary dating methods, Antarctic and Greenland ice core records, greenhouse gases, marine-based climate proxies, glacial mega-floods, and linkages between ocean circulation and abrupt climate change. Emphasis on climate variability during the Quaternary period (the last approximately 2.6 million years), a time interval dominated by cycles of global glaciation. Lectures include discussion of recent and emerging scientific papers in order to keep pace with the latest findings in paleoclimatic research. Writing intensive.

Attributes: Writing Intensive Course

ESCI 766 - Volcanology**Credits: 4**

Provides a comprehensive overview of volcanic processes and their influences on planetary evolution and modern-day Earth systems. Lectures discuss the generation and properties of magma, tectonic setting of volcanism, eruption styles, volcanic landforms and products, monitoring of active volcanoes, volcanic hazards, and volcanism on other planets. Laboratory topics include modeling volcanic processes, hand-sample observation, topographic map interpretation, volcanographical data analysis, and two afternoon field trips. As volcanology is a rapidly developing field of active research, the course incorporates discussions of recent and emerging scientific papers from the literature and student-led updates of ongoing volcanic activity. Prereq: one year of calculus and one ESCI course or permission. Special fee. Lab.

Attributes: Writing Intensive Course

ESCI 771 - Geodesy and Positioning for Ocean Mapping**Credits:** 4

The science and technology of acquiring, managing, and displaying geographically-referenced information; the size and shape of the earth, datums and projections; determination of precise positioning of points on the earth and the sea, including classical terrestrial-based methods and satellite-based methods; shoreline mapping, nautical charting and electronic charts. Prereq: MATH 426, PHYS 408. (Also listed as OE 771.)

ESCI 777 - GIS for Earth & Environmental Sciences**Credits:** 4

Geospatial technologies provide insight into spatial and temporal aspects of environmental and earth systems. Students will master basic skills of a geographical information system. Weekly laboratory exercises will build upon a foundation of conceptual knowledge and data processing skills. Focus on applied research questions and projects will be addressed. The course will use the opensource program QGIS. Additional work will develop programming skills using the python language. Programming background is not a requirement but beneficial. Prereq: Undergraduate Science Course.

ESCI 778 - Remote Sensing Earth & Environmental Sciences**Credits:** 4

Remote sensing provides insight into spatial and temporal aspects of environmental and Earth systems. Students will examine digital image processing techniques, different sensor and platform technologies, and new trends and frontiers in remote sensing science. Weekly laboratory exercises build upon conceptual knowledge, data processing skills, and development of programming skills. Applied research questions and projects will use Google Earth Engine. Hyperspectral, lidar, and unmanned aerial systems will be presented. Prereq: Undergraduate Science Course.

ESCI 795 - Topics**Credits:** 1-4

Geologic, hydrologic, and oceanographic problems and independent studies by means of conferences, assigned readings, and field or laboratory work fitted by ESCI faculty to individual student needs; or new or specialized courses. Topics include geochemistry; geomorphology; geophysics; glaciology; groundwater; structural and regional geology; crystallography; mineralogy; petrology; thermodynamics; ore deposits; earth resource policy; paleontology; sedimentation; stratigraphy; water resources management; chemical, physical, and geological oceanography; earth systems. Also, senior synthesis and earth science teaching methods. May be repeated a maximum of 3 times for no more than four credits.

ESCI 796 - Topics**Credits:** 1-4

Geologic, hydrologic, and oceanographic problems and independent studies by means of conferences, assigned readings, and field or laboratory work fitted by ESCI faculty to individual student needs; or new or specialized courses. Topics include geochemistry; geomorphology; geophysics; glaciology; groundwater; structural and regional geology; crystallography; mineralogy; petrology; thermodynamics; ore deposits; earth resource policy; paleontology; sedimentation; stratigraphy; water resources management; chemical, physical, and geological oceanography; earth systems. Also, senior synthesis and earth science teaching methods. Special fee on some topics.

ESCI 797 - Colloquium**Credits:** 0

Presentation of recent research in the earth sciences by guest speakers and department faculty. May be taken four times. Cr/F.

ESCI 799 - Senior Thesis**Credits:** 1-4

Students work under the direction of a faculty sponsor to plan and carry out independent research resulting in an oral presentation and a written thesis. Research projects should include the development of a research question; collection analysis, and synthesis of data; and interpretation and presentation of results. A copy of the written thesis must be submitted to the Chair of the Department of Earth Sciences prior to graduation. A total of 4 credits is required and may be completed over multiple semesters. Writing intensive.

Attributes: Writing Intensive Course

Ecogastronomy (ECOG)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

ECOG 401 - Introduction to Ecogastronomy**Credits:** 4

This interdisciplinary course introduces students to the principles and practices of EcoGastronomy. It provides students with a foundation for understanding the connections among food production, ecology, ethics, cuisine, nutrition and health within the framework of sustainability. The course includes guest lectures, class discussion, film reviews, activities, and food tastings.

Attributes: Environment,TechSociety(Disc)**ECOG 685 - EcoGastronomy Study Abroad****Credits:** 20

Open to students studying abroad in the discipline as approved by the EcoGastronomy program director and the student's college dean. Special fee. Cr/F.

Co-requisite: INCO 588**Attributes:** World Cultures(Discovery)**ECOG 695 - Independent Analysis****Credits:** 1-4

Study and research project for students to advance knowledge in EcoGastronomy fields. Course may be repeated up to a maximum of 8 credits. Prereq: At least Junior standing and permission.

ECOG 696 - Supervised Student Teaching Experience**Credits:** 4

Participants are expected to perform such functions as attending classes, leading discussion groups, assisting faculty, presenting information in undergraduate courses that they have successfully completed, holding office hours, grading papers and exams. Enrollment is limited to juniors and seniors who have had above average GPAs. Prereq: permission of instructor, program director, director of advising and ECOG 401.

ECOG 698 - Topics**Credits:** 1-4

Special topics and developments in EcoGastronomy. Prereq: junior standing and permission. Course may be repeated when topics change up to a maximum of 8 credits.

ECOG 701 - EcoGastronomy Capstone**Credits:** 2-4

This is a one to two-semester course in which students will synthesize their EcoGastronomy experience with their undergraduate education, including their primary major, and will explore an integrated outlook on their professional future. Field trips, guest lecturers, experimental activities, and related readings and research will provide the foundation for the completion of a portfolio. A research paper is presented at the Undergraduate Research Conference in the spring. Prereq: ECOG 401 & Study Abroad. Writing intensive.

Attributes: Writing Intensive Course

Economics (ECON)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

ECON 401 - Principles of Economics (Macro)**Credits:** 4

Basic functions of the United States economy viewed as a whole; policies designed to affect its performance. Economic scarcity, supply and demand, the causes of unemployment and inflation, the nature of money and monetary policy, the impact of government taxation and spending, the federal debt, and international money matters. ECON 401A emphasizes applications to the international economy. ECON 401H is open to students in the Honors Program. No credit for students who have received credit for ECON 401A, ECON 401H, ECN 411, or equivalent.

Attributes: Social Science (Discovery)**ECON 401H - Honors/Principles of Economics (Macro)****Credits:** 4

Basic functions of the United States economy viewed as a whole; policies designed to affect its performance. Economic scarcity, supply and demand, the causes of unemployment and inflation, the nature of money and monetary policy, the impact of government taxation and spending, the federal debt, and international money matters. ECON 401A emphasizes applications to the international economy. ECON 401H is open to students in the Honors Program. No credit for students who have received credit for ECON 401, ECON 401A, ECN 411, or equivalent.

Attributes: Social Science (Discovery); Inquiry (Discovery)**ECON 402 - Principles of Economics (Micro)****Credits:** 4

Functions of component units of the economy and their interrelations. Units of analysis are the individual consumer, the firm, and the industry. Theory of consumer demand and elasticity, supply and costs of production, theory of the firm under conditions of perfect and imperfect competition, demand for and allocation of economic resources, general equilibrium, and basic principles and institutions of international trade. ECON 402A emphasizes applications to the international economy. ECON 402H is open to students in the Honors Program. No credit for students who have received credit for ECON 402A, ECON 402H, EREC 411, ECN 412, or equivalent.

Attributes: Social Science (Discovery)**ECON 402H - Honors/Principles of Economics (Micro)****Credits:** 4

Functions of component units of the economy and their interrelations. Units of analysis are the individual consumer, the firm, and the industry. Theory of consumer demand and elasticity, supply and costs of production, theory of the firm under conditions of perfect and imperfect competition, demand for and allocation of economic resources, general equilibrium, and basic principles and institutions of international trade. ECON 402A emphasizes applications to the international economy. ECON 402H is open to students in the Honors Program. Writing intensive. No credit for students who have received credit for ECON 402, ECON 402A, EREC 411, ECN 412, or equivalent.

Attributes: Social Science (Discovery); Inquiry (Discovery); Writing Intensive Course**ECON 501 - Business and Economic History****Credits:** 4

This course studies the historical influence of business enterprises on the development of capitalist economies, with an emphasis on the United States. Topics include the rise of manufacturing, development of financial institutions and markets, innovation and new markets, the role of the entrepreneur, and the impact of government policy on business development. Because this is an Inquiry course, each student will pursue a major research project. Does not satisfy Economics Major or Minor requirements. DISC: HP and INQ.

Attributes: Historical Perspectives(Disc); Inquiry (Discovery)**ECON 551 - Careers in Economics - Seminar****Credits:** 2

This career seminar is designed to provide economics majors with an opportunity to learn more about potential careers in the field. Students take a number of self-assessments and are exposed to the full depth of career opportunities. Prereq: ECON 401, ECON 402. Does not satisfy Economics Major requirements. Economics majors only. Cr/F.

ECON 552 - Careers in Economics - Field Experience**Credits:** 2

This career seminar is the second course in the ECON 551/552 sequence. It is designed to give students an opportunity to observe real work environments and then share those experiences with other students enrolled in the course. Does not satisfy Economics Major requirements. Economics majors only. Prereq: ECON 401, ECON 402, ECON 551.

ECON 565 - Predictive Modeling: Data Driven Economic Analysis**Credits:** 4

This course expands upon core topics in statistics through the study and practice of data management, data analysis, and statistical programming. Statistical programming and analytical skills are the key components of predictive modeling. Students will develop tools for collecting, organizing, interpreting, presenting, and analyzing business information. As an economics course an emphasis will be placed on how to use data to improve the information needed to make sound economic and business decisions based on marginal analysis. Prereq: ADMN 420; ECON 402.

ECON 605 - Intermediate Microeconomic Analysis**Credits:** 4

Analysis of supply and demand. Determination of prices, production, and the distribution of income in noncompetitive situations and in the purely competitive model. General equilibrium. Prereq: ECON 402.

ECON #605W - Intermediate Microeconomic Analysis**Credits:** 4

Analysis of supply and demand. Determination of prices, production, and the distribution of income in noncompetitive situations and in the purely competitive model. General equilibrium. Prereq: ECON 402. Writing intensive.

Attributes: Writing Intensive Course**ECON 606 - Intermediate Microeconomics with Calculus****Credits:** 4

Consumer theory. Determination of prices, production, and the distribution of income in perfectly and imperfectly competitive markets. Demand and supply analysis. Welfare analysis of public policies. General Equilibrium. Topics employ calculus. Prereq: ECON 402, MATH 424A or equivalent.

ECON 611 - Intermediate Macroeconomic Analysis**Credits:** 4

Macroeconomic measurement, theory, and public policy determination. Prereq: ECON 401 and ECON 402.

ECON 625 - Economic History of the United States**Credits:** 4

This course studies the development of the U.S. economy from colonial times to the 21st century. The role that institutions, innovations and government policy play in economic development is a central theme of the course. Western settlement, slavery and abolition, the rise of manufacturing and the corporate business, emergence of affluence and consumer society, and the Great Depression are some of the topics addressed. Prereq: ECON 401 or ECON 402;/or permission.

ECON 633 - Microfinance**Credits:** 4

Microfinance focuses on features of the informal economy in developing countries especially small-scale changes in finance, commerce, technology, and in social and environmental organization that have led to transformational economic breakthroughs. Besides financial services, the course examines innovative customer segments, market-based solutions, the role of government subsidies, a range of development issues, and how to measure success for projects, programs, and institutions.

ECON 635 - Money and Banking**Credits:** 4

Study of how the financial sectors of globally interconnected economies impact real economic activity. It includes interrelationships of interest rates, exchange rates, expectations, financial markets, financial institutions, central banks, systemic crises, the supply and demand for money and other financial instruments, and an introduction to monetary theory, policy and regulation. Prereq: ECON 401 and ECON 402.

ECON 645 - International Economics**Credits:** 4

Covers both international trade theory and open-economy macroeconomics. Some of the major issues include whether free trade is always preferred to restricted trade, the controversy over industrial policy and how best to structure the international financial system. Students gain an understanding of topics including currency exchange rate movements, and trade policy, among others. Prereq: ECON 401 and ECON 402.

ECON 651 - Governmental Regulation of Business**Credits:** 4

Mergers, competition, monopoly, and the regulated industries. Prereq: ECON 402.

ECON 653 - Law and Economics**Credits:** 4

Introduces the field of Law and Economics. Focuses on the legal system and the economic consequences of property, contract, tort, criminal law and mediation. Prereq: ECON 402. Writing intensive.

Attributes: Writing Intensive Course**ECON 654 - Industrial Economics and Business Innovation****Credits:** 4

This course will provide students with a survey of economic models in industrial organization, applied to innovation-related issues. The course is divided into three sections. In the first one, we introduce the concept of innovation, its measurement and how it is related to knowledge. In the second part, we look at innovation at the firm level. In particular, we delve into the "knowledge-creating" company and its strategies. Finally, we analyze the structure and evolution of several hi-tech industries, in terms of survival of existing firms and creation of new firms. Prereq: ECON 401 and ECON 402. Writing intensive.

Attributes: Writing Intensive Course**ECON 655 - Innovation in the Global Economy****Credits:** 4

This course will provide students with a survey of economic models in international trade, applied to innovation-related issues. The course is divided into three sections. In the first one, we look at the role that industry, universities, and the government play in the national innovation system. In the second part, we look at innovation from an international perspective. In particular, we delve into the relationship between globalization and innovation. Finally, we analyze the role of externalities in the knowledge economy and particularly network effects in the diffusion of new technologies. Prereq: ECON 401 and ECON 402. Writing intensive.

Attributes: Writing Intensive Course**ECON 656 - Labor Economics****Credits:** 4

Functioning of labor markets from theoretical and policy perspectives. Labor demand and supply, wages and employment. Welfare programs, human capital, discrimination in the labor market, unions, wage differentials. Prereq: ECON 401; ECON 402; ECON 605 recommended.

ECON 668 - Economic Development**Credits:** 4

An exploration of the theorizing (ways of seeing) and resulting policies (ways of doing) in Third World development. How the 'West' constructed the 'Rest'. Theories of development and underdevelopment. Development as industrialization with its urban bias. A planet of slums? The ambivalent effects of technological change in the Third World. An examination of agriculture (famines, green revolution, case study of opium cultivation in Afghanistan). International institutions' versus NGO's approaches to development. Grassroots development, participation and post-development. Prereq: ECON 401; ECON 402;/or permission. Writing intensive.

Attributes: Writing Intensive Course

ECON #669 - Women and Economic Development**Credits:** 4

Examines the position, roles, and contributions of women in economic development as interpreted through different discourses (feminisms, modernity, post modernity) and in theoretical conceptualizations (neoclassical integrationist, liberal feminism, class and gender, feminist ecology). Applied analyses on Africa, South Asia and Latin America. Writing intensive.

Attributes: Writing Intensive Course**ECON 676 - Economics of Sports****Credits:** 4

Focuses on the major economic aspects of North American professional and collegiate sports and special topics like the Olympics, discrimination, and tournament sports drawing from public finance, labor economics, and industrial organization. Prereq: ECON 402. Writing intensive.

Attributes: Writing Intensive Course**ECON 685 - Study Abroad****Credits:** 1-16

Open to students studying abroad in the discipline as approved by the economics program director. Cr/F.

ECON 686 - Study Abroad**Credits:** 1-16

Open to students studying abroad in the discipline as approved by the economics program director. Cr/F.

ECON 695 - Independent Study**Credits:** 1-4

Individual research projects that are student designed. Initial sponsorship of an economics faculty member must be obtained followed by approval of PAUL advisor and dean's office. Special permission required to earn more than 4 credits in one semester. For Paul College juniors and seniors in with 3.0 or better cumulative GPA.

ECON 695W - Independent Study**Credits:** 1-4

Individual research projects that are student designed. Initial sponsorship of an economics faculty member must be obtained followed by approval of PAUL advisor and dean's office. Special permission required to earn more than 4 credits in one semester. For Paul College juniors and seniors in with 3.0 or better cumulative GPA. Writing intensive.

Attributes: Writing Intensive Course**ECON 696 - Supervised Student Teaching Experience****Credits:** 1-8

Participants are expected to perform such functions as leading discussion groups, assisting faculty in undergraduate courses that they have successfully completed, or working as peer advisers in the advising center. Enrollment is limited to juniors and seniors who have above-average G.P.A.s. Reflective final paper is required. Prereq: permission of instructor, department chair, and director of undergraduate programs. No more than 4 credits may be earned as a teaching assistant in any one course. May be repeated to a maximum of 8 credits. Cr/F.

ECON 698 - Topics**Credits:** 4

Special topics. May be repeated. Writing intensive.

Attributes: Writing Intensive Course**ECON 706 - Economics of Climate Change****Credits:** 4

Explores the economics and public policy of global climate change and develops the economic theory including the concepts of externalities, stock pollutant models, the social discount rate, and complicating factors such as information, uncertainty, technological progress, and risk. Students use economic analysis to compare different policy instruments such as administrative regulation, marketable permits, tax incentives, and direct subsidies. Also covers the political economy of international environmental agreements, including an analysis of the Kyoto Protocol. Prereq: ECON 401, ECON 605. Writing intensive.

Attributes: Writing Intensive Course**ECON 726 - Introduction to Econometrics****Credits:** 4

Introduces regression techniques as used in economics and management; estimation and statistical inference in the context of the general linear model; discussion of problems encountered and their solutions; extensions of the general linear model. Prereq: ADMN 420 or equivalent.

ECON 727 - Advanced Econometrics**Credits:** 4

Method of least squares estimation with treatments for heterogeneity and endogeneity. Method of maximum likelihood estimation. Binary choice models. Panel data models. Survival analysis. Topics employ calculus. Prereq: ECON 726, MATH 424A or equivalent.

ECON 736 - Seminar in Monetary Theory and Policy**Credits:** 4

Contemporary developments in monetary theory and the evaluation of policy measures. Prereq: ECON 635. Writing intensive.

Attributes: Writing Intensive Course**ECON 745 - International Trade****Credits:** 4

International trade theory and policy with applications to current trade controversies. Modern topics such as supply-chain and firm-specific analysis developed and debated. Prereq: ECON 605; ECON 645.

ECON 746 - International Finance**Credits:** 4

International monetary mechanism; balance of payments, international investment, exchange rates, adjustment systems, international liquidity, foreign aid, multinational corporations. Prereq: ECON 611; ECON 645. Writing intensive.

Attributes: Writing Intensive Course**ECON #747 - Multinational Enterprises****Credits:** 4

Internationalization of economies. Growth and implications of multinational corporations at the level of systems. Theories of imperialism, international unity/rivalry; theories of direct investment, exercise of influence and conflict, technology transfer, bargaining with host country; effects on U.S. economy. Prereq: permission. Writing intensive.

Attributes: Writing Intensive Course

ECON 768 - Seminar in Economic Development**Credits:** 4

Advanced reading seminar. Topics include methodologies underlying economic development theory, industrialization and post-import substitution, state capitalist development, stabilization policies, appropriate technologies, the capital goods sector, agricultural modernization schemes, and attempts at transition to socialism.

ECON 774 - Senior Economics Seminar**Credits:** 4

Capstone experience for students enrolled in the Economics B.A. program. Topics and format of the class depends on the interests and expertise of the faculty member and students of the course. The course is organized around a "big" idea and focuses on an important topic that has broad interest and social consequences. Prereq: ECON 605, ECON 611. Writing intensive.

Attributes: Writing Intensive Course**ECON 775 - Applied Research Skills for Economists****Credits:** 4

Capstone course for students enrolled in B.S. in analytical economics. Students conduct economic research by bringing their understanding of economic theory and empirical/analytical skills to investigate contemporary economic problems, issues, and phenomena. Presentations are calculus-based. The topics and course design vary depending on the instructor. Prereq: ECON 606, 611, 726. Writing intensive.

Attributes: Writing Intensive Course**ECON 795 - Internship****Credits:** 1-16

On-the-job skill development through fieldwork in an organization (business, industry, health, public service, etc.). Normally, supervision is provided by a qualified individual in the organization, with frequent consultation by a faculty sponsor. Written report required. Internships may be part or full time, with course credits assigned accordingly. May not be used as a major elective. Cr/F.

ECON 798 - Economic Problems**Credits:** 2 or 4

Special topics; may be repeated. Prereq: permission of adviser and instructor. Writing intensive.

Attributes: Writing Intensive Course**ECON 799 - Honors Thesis****Credits:** 4-8

Supervised research leading to the completion of an honors thesis; required for graduation from the honors program in economics. Writing intensive.

Attributes: Writing Intensive Course

Economics-UNHM (ECN)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

ECN 410 - History of Literary Economics**Credits:** 4

An examination of the contributions of fiction writers to the history of economic thought. Novels and short stories are analyzed in conjunction with studying influential and heterodox schools of economic thought. Fiction writers will vary by semester (e.g., Mark Twain, Edith Wharton, Charlotte Perkins Gilman, Theodore Dreiser, Jack London, Ayn Rand, F. Scott Fitzgerald and Louisa May Alcott). Schools of economic thought examined include critics as well as advocates of free market capitalism. Writing intensive.

Attributes: Humanities(Disc); Inquiry (Discovery); Writing Intensive Course**ECN 411 - Introduction to Macroeconomic Principles****Credits:** 4

Studies how an economy functions. Develops measures and theories of economic performance to study such issues as unemployment, inflation, international trade and finance, and the level of national production. Examines government policies designed to correct for unemployment and inflation with close attention to the use of fiscal and monetary policies in the U.S. No credit for students who have received credit for ECON 401.

Attributes: Social Science (Discovery)**ECN 411W - Introduction to Macroeconomic Principles****Credits:** 4

Studies how an economy functions. Develops measures and theories of economic performance to study such issues as unemployment, inflation, international trade and finance, and the level of national production. Examines government policies designed to correct for unemployment and inflation with close attention to the use of fiscal and monetary policies in the U.S. No credit for students who have received credit for ECON 401. Writing Intensive.

Attributes: Social Science (Discovery); Writing Intensive Course**ECN 412 - Introduction to Microeconomic Principles****Credits:** 4

Studies the behavior and interaction of fundamental decision-making units in an economy, especially consumers and business firms. Applies such economic principles as scarcity, supply and demand, and elasticity to a variety of social issues. Topics include the resource allocation problems of households and business firms, economic theories of social problems (such as crime, divorce, and discrimination), and the economic implications of government policies affecting the environment, the workplace, and industrial organization. No credit for students who have received credit for ECON 402.

Attributes: Social Science (Discovery)**ECN 412W - Introduction to Microeconomic Principles****Credits:** 4

Studies the behavior and interaction of fundamental decision-making units in an economy, especially consumers and business firms. Applies such economic principles as scarcity, supply and demand, and elasticity to a variety of social issues. Topics include the resource allocation problems of households and business firms, economic theories of social problems (such as crime, divorce, and discrimination), and the economic implications of government policies affecting the environment, the workplace, and industrial organization. No credit for students who have received credit for ECON 402. Writing Intensive.

Attributes: Social Science (Discovery); Writing Intensive Course

ECN 505 - Contemporary Economic Issues**Credits: 4**

The course applies microeconomic and macroeconomic principles to analyze current economic problems and issues with attention to developing an evaluating different economic policies for addressing the economic problems that are identified. The course includes a service learning component in which students will work with a community partner (e.g., local business, nonprofit organization or government agency) to identify an economic problem and help design and evaluate policy options to enact a solution to the problem. Topics will vary each semester but will include a cross-section of local, state, national and international economic issues with related readings. Prereq: ECN 411 and ECN 412 or permission of the instructor.

ECN 635 - Money, Banking and Macroeconomic Activity**Credits: 4**

A study of the financial sector of the economy including commercial banks, thrifts, and other depository institutions. Examines the meaning and determinants of the money supply, credit and interest rates. Close attention paid to the role of the Federal Reserve and the economic effects of its monetary policy. Prereq: ECN 411, ECN 412.

ECN 640 - Business Law and Economics**Credits: 4**

A study of the legal environment of business. Emphasis is on using economic analysis to examine laws of property, contract, and tort affecting business. Includes the ethical foundations of law and ethical issues involving business. Specific topics may include commercial free speech, white collar crime and managerial responsibility, product liability, cyberlaw, copyright, trademark and patent law. Prereq: ADM 400, ECN 412, and sophomore standing or permission of the instructor. Writing intensive.

Attributes: Writing Intensive Course

ECN 650 - Economics for Managers**Credits: 4**

Examines how economic principles can be applied to resource allocation problems confronted by managers in a variety of industry settings. Emphasis on both theory and application. Topics include cost analysis, production decisions, and pricing policies of business managers within perfectly competitive, monopolistic, oligopolistic, and monopolistically competitive environments. Prereq: ADM 400, ECN 412 and sophomore standing or permission of instructor.

Education (EDUC)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

EDUC 400 - Careers in Education: Exploring Professional Contexts**Credits: 1**

Designed for students interested in learning about careers in education, this survey course explores professional opportunities in both formal and informal education settings within P-12 teaching and beyond (i.e., research, museum director, counseling, social work, educational software developer, etc.). Faculty from multiple disciplines and local professionals will present seminars and lead discussions about their role in addressing contemporary issues in education. Students will consider pathways that can be taken to pursue professional goals. Cr/F.

EDUC 401 - Current Issues in Education**Credits: 2**

This survey course explores current issues in education through multiple professional lenses. Students will consider the relationship between their career pathways and key issues impacting educational settings including social media, poverty, curriculum, assessment and evaluation. Cr/F.

EDUC 402 - Introduction to Educational Studies: Social Change and Education in Local and Global Contexts**Credits: 4**

This course introduces students in the Dual Major in Educational Studies to the social, cultural, and political factors that influence education outside of conventional school settings. We examine the relationship between education and social change in local and global contexts. Guiding questions include: How does schooling produce certain kinds of citizens? How do grassroots movements use education to resist colonial/colonizing agendas? What role does education play in promoting democracy, and social and economic equality? Prereq: Permission required for non-majors.

EDUC 444B - Be the Change You Want to See: Active Citizenship in a Multicultural World**Credits: 4**

This is a first-year inquiry course intended primarily for students participating in the Common Purposes residential living program. The course offers multidisciplinary content focused on active citizenship in a pluralistic democracy. The primary organizing concept of the course is community; assignments focus on deliberative dialogue, public reasoning, collective action, and social justice. The course is taught as a seminar and includes on-campus and off-campus applied projects.

Attributes: Social Science (Discovery); Inquiry (Discovery)

EDUC 500 - Exploring Teaching**Credits: 4**

For students considering a teaching career. In-school experiences to develop introductory skills in teaching. On-site seminars for analysis and evaluation. Assessment and advising related to teaching as a career. Prerequisite for further work toward teacher licensure. Minimum of 7 hours a week, plus travel time, required. Repeatable up to a maximum of 8 credits. Prereq: permission. Special fee. Cr/F.

EDUC 506 - Literacy Tutoring at the Elementary School Level**Credits: 2**

Supports students volunteering as reading and writing tutors in local elementary schools. Explores student-tutor relationships, student engagement, mentoring, literacy best-practices, and lesson-planning. Includes a weekly tutoring commitment through Seacoast Reads. May be repeated up to 3 times (6 credits).

EDUC #507 - Mentoring Adolescents**Credits: 2**

This seminar is intended for undergraduate men and women who are mentoring local middle-school students on a weekly basis. The mentoring involves minimally tutoring the mentees once a week at their schools. The seminar meets twice a month for two hours. Additionally, one tutoring session a month is reserved for a focus group discussion involving the mentors and their mentees at the school site. May be repeated for a maximum of 12 credits.

EDUC 520 - Education, Poverty, and Development**Credits:** 4

An examination of the human and institutional relationships among education, poverty, and social development. This course will emphasize the ways in which access to universal, effective education is correlated with the incidence of childhood poverty and its reduction in the US and selected countries in the developed and developing world. Interactive, discussion-based classes. Prior coursework in social or political sciences, economics, international affairs, health sciences, or related fields suggested. Not open to freshmen. 4 credits.

Attributes: Social Science (Discovery)**EDUC 525 - Teaching Race****Credits:** 4

This course examines the idea of race from the perspective of science, history, and lived experience to help the student properly evaluate inequalities of treatment (on the basis of race or any other marker) in various sectors of life in the United States. The course aims at helping the student a) perceive what is taught about race and what is communicated in our schools and colleges about the meaning of racial ascription, of color, and whiteness and b) to figure out how the power of educational institutions can best be used to promote equality and racial justice in society.

EDUC 550 - Language and Linguistic Diversity in Schools**Credits:** 4

The course offers a broad examination of language and linguistic diversity, drawing from education, sociolinguistics, anthropology, child development, and related fields. Through the critical examination of the language environments of schools, assumptions of linguistic diversity are examined. Various educational system interventions, presenting successes, challenges, limitations, and controversies are considered. A minimum of 20hrs of fieldwork beyond classroom time is required. Students have the opportunity to identify age group preference for field placement. Prereq: permission.

EDUC 556 - Mentoring Adolescents with Disabilities in the Transition to Work**Credits:** 2

This course introduces undergraduates to a mentoring experience with an adolescent with a disability in a supportive setting. Students develop a beginning understanding of disabilities and the impact those disabilities might have on learning; the development of work related skills; and the importance of natural supports within the work environment. Each mentor/mentee relationship will be individualized based on the needs of the participants. May be repeated to a maximum of 12 credits.

EDUC 625 - Anthropological Thinking on Education**Credits:** 4

Education is about, by, and for human beings. It takes place in a sociocultural context. It involves learning and, in many societies of the world, schooling. Education should, therefore, be understood from the viewpoint of what is known about human beings, i.e., from the viewpoint of anthropology. This course introduces the student to five key ideas in anthropology that help us think about education. The ideas are: Evolution, Culture, Structure, Function, and Relativism. The course is organized that the introduction of each idea is followed by select readings that illustrate how the idea bears on education. It is hoped that the course will provide the student with conceptual framework for analyzing educational policies and practices.

EDUC 694 - Courses in Supervised Teaching**Credits:** 8

Supervised Teaching of Music. Cr/F. Supervised Teaching of Adult and Occupational Education. Cr/F. Supervised Teaching of Mathematics. Cr/F.

EDUC 694A - Supervised Teaching/Music**Credits:** 8

Supervised Teaching of Music. Cr/F.

EDUC 694C - Supervised Teaching/Mathematics**Credits:** 8

Supervised Teaching of Mathematics. Cr/F.

EDUC 694D - Supervised Teaching/Kinesiology**Credits:** 4

Supervised Teaching of Kinesiology. Cr/F.

EDUC 700 - Educational Structure and Change**Credits:** 4

To assume leadership roles, beginning teachers need to develop an informed understanding of how they can operate effectively as decision-makers and agents of change within educational institutions. Such understanding entails knowledge of the politics, history, organization, and function of schools from a variety of viewpoints: historical, sociological, political, and cross-cultural. This course focuses on the structure of public education, on the nature of educational change, and the teacher's role in the change process.

EDUC 701 - Human Development and Learning: Educational Psychology**Credits:** 4

Child development through adolescence, theories of learning (including Piaget, information processing, and Vygotsky), conceptions of intelligence, moral education, research in teaching and teacher effectiveness, cross-cultural variability, gender and sexual orientation, management and discipline, and assessment and grading -- all applied to problems of classroom and individual teaching and learning. Junior and Senior status. Writing intensive.

Attributes: Writing Intensive Course**EDUC 703C - Classroom Management: Creating Positive Learning Environments****Credits:** 4

This course is designed to help prospective and current teachers create and maintain caring, respectful classroom communities in which learners feel safe, valued, cared for, valued, and empowered. The course includes a strong emphasis on developing knowledge about the culture and backgrounds of children and families in order to establish positive interactions within the classroom community. The course addresses the challenges and opportunities in creating community in the increasingly diverse student populations in US schools. We will consider what it means to be culturally responsive in order to establish a classroom in which all students can succeed academically and socially.

EDUC 703D - Social Studies Methods for Middle and High School**Teachers****Credits: 4**

The social studies theory and methods course begins with an overview of the varied and, at times, competing goals and visions of the profession. Students examine these goals and their underlying rationales, and then develop their own philosophy of social studies teaching and learning. Students also examine state and national scope and sequence frameworks for the social studies, as well as the language arts Common Core standards. A variety of classroom strategies and methods are explored during the remainder of the course, including unit design, leading class discussions, how to approach controversial issues, teaching concepts and generalizations, increasing student engagement and empathy with the past, incorporating technology and the arts, management and discipline, and formats for assessment and grading.

EDUC 703F - Teaching Elementary School Science**Credits: 4**

This course is designed to increase pre-service teachers' pedagogical content knowledge and enthusiasm with respect to teaching science at the elementary level. Throughout this course, students will familiarize themselves with reform-based approaches to elementary science instruction through inquiry, readings, and class discussions. Science will be explored not only as an important element of elementary education, but also as a means by which to support a diverse class of elementary students in literacy and mathematics learning. 703F has a special fee when taught in Manchester. Pre-req: EDUC 500.

EDUC 703M - Teaching Elementary Social Studies**Credits: 4**

Social Studies Methods explores practical teaching models, techniques of implementation, and relationships to curricula in elementary classroom instruction. The New Hampshire Social Studies Frameworks and Common Core Curriculum Standards for instruction are identified and implemented in creating lesson plans for a mini unit. Pre or Co-req: EDUC 500.

EDUC 705 - Contemporary Educational Perspectives**Credits: 4**

Students formulate, develop, and evaluate their own educational principles, standards, and priorities. Writing intensive.

Attributes: Writing Intensive Course

EDUC 706 - Introduction to Reading in the Elementary School**Credits: 4**

Methods in reading and writing instruction; current procedures and materials; diagnostic techniques. Course satisfies reading/language arts requirement for prospective elementary teachers in the five-year teacher education program. Special fee.

EDUC 707 - Teaching Reading through the Content Areas**Credits: 2**

Approaches and methods for teaching reading through content materials; coursework includes practical applications through development of instructional strategies and materials. Required for candidates seeking certification in art, biology, chemistry, earth science, general science, physical science, physics, or social science.

EDUC 710E - Workshop in Adult and Occupational Education**Credits: 1-4**

Modularized instruction of in-service education. Focus varies with the needs of the student. May be repeated for up to 8 credits.

EDUC 710F - Investigations**Credits: 1-4**

Topics may include career education, secondary education, post-secondary education, adult education, extension education, exemplary education, cooperative education, disadvantaged and handicapped education, international agriculture, or teaching experience. Student-selected in one of the areas listed. Elective after consultation with instructor. Hours arranged. May be repeated.

EDUC 710H - Field Experience**Credits: 2-16**

Work with an agency, institution, or organization to gain technical and/or professional competence not otherwise available. Student plans experience with departmental adviser. Credit approval subject to recommendation of faculty members and performance of student. Prereq: permission.

EDUC 712 - Teaching Multilingual Learners**Credits: 4**

This course is for people interested in teaching English to speakers of other languages (ESOL) in schools and communities in NH and the U.S. Topics include: theories of first and second language acquisition, policies and laws affecting language minority students, strategies for teaching academic content in the mainstream classroom, creating classroom/school cultures that invite all students into learning, and the role of advocacy and professional collaboration in ESOL.

EDUC 717 - Growing up Male in America**Credits: 4**

An integrative view of growing up male in the American culture from birth through adulthood. Analysis of major perspectives on male development and the implications in parenting with specific emphasis on male education. Participants are expected to develop awareness of their own development as a male or alongside males, using current male development perspectives as a guide. They also create an awareness of how this will affect their behavior toward boys in their classrooms.

EDUC 718 - Critical Social Justice in and Beyond Education**Credits: 4**

Students will become familiar with key concepts and principles of critical theory, critical pedagogy, and social justice education so that they may use this body of work to inform their teaching, leadership, and scholarship. We will examine the role of a) schools in providing equity of educational access and outcomes, b) teacher agency to change unjust conditions, and c) micro experiences within schools and the macro layer of context (i.e., history, politics, economics, culture).

EDUC 720 - Integrating Technology into Classroom**Credits: 4**

Participants gain practical experience that takes specific advantage of technology to enhance and extend student learning. State academic standards and national technology standards are used to make decisions about curriculum content and to plan technology-based activities. Participants use electronic management tools such as iMovie, Powerpoint, podcast, webcast, Comic Life, Audacity, and Garage Band are featured in this hands-on course.

EDUC 733 - Teaching Writing in the 21st Century**Credits: 4**

An examination of the challenges to teaching writing in the present age of high stakes testing and audit culture. Course questions include 'best practices' for teaching writing in a complex society that values a range of expressive forms, including digital technologies, social media, film and video. Special emphasis on multi-modal literacies in K-12 classrooms. Exploration of language diversity, the relationship between reading, writing, and literacy development in content-specific areas, student centered assessments, and integrating the arts into the reading and writing workshop.

EDUC 734 - Children's Literature**Credits: 4**

Interpretive and critical study of literature for children in preschool and elementary settings. Methods of using literature with children.

EDUC 741 - Exploring Mathematics with Young Children**Credits: 4**

A laboratory course offering those who teach young children mathematics, and who are interested in children's discovery learning and creative thinking, offers a chance to experience exploratory activities with concrete materials, as well as mathematical investigations, on an adult level, that develop the ability to provide children a mathematically rich environment, to ask problem-posing questions, and to establish a rationale for doing so. Prereq: MATH 601.

EDUC 745 - Math with Technology in Early Education**Credits: 2**

The primary goal of this course is that students gain knowledge of learning standards and teaching methods for the instruction of mathematics in early education settings with infants through 3rd grade. In addition, participants gain experience in applying their newfound knowledge in the areas of mathematics with technology through a combination of teaching and digital experiences. On-line course; no campus visits required. Please note the minimal technical requirements for a UNH e-course.

EDUC 750 - Introduction to Exceptionality**Credits: 4**

A life span perspective of the social, psychological, and physical characteristics of individuals with exceptionalities including intellectual, sensory, motor, health, and communication impairments. Includes implications for educational and human service delivery.

EDUC 751A - Educating Exceptional Learners: Elementary**Credits: 4**

Foundations of special education and an introduction to a variety of service delivery models with an emphasis on educating all learners in heterogeneous classrooms. Instructional strategies and supports for all students, particularly those with mild and moderate disabilities, will be the primary focus.

EDUC 751B - Educating Exceptional Learners: Secondary**Credits: 4**

Foundations of special education and an introduction to a variety of service delivery models with an emphasis on educating all learners in heterogeneous classrooms. Instructional strategies and supports for all students, particularly those with mild and moderate disabilities, is the primary focus. Preparation for students' transitions to post-secondary life is included.

EDUC 751C - Educating Exceptional Learners: Related Services**Credits: 4**

An overview of special education and related services in an educational setting. Focus on support services provided to general education and special education teachers, including laws relating to special populations, how related services interact with classroom and special educators, IEPs, and other topics that impact services provided to students with special needs.

EDUC 752 - Contemporary Issues in Learning Disabilities**Credits: 4**

Critical analysis of current and historical conceptions of learning disability in the areas of definition, supporting theories, assessment practice, and teaching methodologies. Focus on contemporary issues in the field that relate to working with students labeled as learning disabled at both elementary and secondary levels.

EDUC 753 - Contemporary Issues in Behavioral Disabilities**Credits: 4**

Nature and scope of emotional and behavioral disabilities in students for elementary through secondary levels. Theoretical perspectives, characteristics, assessment and educational intervention strategies are included.

EDUC 754 - Contemporary Issues in Developmental Disabilities**Credits: 4**

The causal factors, physical and psychological characteristics, and educational and therapeutic implications of mental retardation, cerebral palsy, epilepsy, autism, and related conditions. A life span perspective is included, with major emphasis on the school-age population.

EDUC 756 - Supporting Families of Individuals with Exceptionalities**Credits: 4**

An introduction to family system theory and the implications for families having members with exceptionalities. Issues addressed include diagnosis and prognosis, coping strategies, communication and team collaboration, cross-cultural competence, and agency and school delivery of services. Emphasis is on proactive collaboration with family members.

EDUC 757 - Contemporary Issues in Autism Spectrum Disorders**Credits: 4**

The goal of this course is to enhance students' understanding of contemporary issues related to educating students with autism spectrum disorders (ASD). The course is grounded in a theoretical foundation that values the perspectives of individuals with ASD in academic, research, policy, and clinical endeavors. Learning outcomes focus on strategies for identifying opportunities for learning, communication, literacy, and social relationships in a variety of inclusive environments.

EDUC 760 - Introduction to Young Children with Special Needs**Credits: 4**

Needs of children (birth to eight years) with developmental delays or who are at risk for disabilities. Strengths and special needs of such children; causes, identification, and treatment; current legislation; parent and family concerns; program models.

EDUC 761 - Inclusive Curriculum for Young Children with Special Needs**Credits: 4**

Classroom applications of constructivist theory. Curriculum planning and implementation; overview of research and theory related to teaching and learning of specific content areas, with emphasis on integrated approach to early childhood curriculum. Stresses the reciprocal nature of student-teacher relationship. Prereq: permission.

EDUC 762 - Curriculum for Young Children with Special Needs: Evaluation and Program Design**Credits:** 4

Overview of evaluation and intervention issues relevant to early childhood special education, focusing on ages three through eight. Norm-referenced and criterion-referenced assessment tools. Judgment-based evaluation and observation skills. Translation of evaluation information into goals and objectives for individual education programs. Developing appropriate programs in inclusive settings.

EDUC 767 - Students, Teachers, and the Law**Credits:** 4

Our public schools play a vital role in our society. What shall be taught and who shall teach our children are perennial questions. This course explores how the law impacts the educational lives of students and teachers, including issues of church-state relations, free speech, dress codes, and search and seizure. (Also offered as JUST 767.)

EDUC #776 - Reading for Learners with Special Needs**Credits:** 4

Techniques and procedures for teaching reading to learners with special needs. Emphasis on providing reading instruction in the least restrictive alternative.

EDUC #780 - Belize/New Hampshire Teacher Program**Credits:** 4

International course involving teams of teachers from Belize and New England. The program offers teachers in both countries the opportunity to work collaboratively on developing effective teaching practices, develop an understanding of each other's cultural and educational perspectives, extend the experience to other teachers and students upon return. Special fee.

Co-requisite: INCO 589**EDUC #784 - Educators as Researchers****Credits:** 4

This course addresses the twofold aim of (a) preparing educational practitioners to conduct systematic inquiry in their classrooms and/or schools and (b) introducing strategies and criteria for understanding, evaluating, and applying educational research.

EDUC #785 - Educational Assessment**Credits:** 4

Theory and practice of educational evaluation; uses of test results in classroom teaching and student counseling; introductory statistical techniques.

EDUC 791 - Methods of Teaching Secondary Science**Credits:** 4

This course is designed to provide experiences and resources that will support individuals who are planning to teach middle or high school science. Through interactive activities, readings, and class discussions, the class explores key elements and challenges of secondary science teaching and provide a foundation for continued growth and reflection throughout the students' teaching careers. Some of the main topics discussed in this course are national and state science standards, reform-based approaches to instruction, the use of technology in science teaching, laboratory safety, curriculum evaluation, and assessment.

EDUC 795 - Independent Study**Credits:** 2 or 4

Juniors and seniors only, with approval by appropriate faculty member. Neither course may be repeated.

EDUC 796 - Independent Study**Credits:** 2 or 4

Juniors and seniors only, with approval by appropriate faculty member. Neither course may be repeated.

EDUC 797 - Special Topics in Education**Credits:** 1-4

An experimental course for the purpose of introducing a new course or teaching a special topics for a semester in an area of specialization in Education.

Electrical & Computer Engineering (ECE)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

ECE 401 - Perspectives in Electrical and Computer Engineering**Credits:** 4

An introductory course for electrical and computer engineering majors that introduces incoming students to the fundamental concepts of analysis and design. Concepts are presented through an examination of real-world problems. Students are introduced to electrical and computer engineering problem solving and design through active learning techniques in lecture and in a laboratory setting. Provides a context for the electrical engineering and computer engineering curriculum and introduces the profession and activities of electrical and computer engineering. Lab.

Attributes: Inquiry (Discovery)**ECE 444 - Bionics: Technology from Nature****Credits:** 4

Bionics is the study of living systems with the intention of applying their principles to the design of useful technology for mankind. Students learn strategies to discover bio-inspired technology. The student investigates the fields of bio-inspired cyborgs, defense and attack mechanisms in biology leading to military applications including non-lethal weapons, bio-inspired sensors including brain-computer interfaces, bio-inspired robots, and animal and plants that generate energy for technology. Writing Intensive. Lab.

Attributes: Biological Science(Discovery); Discovery Lab Course; Inquiry (Discovery); Writing Intensive Course**ECE 537 - Introduction to Electrical Engineering****Credits:** 4

Fundamentals of electrical engineering. Topics are circuit elements; signal waveforms; circuit laws and theorems; transfer functions; free, forced, and steady state responses; power calculations; amplifiers; and magnetic circuits. Non-ECE majors only. Prereq: PHYS 408. Pre- or Coreq: MATH 527. Lab.

ECE 541 - Electric Circuits**Credits:** 4

Linear passive circuits beginning with resistive circuits, power and energy relations, mesh and node analysis. Transient and steady-state behavior of simple circuits containing energy storage elements (capacitors, inductors). Introduction to linear active circuits using dependent source models and ideal op amps. Introduction to transfer function and frequency response concepts. For ECE majors only. Pre- or Coreq: MATH 426; PHYS 408. Lab.

ECE 543 - Introduction to Digital Systems**Credits:** 4

Fundamental analysis and design principles. Number systems, codes, Boolean algebra, and combinational and sequential digital circuits. Lab: student-built systems using modern integrated circuit technology and an introductory design session on a CAD workstation. Lab.

ECE 548 - Electronic Design I**Credits:** 4

Introduction to electronic design for analog signal processing. Linear op amp circuits for amplification and filtering. Use of Laplace techniques for filter specification; simple passive and op amp filter realizations. Discrete active devices (FET and BJT): operating characteristics, biasing considerations, canonical amplifier configurations including differential amplifiers. Prereq: ECE 541. Lab.

ECE 562 - Computer Organization**Credits:** 4

Basic computer structure, including arithmetic, memory, control, and input/output units; the trade-offs between hardware, instruction sets, speed, and cost. Laboratory experiments involving machine language programming and I/O interfacing using microcomputers. Prereq: CS 410 or CS 415; ECE 543. Lab.

ECE 583 - Designing with Programmable Logic**Credits:** 4

Design methodologies for implementing digital systems in programmable logic. Covers topics related to the design, implementation, and testing of programmable logic devices. Students are introduced to the Very-High-Speed Hardware Description Language (VHDL) entry language and simulation procedures, along with common logic synthesis tools. Programmable logic families, device architectures, and testing procedures are covered in detail. Laboratory exercises lead the student through the complete programmable logic design cycle. Each student is required to prototype a digital system starting with VHDL entry, functional and timing simulations, logic synthesis, device programming, logic probing, and systems verification. Prereq: ECE 562. Lab.

ECE 602 - Engineering Analysis**Credits:** 4

Analyze and solve engineering problems using linear algebra and integral and differential calculus of functions of several variables. Boundary-value problems in mechanics, fluid dynamics, and electrostatics. Examination of electrostatics, magnetostatics, and fluid and wave mechanics using vector differential and integral calculus. Introduction of approximation and error analysis methods as fundamental engineering tools. Prereq: MATH 527.

ECE 603 - Electromagnetic Fields and Waves I**Credits:** 4

Maxwell's equations in integral and differential form with applications to static and dynamic fields. Uniform plane waves in free space and material media. Boundary conditions; simple transmission line theory; parallel plate and rectangular waveguides; simple radiating systems. Prereq: PHYS 408; ECE 602.

ECE 617 - Junior Laboratory I**Credits:** 4

Application of laboratory instrumentation to the investigation of active and passive circuit characteristics; introduction to computer-aided design, analysis, and testing; development of report writing and oral presentation skills. Pre- or Coreq: ECE 633; ECE 651. Writing intensive.

Attributes: Writing Intensive Course**ECE 618 - Junior Laboratory II****Credits:** 4

Laboratory exercises in the design and analysis of active circuits, techniques of signal processing, and the properties of distributed circuits. Continued development of report writing and oral presentation skills. Prereq: ECE 617. Pre- or Coreq: ECE 603. Writing intensive.

Attributes: Writing Intensive Course**ECE 633 - Signals and Systems I****Credits:** 3

Mathematical characterization of continuous-time systems using time- and frequency-domain concepts. Properties of linear systems described by ordinary differential equations. Fourier analysis of signals and system frequency response functions. Applications to communication and control systems. Introduction to system simulation using computer methods. Prereq: MATH 527.

ECE 633H - Signals and Systems I/Honors**Credits:** 4

Mathematical characterization of continuous-time systems using time- and frequency-domain concepts. Properties of linear systems described by ordinary differential equations. Fourier analysis of signals and system frequency response functions. Applications to communication and control systems. Introduction to system simulation using computer methods. Honors students will attend an additional one-hour meeting each week. Prereq: MATH 527, permission required.

ECE 634 - Signals and Systems II**Credits:** 3

Transient response analysis of linear systems using Laplace transforms, application to feedback control systems. Introduction to discrete-time linear systems; system response determination using Z-transform; elementary design of digital filters and controllers. State variable formulation of dynamical systems. Prereq: ECE 633.

ECE 647 - Random Processes and Signals in Engineering**Credits:** 3

Emphasis on applied engineering concepts such as component failure, quality control, noise propagation. Topics include random variables, probability distributions, mean and variance, conditional probability, correlation, power spectral density. Prereq: MATH 426; ECE 602.

ECE 647H - Random Processes and Signals/Honors**Credits:** 4

Emphasis on applied engineering concepts such as component failure, quality control, noise propagation. Topics include random variables, probability distributions, mean and variance, conditional probability, correlation, power spectral density. Honors students attend an additional one-hour meeting each week. Prereq: MATH 426; ECE 602, permission required.

ECE 649 - Embedded Microcomputer Based Design**Credits:** 4

An in-depth treatment of the design of embedded microcomputer systems. Topics include advanced architectures for embedded processors, hardware and software aspects of interfacing, handling interrupts, advanced programming including debugging of real time systems, embedded application implementations. Laboratory studies are required to reinforce theoretical and applied concepts in an actual embedded architecture. Prereq: ECE 562. Lab.

ECE 651 - Electronic Design II**Credits: 4**

Design of fundamental circuit blocks in electronic systems. Multistage amplifiers; feedback systems and stability; power amplifiers. Nonlinear electronic circuits: oscillators, function generators; clippers and peak detectors; A/D and D/A conversion. Switching mode and logic circuits. Prereq: ECE 548.

ECE 681 - Teaching Experience**Credits: 1**

Credit for assisting in the instruction of undergraduate laboratories. Available on a limited basis to students selected by the department chairperson. May be repeated for credit up to a total of 4 credits.

ECE 694 - Professional Principles of Engineering**Credits: 1**

Provides background for the capstone design experience (ECE 791/ ECE 792). Topics include creativity, design methodology, specification development, project management, ethics, safety, reliability and preparation for oral and written reports. Includes initial capstone project selection. Prereq: ECE junior standing. Cr/F.

ECE 704 - Electromagnetic Fields and Waves II**Credits: 4**

Provides an overview of electromagnetics modeling by covering commonly-used numerical solutions to electromagnetics problems. Computational approaches to be covered include the Method of Moments (MoM) for both static and dynamic fields, iterative solutions to Laplace's equations. Finite Element Methods, high-frequency solutions, and the Finite-Difference, Time-Domain techniques (FDTD). Prereq: ECE 603.

ECE 711 - Digital Systems**Credits: 4**

Principles, procedures and tools related to the design, implementation and testing of microprocessor-based embedded systems. Students prototype a complete embedded system using CAD tools, application specific integrated circuits, printed circuit board technology, and modern diagnostic/testing procedures and tools. Projects are designed to introduce diverse digital technologies. Lab.

ECE 714 - Introduction to Digital Signal Processing**Credits: 4**

Introduction to digital signal processing theory and practice, including coverage of discrete time signals and systems, frequency domain transforms and practical spectral analysis, digital filter terminology and design, and sampling and reconstruction of continuous time signals. Laboratory component providing an introduction to DSP design tools and real-time algorithm implementation. Prereq: ECE 633. Lab.

ECE 715 - Introduction to VLSI**Credits: 4**

Principles of VLSI (Very Large Scale Integration) systems at the physical level. CMOS circuit and logic design, CAD tools, CMOS system case studies. Students exercise the whole development cycle of a VLSI chip: design and layout performed during semester I. The chips are fabricated off campus and returned during semester II, when they are tested by students. An IA (continuous grading) grade is given at the end of semester I. Lab.

ECE 717 - Introduction to Digital Image Processing**Credits: 4**

Digital image representation; elements of digital processing systems; multidimensional sampling and quantization; image perception by humans, image transformations including the Fourier, the Walsh, and the Hough Transforms; image enhancement techniques including image smoothing, sharpening, histogram equalization, and pseudo color processing; image restoration fundamentals; image compression techniques, image segmentation and use of descriptors for image representation and classification. Prereq: ECE 633; ECE 647. Lab.

ECE 724 - Ubiquitous Computing Fundamentals**Credits: 4**

Ubiquitous computing, or ubicomp, explores embedded, interconnected computing devices that are part of everyday objects and activities. This course takes an interdisciplinary look at the foundations of ubiquitous computing. Topics include software and hardware for ubicomp, human-computer interaction in ubicomp, and issues related to privacy and security in ubicomp. Students undertake a research project inspired by the material. Registration by permission only.

ECE #734 - Network Data Communications**Credits: 4**

Introduces basic concepts related to data transmission equipment and physical interfaces, data communication protocols, and the Open System Interconnection (OSI) Reference Model. Includes physical layer hardware, signaling schemes, protocol packets, computer interfaces, error detection, signal integrity, and data transmission protocols relative to both wired and wireless networks. Introduces both logical and wide-area networks, and how a networking system is constructed, tested, and managed. Network design and testing exercises. Prereq: ECE 633; ECE 649. Lab. Electrical Engineering majors only.

ECE 757 - Fundamentals of Communication Systems**Credits: 4**

Spectra of deterministic and random signals; baseband and bandpass digital and analog signaling techniques; transmitter and receiver architectures; performance analysis of digital and analog signaling in additive noise channels; carrier and symbol timing synchronization methods. Prereq: ECE 633; ECE 647. Lab.

ECE 758 - Communication System Design**Credits: 4**

System- and circuit-level design and implementation of communication hardware including: mixers, RF amplifiers, filters, oscillators and frequency synthesizers, modulators and detectors, carrier and symbol timing recovery subsystems. Issues in software-defined radio transmitter and receiver implementation. Communication link engineering including antenna selection and channel impairment effects. Prereq: ECE 651; ECE 757. Lab.

ECE #760 - Introduction to Fiber Optics**Credits: 4**

Basic physical and geometric optics; solution of Maxwell's equations for slab waveguides and cylindrical waveguides, of both step index and graded index profiles; modes of propagation and cutoff; polarization effects; ground and phase velocity; ray analysis; losses; fabrication; sources; detectors; couplers; splicing; cabling; applications; system design. Prereq: ECE 603. Lab.

ECE 772 - Control Systems**Credits:** 4

Development of advanced control system design concepts such as Nyquist analysis; lead-lag compensation; state feedback; parameter sensitivity; controllability; observability; introduction to non-linear and modern control. Includes interactive computer-aided design and real-time digital control. Prereq: ECE 634. Lab. (Also offered as ME 772.)

ECE 775 - Applications of Integrated Circuits**Credits:** 4

Design and construction of linear and nonlinear electronic circuits using existing integrated circuits. Limitations and use of operational amplifiers. Laboratory course in practical applications of non-digital integrated circuit devices. Prereq: ECE 651. Lab.

ECE #777 - Collaborative Engineering**Credits:** 4

Study of processes in which engineers from diverse disciplines cooperate to specify, design, manufacture, test, market, and maintain a product. Classes are organized in both technical and nontechnical flexible modules. Technical topics are advanced and relevant to project being developed, such as related research, technology, design methodology, and CAD tools. Nontechnical topics include ISO 9000 quality system, engineering management, budget considerations, building, communication and leadership skills, and concurrent engineering principles. The course utilizes collaborative engineering by team development of an engineering project, often a research oriented proof-of-concept prototype. Prereq: permission. Lab. Also listed as TECH 750.

ECE 784 - Biomedical Instrumentation**Credits:** 4

Principles of physiological and biological instrumentation design including transducers, signal conditioning, recording equipment, and patient safety. Laboratory includes the design and use of instrumentation for monitoring of electrocardiogram, electromyogram, electroencephalogram, pulse, and temperature. Current research topics, such as biotelemetry, ultrasonic diagnosis, and computer applications. Prereq: ECE 651. Lab.

ECE 791 - Senior Project I**Credits:** 2

First semester of the capstone design experience. Students develop project plans, and prepare and present written and oral project proposals. The project plans must include aspects of design, implementation and evaluation. At the end of the semester, students prepare a written progress report. Prereq: ECE 694; ECE senior standing. Writing intensive.

Attributes: Writing Intensive Course**ECE 791H - Senior Honors Project I****Credits:** 4

First semester of the capstone honors senior thesis research. Students develop research plans, prepare and present written and oral research proposals. The research plans must include aspects of design, implementation and evaluation, similar to ECE 791. However, honors thesis research must also include independent research beyond the normal scope of ECE 791. At the end of the semester students prepare a written progress report. Prereq: ECE 694; ECE senior standing, permission required. Writing intensive.

Attributes: Writing Intensive Course**ECE 792 - Senior Project II****Credits:** 2

This course requires the completion of the capstone design experience begun in ECE 791. At the end of the semester students prepare written final project reports, and present their results in a research poster session. Prereq: ECE 791. Writing intensive.

Attributes: Writing Intensive Course**ECE 792H - Senior Honors Project II****Credits:** 4

This course requires the completion of the capstone honors thesis research begun in ECE 791H. At the end of the semester students prepare honors theses, and present their research results in a research poster session. ECE 791H/792H fulfills the requirement of one professional elective. Prereq: ECE 791H, permission required. Writing intensive.

Attributes: Writing Intensive Course**ECE 795 - Electrical and Computer Engineering Projects****Credits:** 1-4

Laboratory course. Student undertakes a project of mutual interest with an ECE faculty advisor. A written final report must be filed with the ECE Department. Prereq: permission.

ECE 796 - Special Topics**Credits:** 1-4

New or specialized courses and/or independent study. Prereq: permission. 1 to 4 credits some sections may use credit/fail grading.

Engineering Technology (ET)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

ET 401 - Introduction to 3D Printing**Credits:** 4

This project-based course introduces current methods in the design and fabrication of #D models. Students will apply and integrate techniques from mathematics, engineering, and computing design #D models and then manufacture them by the use of 3D printers. Credit cannot be earned by students who have completed UMST 599 SpcTop/Intro to 3D Printing. Special fee.

Attributes: Environment,TechSociety(Disc)**ET #601 - Data Structures and Data Bases****Credits:** 4

A brief review of fundamental container classes; stacks, queues and link lists followed by more advanced data structures and concepts using search algorithms, iterators, and efficiency indicators. The second part of the course will include the development and use of relational databases using a commercial database engine. Java console applications and minimal Graphic User Interface applications will be used throughout the course to develop and test concepts.

ET 625 - Technical Communications**Credits:** 4

Designed to improve students' capabilities to prepare and present technical information in written and oral form and through electronic means. ET majors should take this course early in their program of study so that proficiencies developed can be utilized in later courses. (Also listed as ENGL 502.) Writing intensive.

Attributes: Writing Intensive Course

ET 630 - Analytical Methods in Engineering Technology**Credits: 4**

Review of college-level mathematics including differential and integral calculus with applications and advanced topics, e.g., Fourier analysis, Laplace transform technique, and probability and statistics. Prereq: engineering technology majors only.

ET 635 - Fluid Technology and Heat Transfer**Credits: 4**

Fundamental principles of fluid technology and basic principles of heat transfer, with applications in solving practical problems, and how these concepts are used in the HVAC area. Prereq: Thermodynamics; Mechanical Engineering Tech majors.

ET #639 - Heating, Ventilation and Air Conditioning I**Credits: 4**

First in a two course sequence designed to familiarize the student with the design and operation of fluid thermal systems with specific applications in the heating, ventilating, and air conditioning of occupied spaces and some reference to industrial process control. Prereq: thermodynamics, calculus, or permission. Lab. Special fee.

ET 640 - Heating, Ventilation and Air Conditioning II**Credits: 4**

Second in a two course series designed to acquaint the student with the fundamentals of fluid thermal system design with specific topics in solar loads on buildings, air conditioning system requirements, pump and fan selection, piping and duct system design, and an introduction to controls. Prereq: ET #639 or permission. Lab. Special fee.

ET 641 - Production Systems**Credits: 4**

Market forecasting; waiting line theory; manufacturing inventories and their control; production scheduling; quality control. Prereq: differential and integral calculus.

ET 644 - Mechanical Engineering Technology Concepts in Analysis and Design**Credits: 4**

Kinematics, kinetics, work and energy, fluids, heat transfer; application of these concepts to problems in mechanical design. Prereq: strength of materials and dynamics and ET 637.

ET #647 - Advanced Perspectives on Programming**Credits: 4**

Several programming languages will be selected for study and analysis. Students will gain knowledge regarding the languages studied and conduct analysis related to comparisons and divergence in capabilities. Prereq: intermediate programming skills in three or more programming languages. Major suggested languages of interest are: Java, C++, Visual Basic, Visual C++ Windows, Visual Basic.Net and C# or permission.

ET #655 - Engineering Tech Seminar Series**Credits: 1**

Five talks will be given that introduce the ET student to the softer issues of technology. Talks will be given in the areas of Ethics, Diversity, Lifelong Learning, Functioning in technical teams, and the importance of timeliness, scheduling and product improvement. For the most part talks are given by outside industrial personnel dealing in these specific areas. Students are required to write a short paper on three of the five topic areas. Class discussion of each talk takes place during regular class time. No prerequisites.

ET 671 - Digital Systems**Credits: 4**

Digital systems design and application using TTL and CMOS devices, design of systems, and interfacing. Digital design project required. Prereq: introductory digital design. Special fee. Lab.

ET 674 - Control Systems and Components**Credits: 4**

Topics include linear systems analysis, the Laplace transform and its properties, controllers, root locus technique, transient response analysis, first- and second-order systems, error analysis, and control system design. Prereq: differential and integral calculus. Lab.

ET 675 - Electrical Technology**Credits: 4**

Electrical circuits: DC and AC network analysis, power factors, transformers, power supplies. Electronic circuits—diodes, transistors and operational amplifiers. Digital circuits and introduction to computer-aided engineering. Prereq: differential and integral calculus. Lab.

ET 677 - Analog Systems**Credits: 4**

Operational amplifiers. Transducers and measurement systems. Frequency response. Grounding and shielding. Signal and power interfacing techniques. Design project. Prereq: intro. analog design. Special fee. Lab.

ET 680 - Communications and Fields**Credits: 4**

Topics include Fourier series analysis; the Fourier transform and its properties; convolution; correlation including PN sequences; modulation theory; encoding and decoding of digital data (NRZ-M, NRZ-S, RZ, Biphase-L, and Manchester); antennas and antenna pattern; Radar Range Equation; and an introduction to information theory. Prereq: differential and integral calculus. Lab.

ET 695 - Independent Study**Credits: 1-4**

Individual reading, writing, or laboratory work carried out under the tutelage of a faculty member. Prereq: approval of the adviser. May be repeated up to a maximum of 4 credits.

ET 696 - Topics in Mechanical Engineering**Credits: 4**

New or specialized courses not covered in regular course offerings. Prereq: permission. May be repeated to a maximum of 4 credits.

ET 697 - Topics in Electrical Engineering Technology**Credits: 4**

New or specialized courses not covered in regular course offerings. Prereq: permission. May be repeated for a maximum of 4 credits.

ET 706 - Internship**Credits: 1-4**

On-the-job skill development through fieldwork in industry. Normally, supervision is provided by a qualified individual in the organization with consultation by a faculty sponsor. Written report required. Internships may be part or full time, with course credits assigned accordingly. May be repeated to a maximum of 4 credits. Credit/Fail.

ET 707 - Object Oriented Design and Documentation**Credits:** 4

Current design techniques and strategies, including State Transition Diagrams (STD) and United Modeling Language (UML), provide the core of the course. Case studies of large programming projects will be developed. Group programming projects will be completed based upon case studies. Prereq: intermediate programming skills in one or more of the following OOP language: Java, C++, Visual C++ Windows, Visual Basic.Net and C# or by permission.

ET #717 - Network Security**Credits:** 4

The technical, operational, and managerial issues of computer systems and network security in an operational environment. Addresses the threats to computer security including schemes for breaking security, and techniques for detecting and preventing security violations. Emphasis on instituting safeguards, examining different types of security systems, and applying the appropriate level of security for the perceived risk. Prereq: Java programming.

ET #727 - CT Software Development Project**Credits:** 4

This course requires the development of a real world project that responds to an engineering focused organizational need. The project is undertaken by a team of students. An iterative approach is used to incrementally address the project requirements while constructing a prototype of the software engineering solution to the original problem. Electrical Engineering Tech and EET: Computer Technology majors only.

ET 733 - Business Organization and Law**Credits:** 4

Corporations; proprietorships; product liability; contracts; federal agencies; commercial paper; conditions of employment; business ethics; bankruptcy; U.C.C. Special fee. Writing intensive.

Attributes: Writing Intensive Course**ET 734 - Economics of Business Activities****Credits:** 4

Elementary financial accounting; compound interest and time value of money; sources of capital; cost estimating; depreciation; risk and insurance; personal finance. Prereq: differential and integral calculus. Special fee.

ET 747 - User Interface Design**Credits:** 4

This course familiarizes students with Human Computer Interaction and the significant role it plays in product design and development. The principles of HCI, examples of good and bad applications, and factors that determine a design's effectiveness are covered. Stages of the product development life cycle are discussed to understand the progression of a project from conception to delivery and the impact it has on HCI. (Also listed as COMP 640.) Electrical Engineering Technology majors only.

ET 751 - Mechanical Engineering Technology Project**Credits:** 4 or 8

Students are required to find solutions to actual technological problems in design, fabrication, and testing as posed by industry. Students define the problem, prepare a budget, and work with the client company to research, design, build, and test the software and/or hardware needed. Prereq: senior standing in E.T. A year-long course: 4 credits per semester; an IA grade (continuous course) given at the end of first semester. Withdrawal from course results in loss of credit.

ET 781 - Introduction to Automation Engineering**Credits:** 4

Students are introduced to the topics needed to develop a good understanding of the basic principles of Automation Engineering. This introductory course covers a wide variety of topics such as performance of sensors, actuators, motors and drives, PLC's and HMI, environmental controls, robots, machine vision systems, and controls and system integration. Prereq: ET 674 Control Systems and Components. Open to Electrical Engineering Technology, and Mechanical Engineering Technology majors only.

ET 788 - Introduction to Digital Signal Processing**Credits:** 4

This course will deal with the topics of spectral representation of periodic and non-periodic analog signals followed by discrete sampling and aliasing and how it relates to Nyquist sampling theorem. The z-transform will be introduced as the required mathematical tool along with an introduction to MATLAB and its associated DSP tool box. Spectral analysis of digital signal will be accomplished using these tools. Convolution and digital filtering will also be covered. Lab. Prereq: ET 680 Communications and Fields or equivalent.

ET #790 - Microcomputer Technology**Credits:** 4

Microcomputer systems design, including assembly language, interfacing, processor timing and loading, and inter-processor communications via local area networks. Hardware, software, and architecture of both Intel 80X86 and Motorola 68XX0 microprocessors. Microcomputer applications with emphasis on lab work using Motorola HCII microcontroller. Prereq: ET 671. Special fee. Lab.

ET 791 - Electrical Engineering Technology Project**Credits:** 4 or 8

Students are required to find solutions to actual technological problems in design, fabrication, and testing, as posed by industry. Students define the problem, prepare a budget, and work with the client company to research, design, build, and test the software and/or hardware needed. Prereq: senior standing in E.T. Special fee. A year-long course: an IA grade (continuous course) given at end of first semester. Withdrawal from course results in loss of credit.

English (ENGL)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

ENGL 400 - English for International Students**Credits:** 1-4

Designed for international students to provide additional support in course work. Students continue to develop skills in listening comprehension, speaking, reading, and writing in English. This is a variable credit course and may be repeated up to a total of 4 credits. No letter grades. Course graded. Prereq: permission from ESL Institute. Cr/F. Writing intensive.

Attributes: Writing Intensive Course

ENGL 400A - Academic English for ESL**Credits:** 4

Preparation for the reading, writing, and speaking assignments that students encounter in academic courses. Students complete reading, writing, and speaking assignments every week, with close guidance from the instructor. In addition to the time they spend in class, students also have frequent individual conferences with the instructor. No more than 16 combined credits for ENGL 400 and ENGL 400A may be counted toward a UNH degree. Special fee. Writing intensive.

Attributes: Writing Intensive Course**ENGL 401 - First-Year Writing****Credits:** 4

Training to write more skillfully and to read with more appreciation and discernment. Frequent individual conferences for every student. Special fee. Writing intensive.

Attributes: Writing Skills(Discovery); Writing Intensive Course**ENGL 401A - First Year Writing for Multi-Lingual Students****Credits:** 4

A special section of first-year writing for students whose native language is not English. Training to write more skillfully and to read with more appreciation and discernment, with special attention to the challenges of non-native speakers of English. Supplemental work on listening and speaking as necessary. Frequent individual conferences for every student. Students may not take both ENGL 401 and ENGL 401A for credit. Special fee. Writing intensive.

Attributes: Writing Skills(Discovery); Writing Intensive Course**ENGL 401H - Honors/First-Year Writing****Credits:** 4

Training to write more skillfully and to read with more appreciation and discernment. Frequent individual conferences for every student. Special fee. Writing intensive.

Attributes: Writing Skills(Discovery); Writing Intensive Course**ENGL 401S - Literacy Studio****Credits:** 2

Develops college-level literacy skills through scaffolded instruction, necessary for success in English 401.

Co-requisite: ENGL 401**ENGL 402 - Introduction to Literature for International Students****Credits:** 4

The art of thoughtfully enjoying major literary works. This course is intended for students who are participating in the ESL program. Permission required from ESL Institute.

ENGL #403 - Exploring Literature**Credits:** 4

The art of thoughtfully enjoying major literary works.

Attributes: Humanities(Disc)**ENGL 403W - Exploring Literature****Credits:** 4

The art of thoughtfully enjoying major literary works. Writing intensive.

Attributes: Humanities(Disc); Writing Intensive Course**ENGL 405 - Introduction to Linguistics****Credits:** 4

Overview of the study of language: universal properties of human language, Chomsky's innateness of hypothesis, language acquisition in children, dialects and language variation, language change. Includes introduction to modern grammar (phonology, syntax, semantics) and to scientific linguistic methodology. (Also offered as LING 405.)

Attributes: Social Science (Discovery); Inquiry (Discovery)**ENGL 405H - Honors/Introduction to Linguistics****Credits:** 4

Overview of the study of language: universal properties of human language, Chomsky's innateness of hypothesis, language acquisition in children, dialects and language variation, language change. Includes introduction to modern grammar (phonology, syntax, semantics) and to scientific linguistic methodology. (Also offered as LING 405.)

Attributes: Social Science (Discovery); Inquiry (Discovery)**ENGL 415A - Literature and Law****Credits:** 4

From the gritty mean streets to the marble columned courthouse, 'Literature and Law' addresses issues of interpretation and moral judgement. Students will examine the literary explorations of various facets of the legal system and criminality and address fundamental questions raised by the law. Writing intensive. Ideal for students interested in: Justice Studies, Sociology, Political Science, and Psychology. Prereq: ENGL 401 (B or better). Writing intensive.

Attributes: Humanities(Disc); Writing Intensive Course**ENGL 415B - Literature and Business****Credits:** 4

Reading literature provides fresh ways to consider the purposes, benefits, strategies, ethics, and risks of business. Using a variety of literary forms (poetry, short fiction, novels, plays, and essays) this course serves as a reflective study of business practices and how they affect individuals and groups. This course asks students to consider how literature can help us think more broadly about the function business. Ideal for students interested in Business Administration, Marketing, and Economics. Prereq: ENGL 401 (with a B or better). Writing intensive.

Attributes: Humanities(Disc); Writing Intensive Course**ENGL 415C - Literature and Medicine****Credits:** 4

Literary representations of medical practice are used to prompt discussion of broad issues concerning medical philosophy and medical ethics, the image of the medical professional in the media, differing conceptions of healing in various social contexts worldwide, and changes in biological science and medicine on the larger society. Ideal for students interested in: Health Care, Biomedical Sciences, Physical therapy, and Nutrition. Prereq: ENGL 401 (with a B or better). Writing intensive.

Attributes: Humanities(Disc); Writing Intensive Course

ENGL #415D - Literature and the Animal World**Credits: 4**

Our ability to define what it is to be human, what essential struggles and dilemmas humans face, depends on our understanding of the relationship between human and animal identity. In this course students address questions fundamental for those engaged in animal-related professions. Ideal for students interested in: Equine Studies, Pre-Vet, Biology, and Zoology. Prereq: ENGL 401 (with a B or better). Writing intensive.

Attributes: Humanities(Disc); Writing Intensive Course

ENGL 415E - Literature and Cyberculture**Credits: 4**

What is "cyberculture" and how has it been portrayed in various forms of literature? This course explores the very nature of what cyberculture is, and looks at various aspects of this culture - computers, coders and hackers, online communities, cyber-commerce, digitization, e-mail, and so on. Students study how essayists, novelists, and dramatists have raised fundamental questions about the nature and effects of digitization upon our society. Ideal for students interested in: Business, Communications, and Computer Science. Prereq: ENGL 401 (with a B or better). Writing intensive.

Attributes: Humanities(Disc); Writing Intensive Course

ENGL #415F - Literature and the Psyche**Credits: 4**

Literature has long been fascinated with the inner lives of characters, with altered states of mind, madness and recovery, the development of a sense of selfhood and the place of mental deviance in society. This course will examine how literary texts have portrayed the psychological dimensions of human life and the personal, social and therapeutic challenges such portrayals raise. Ideal for students interested in: Psychology and Gender Studies. Prereq: ENGL 401 (with a B or better). Writing intensive.

Attributes: Humanities(Disc); Writing Intensive Course

ENGL 415G - Literature and the Visual Arts**Credits: 4**

This course considers how the sister arts communicate with each other, how writers – sometimes sassy, sometimes ecstatic – talk back to paintings, and how painters – and artists in other mediums – find inspiration in myth, poetry, and the written word. Students discuss a range of questions that result from such an investigation. Ideal for students interested in: Art, Humanities, Communications, and Theater and Dance. Prereq: ENGL 401 (with a B or better). Writing intensive.

Attributes: Humanities(Disc); Writing Intensive Course

ENGL #415J - Literature and Religion**Credits: 4**

Most major religions are founded on basic literary principles of "word" or "text", such as the Hebrew Torah, the Christian Bible, the Koran of Islam or the Vedas of Hinduism. While many people in our own time see literature as a "secular scripture" others see literature as a natural conduit for channeling the divine. Ideal for students interested in: Philosophy, Anthropology, Sociology, and History. Prereq: ENGL 401 (with a B or better). Writing intensive.

Attributes: Humanities(Disc); Writing Intensive Course

ENGL 419 - Introduction to Literary Analysis**Credits: 4**

Critical analysis of fiction, poetry, drama, nonfiction, and a variety of other art forms, such as film and media. Developing fundamental research, writing, and critical skills. Frequent short papers. This course is a prerequisite with a minimum grade of C for those intending to declare one of the four majors offered in the English Department. Writing intensive.

Attributes: Inquiry (Discovery); Writing Intensive Course

ENGL 419H - Honors/Writing about Literature**Credits: 4**

Critical analysis of fiction, poetry, drama, nonfiction, and a variety of other art forms, such as film and media. Developing fundamental research, writing, and critical skills. Frequent short papers. This course is a prerequisite with a minimum grade of C for those intending to declare one of the four majors offered in the English Department. Writing intensive.

Attributes: Inquiry (Discovery); Writing Intensive Course

ENGL 440A - On Race in Culture and Society**Credits: 4**

Of our special concern will be the claim that race is a culturally or socially, not biologically, constructed category. The reading list will include literary texts (Toni Morrison's "Recitatif"), works of African American comedians (Bill Cosby, Richard Pryor, Eddie Murphy, etc.), philosophical texts (Immanuel Kant, W.E.B. DuBois, K.A. Appiah, etc.) as well as some legal documents (recent U.S. Supreme Court decisions concerning affirmative action). We will also do two case studies, one on the name of Redskins and one the Whiteness Project. The general goal of the course is to improve the student's ability to speak and think critically about race and race relations in the U.S. Writing intensive.

Attributes: Humanities(Disc); Writing Intensive Course

ENGL 441 - On Race and Culture in Society**Credits: 4**

Of our special concern will be the claim that race is a culturally or socially, not biologically, constructed category. The reading list will include literary texts (Toni Morrison's "Recitatif"), works of African American comedians (Bill Cosby, Richard Pryor, Eddie Murphy, etc.), philosophical text (Immanuel Kant, W.E.B. DuBois, K.A. Appiah, etc) as well as some legal documents (recent U.S. Supreme Court decisions concerning affirmative action). We will also do two case studies, one on the name of the Redskins and one on the Whiteness Project. The general goal of the course is to improve the student's ability to speak and think critically about race and race relations in the U.S. Writing intensive.

Attributes: Humanities(Disc); Writing Intensive Course

ENGL 444D - Irish Identity**Credits: 4**

Explores the historical causes and literary effects of emigration from Ireland to other regions in the North and South Atlantic. Considers the political and economic conditions of Ireland itself and asks how Irish identities are first formed dialectically through contact with indigenous others and then nostalgically constituted through the experience of migration. Writing intensive.

Attributes: Humanities(Disc); Inquiry (Discovery); Writing Intensive Course

ENGL 444G - Ethnic America: Readings in African American, Asian American, Native American and Latino/a Literature**Credits:** 4

This course introduces students to literature by and about African Americans, Asian Americans, Natives, and Latino/as. It introduces approaches in American Studies that will guide students in understanding and appreciating what we call ethnic literature. Secondary sources might include readings in and about ideological criticism, historical analysis, race and ethnic studies, multicultural education, formal narrative, and genre analysis. Writing intensive.

Attributes: Humanities(Disc); Inquiry (Discovery); Writing Intensive Course**ENGL #444K - People Stories: Investigating Identity as Literary Construction****Credits:** 4

Plato's Republic, Shakespeare's As You Like It, Thoreau's Walden, Narrative of Frederick Douglass, Austen's Mansfield Park, Palahniuk's Fight Club, Eugenides' Middlesex, Satrap's Persepolis, Hall's Without a Map, poetry, and seminar texts in criticism are read as we complicate our notions of what shapes identity across time, race, cultures, genders, economic statuses, and through the media of dialogue, novel, drama, poetry, graphic novel, and memoir. Writing intensive.

Attributes: Humanities(Disc); Inquiry (Discovery); Writing Intensive Course**ENGL #444M - Food and Class: America's Food Industry and the (Im)migrant Worker****Credits:** 4

Students explore the implications of food production and labor in the US through the stories artists and writers have given us, specifically, those of migrant and immigrant food workers. Texts include Fast Food Nation, The Jungle, The Grapes of Wrath and Diary of an Undocumented Immigrant. Through writing, close reading, and collaboration, students map a path of inquiry for their study, culminating in one research and one multi-media project. Field trips to a local farm, the Dreams of Freedom Museum, and New York over spring break. Writing intensive.

Attributes: Humanities(Disc); Inquiry (Discovery); Writing Intensive Course**ENGL 444N - Monsters!!!****Credits:** 4

This course will introduce students to a number of critical thinking processes by examining one of the most symbolically significant human archetypes, Monsters. By engaging works of historical significance and popular texts, students will explore a familiar subject from historical, political, psychological, and literary points of view. Writing intensive.

Attributes: Humanities(Disc); Inquiry (Discovery); Writing Intensive Course**ENGL 501 - Introduction to Creative Nonfiction****Credits:** 4

A writing course that explores types of creative nonfiction such as nature writing, the profile, the memoir, and the personal essay. Extensive reading of contemporary authors to study the sources and techniques used in creative nonfiction. Regular papers, conferences, and workshops. Prereq: ENGL 401. Special fee. Writing intensive.

Attributes: FinePerformingArts(Discovery); Writing Intensive Course**ENGL 501H - Honors/Introduction to Creative Nonfiction****Credits:** 4

A writing course that explores types of creative nonfiction such as nature writing, the profile, the memoir, and the personal essay. Extensive reading of contemporary authors to study the sources and techniques used in creative nonfiction. Regular papers, conferences, and workshops. Special fee. Writing intensive.

Attributes: FinePerformingArts(Discovery); Writing Intensive Course**ENGL 502 - Professional and Technical Writing****Credits:** 4

A writing course introducing students to the effective communication of technical information through various workplace documents including resumes, memos, business letters, reports, brochures, etc. Special emphasis on an introduction to professional conventions and genres and to the transferable skills of rhetorical and audience analysis, document design and collaborative work. Prereq: ENGL 401. Special fee (no fee for students taking ENGL 502 at UNHM). Writing intensive.

Attributes: Writing Intensive Course**ENGL 502H - Honors/Technical Writing****Credits:** 4

A writing course introducing students to the effective communication of technical information through various workplace documents including resumes, memos, business letters, reports, brochures, etc. Special emphasis on an introduction to professional conventions and genres and to the transferable skills of rhetorical and audience analysis, document design and collaborative work. Special fee. Prereq: permission. Writing intensive.

Attributes: Writing Intensive Course**ENGL 503 - Persuasive Writing****Credits:** 4

Writing of all types of persuasive nonfiction prose, including argumentative essays and position papers. Special attention to argumentative structures and analysis of audiences. Weekly papers of varying lengths and formats, frequent conferences. Prereq: ENGL 401. Special fee. Writing intensive.

Attributes: Writing Intensive Course**ENGL 504 - Resume Writing****Credits:** 2

Write your resume now! Readings from recruiters, scholars, and managers reveal what employers want in resumes and cover letters, and what they don't want. Topics include: understanding ATS (applicant tracking systems); analyzing purpose and audience; learning cutting-edge designs; writing detailed and efficient content; tailoring your resume to the job advertisement; writing persuasive cover letters; and formatting and editing tips. Students will identify two job advertisements and write a resume and letter for each. Cr/F.

ENGL 511 - Major Writers in English**Credits:** 4

In-depth study and discussion of a few American and/or British writers. Topics and approaches vary depending on instructors. May be repeated for credit, barring duplication of topic. Writing intensive.

Attributes: Humanities(Disc); Writing Intensive Course

ENGL 512 - British Literature I Age of Heroes: Beowulf to Dr. Faustus
Credits: 4

An introduction to the earliest poetry, prose and drama in English, considered in chronological order and in historical context. Examine important literary works as the old English epic Beowulf, Chaucer's entertaining collection Canterbury Tales, the Arthurian romance Sir Gawain and the Green Knight, the devotional autobiography The Book of Margery Kempe, the sermon in dramatic form Everyman, Edmund's Spenser's chivalric saga The Faerie Queen and the sonnets of Philip Sidney and William Shakespeare. Writing intensive.

Attributes: Humanities(Disc); Writing Intensive Course

ENGL 513 - British Literature II Age of Revolutions: Shakespeare to Austen
Credits: 4

An introduction to the English literary tradition from the Renaissance to the early Romantics, considered in chronological order and in historical context. Examine important literary works such as Shakespeare's Twelfth Night, the erotic poetry of John Donne, John Milton's Biblical epic Paradise Lost, Aphra Behn's roguish comedy The Rover, Margaret Cavendish's utopian fantasy the Blazing World, the satire of Jonathan Swift, and early Romantic works by Thomas Grey and Jane Austen. Writing intensive.

Attributes: Humanities(Disc)

ENGL 513H - British Literature II Age of Revolutions: Shakespeare to Austen
Credits: 4

An introduction to the English literary tradition from the Renaissance to the early Romantics, considered in chronological order and in historical context. Examine important literary works such as Shakespeare's Twelfth Night, the erotic poetry of John Donne, John Milton's Biblical epic Paradise Lost, Aphra Behn's roguish comedy The Rover, Margaret Cavendish's utopian fantasy the Blazing World, the satire of Jonathan Swift, and early Romantic works by Thomas Grey and Jane Austen. Writing intensive.

Attributes: Humanities(Disc); Writing Intensive Course

ENGL 513W - British Literature II Age of Revolutions: Shakespeare to Austen
Credits: 4

Selected works in poetry and prose considered in chronological order and historical context. Attention to the works and to the ideas and tastes of their periods. The Stuart Monarchy to the Age of Enlightenment. Writing intensive.

Attributes: Humanities(Disc); Writing Intensive Course

ENGL 514 - British Literature III: Revolts, Renewals, Migrations
Credits: 4

Encounter the Romantic fantasies of John Keats's nature poetry and Mary Shelley's Frankenstein, the Victorian novels that brought us Jane Eyre, Ebenezer Scrooge and Mr. Hyde, the experiments of Modernists like Virginia Woolf and James Joyce, and Postmodern transformations by a shifting cast of contemporaries. We'll read these works in the context of imperial expansion and contraction, the crises of world wars, and the civil rights and independence struggles of the 20th and 21st centuries.

Attributes: Humanities(Disc)

ENGL 514H - Honors/British Literature III: Revolts, Renewals, Migrations
Credits: 4

Encounter the Romantic fantasies of John Keats's nature poetry and Mary Shelley's Frankenstein, the Victorian novels that brought us Jane Eyre, Ebenezer Scrooge and Mr. Hyde, the experiments of Modernists like Virginia Woolf and James Joyce, and Postmodern transformations by a shifting cast of contemporaries. We'll read these works in the context of imperial expansion and contraction, the crises of world wars, and the civil rights and independence struggles of the 20th and 21st centuries.

Attributes: Humanities(Disc); Writing Intensive Course

ENGL 514W - British Literature III: Revolts, Renewals, Migrations
Credits: 4

Encounter the Romantic fantasies of John Keats's nature poetry and Mary Shelley's Frankenstein, the Victorian novels that brought us Jane Eyre, Ebenezer Scrooge and Mr. Hyde, the experiments of Modernists like Virginia Woolf and James Joyce, and Postmodern transformations by a shifting cast of contemporaries. We'll read these works in the context of imperial expansion and contraction, the crises of world wars, and the civil rights and independence struggles of the 20th and 21st centuries.

Attributes: Humanities(Disc); Writing Intensive Course

ENGL #515 - American Literature I Conquest and Nation: First Contact to the Civil War
Credits: 4

Read texts from the English settlement of North America to the founding of the U.S. and to the national crisis of the Civil War. Encounter an astonishing range of voices in exploration accounts, sermons, captivity narratives, Native American writings, Revolutionary texts, autobiographies, fiction, nature writing, slave narratives, and poetry. The course offers students knowledge of the formative period of American literature and experience in textual analysis through reading and writing about multiple genres.

Attributes: Humanities(Disc)

ENGL 515H - Honors/American Literature I Conquest and Nation: First Contact to the Civil War
Credits: 4

Read texts from the English settlement of North America to the founding of the U.S. and to the national crisis of the Civil War. Encounter an astonishing range of voices in exploration accounts, sermons, captivity narratives, Native American writings, Revolutionary texts, autobiographies, fiction, nature writing, slave narratives, and poetry. The course offers students knowledge of the formative period of American literature and experience in textual analysis through reading and writing about multiple genres. Writing intensive.

Attributes: Humanities(Disc); Writing Intensive Course

ENGL 515W - American Literature I Conquest and Nation: First Contact to the Civil War
Credits: 4

Read texts from the English settlement of North America to the founding of the U.S. and to the national crisis of the Civil War. Encounter an astonishing range of voices in exploration accounts, sermons, captivity narratives, Native American writings, Revolutionary texts, autobiographies, fiction, nature writing, slave narratives, and poetry. The course offers students knowledge of the formative period of American literature and experience in textual analysis through reading and writing about multiple genres. Writing intensive.

Attributes: Humanities(Disc); Writing Intensive Course

ENGL 516 - American Literature II Money, Migration, and Modernity: Huck Finn to Beloved**Credits:** 4

Students will discuss novels, plays, poems, and essays that address the difficult issues of national rebuilding, the temptations of a new consumer culture, the devastations of numerous wars fought overseas, and encounters with European, Jewish, Latin American, and Asian immigrants. Whether comparing nineteenth-century Huckleberry Finn with twentieth-century Beloved or making sense of modern and postmodern literary playfulness, students will become thoughtful readers and writers.

Attributes: Humanities(Disc)**ENGL 516H - Honors/American Literature II Money, Migration, and Modernity: Huck Finn to Beloved****Credits:** 4

Students will discuss novels, plays, poems, and essays that address the difficult issues of national rebuilding, the temptations of a new consumer culture, the devastations of numerous wars fought overseas, and encounters with European, Jewish, Latin American, and Asian immigrants. Whether comparing nineteenth-century Huckleberry Finn with twentieth-century Beloved or making sense of modern and postmodern literary playfulness, students will become thoughtful readers and writers. Writing intensive.

Attributes: Humanities(Disc); Writing Intensive Course**ENGL 516W - American Literature II Money, Migration, and Modernity: Huck Finn to Beloved****Credits:** 4

Students will discuss novels, plays, poems, and essays that address the difficult issues of national rebuilding, the temptations of a new consumer culture, the devastations of numerous wars fought overseas, and encounters with European, Jewish, Latin American, and Asian immigrants. Whether comparing nineteenth-century Huckleberry Finn with twentieth-century Beloved or making sense of modern and postmodern literary playfulness, students will become thoughtful readers and writers. Writing intensive.

Attributes: Humanities(Disc); Writing Intensive Course**ENGL 517 - Introduction to African American Literature and Culture****Credits:** 4

An introduction to African American literature in the context of a variety of cultural perspectives. Course topics may include major writers, literary genres, historical periods, Harlem Renaissance, Black Arts Movement, fine and folk arts, religion, music, and film. (Also offered as AMST 502.) Writing intensive.

Attributes: Humanities(Disc); Inquiry (Discovery); Writing Intensive Course**ENGL 517H - Honors/Introduction to African American Literature and Culture****Credits:** 4

An introduction to African American literature in the context of a variety of cultural perspectives. Course topics may include major writers, literary genres, historical periods, Harlem Renaissance, Black Arts Movement, fine and folk arts, religion, music, and film. (Also offered as AMST 502.) Writing intensive.

Attributes: Humanities(Disc); Writing Intensive Course**ENGL 518 - Bible as Literature****Credits:** 4

Literature of the Old and New Testaments and the Apocrypha, primarily in the King James version.

Attributes: Humanities(Disc)**ENGL 518H - Honors/Bible as Literature****Credits:** 4

Literature of the Old and New Testaments and the Apocrypha, primarily in the King James version. Writing intensive.

Attributes: Humanities(Disc); Writing Intensive Course**ENGL 518W - Bible as Literature****Credits:** 4

Literature of the Old and New Testaments and the Apocrypha, primarily in the King James version. Writing intensive.

Attributes: Humanities(Disc); Writing Intensive Course**ENGL 520 - Literature and the History of Ideas: Dystopian and Post Apocalyptic Fiction****Credits:** 4

Our survey of short stories and novellas spans historical periods and national literatures. Together these stories offer a context for literary terms, subgenres, and historical contexts, as well as diverse opportunities for close-reading. Writing assignments (blog posts and a range of analytical and creative writing options) will enable further investigations of these perennial and new classics.

Attributes: Humanities(Disc)**ENGL 521 - Nature Writers****Credits:** 4

Literary writings on the natural environment by naturalists and observant others concerned about the environment. Readings include essays, selections, or book length works by such authors as Gilbert White, Henry David Thoreau, Ralph Waldo Emerson, John Muir, John Burroughs, Aldo Leopold, Rachel Carson, Wallace Stegner, Edward Abbey, Annie Dillard, Jamaica Kincaid, Terry Tempest Williams, Janisse Ray, Sandra Steingraber, and others. See detailed course description in the department and on the department website. Writing intensive.

Attributes: Humanities(Disc); Writing Intensive Course**ENGL 521H - Honors/Nature Writers****Credits:** 4

Literary writings on the natural environment by naturalists and observant others concerned about the environment. Readings include essays, selections, or book length works by such authors as Gilbert White, Henry David Thoreau, Ralph Waldo Emerson, John Muir, John Burroughs, Aldo Leopold, Rachel Carson, Wallace Stegner, Edward Abbey, Annie Dillard, Jamaica Kincaid, Terry Tempest Williams, Janisse Ray, Sandra Steingraber, and others. See detailed course description in the department and on the department website. Writing intensive.

Attributes: Writing Intensive Course**ENGL 526 - Introduction to Fiction Writing****Credits:** 4

Writing fiction asks us to say: who am I? What's happening in the world around me? Awakening to the story in your life, and thus to your own imagination, will change your life. Repeatedly, we see fiction writers find their power as creative people. You might become the head of a major corporation! You might just write a great novel or short story. Or just be happier. Join us: write stories, change your life. Prereq: ENGL 401. Special fee. Writing intensive.

Attributes: FinePerformingArts(Discovery); Writing Intensive Course

ENGL 527 - Introduction to Poetry Writing**Credits:** 4

Writing poetry is training for life - its practice deepens both the liveliness and rigor of the mind. This course is run in a workshop/discussion format - it uses innovative exercises, guided prompts, language games, and readings that teach the basics of craft, while showing you how to think like a writer, opening up to the pleasures and surprises of the creative process. No prior experience necessary. Prereq: ENGL 401. Special fee. Writing intensive.

Attributes: FinePerformingArts(Discovery); Writing Intensive Course**ENGL #530 - Poetry****Credits:** 4

Meaning, techniques and traditions of lyric (short) poetry (the history and variety of lyric poetry in English). See department course descriptions in particular term for more information about works studied. Not offered each semester. Prereq: ENGL 401.

Attributes: Humanities(Disc); Writing Intensive Course**ENGL #531 - Introduction to Drama: How to Read a Play****Credits:** 4

Theater, the first mass entertainment genre, has an illustrious history on which the film and television drama of our own day draws. This course introduces you to the pleasures of reading and analyzing stage plays. It surveys Western drama's beginnings in Greek tragedy, the glories of the English Renaissance stage, the psychological explorations of realist and Symbolist drama, the experimentalism of avant-garde drama and the political provocations of contemporary women playwrights and writers of color. Prereq: ENGL 401.

Attributes: Writing Intensive Course**ENGL 533 - Introduction to Film Studies****Credits:** 4

A survey of the international development of the motion picture from the silent period to the present, emphasizing film's narrative practices. Introduces students to the study of the art, history, technology, economics, and theory of cinema. Films and film makers of various nations, periods, movements, and genres examined. Mandatory weekly screenings in addition to class. Students cannot receive credit for both ENGL 533 and CMN 550.

Attributes: Humanities(Disc)**ENGL 533H - Honors/Introduction to Film Studies****Credits:** 4

A survey of the international development of the motion picture from the silent period to the present, emphasizing film's narrative practices. Introduces students to the study of the art, history, technology, economics, and theory of cinema. Films and film makers of various nations, periods, movements, and genres examined. Mandatory weekly screenings in addition to class. Students cannot receive credit for both ENGL 533 and CMN 550. Special fee. Writing intensive.

Attributes: Humanities(Disc); Writing Intensive Course**ENGL 533W - Introduction to Film Studies****Credits:** 4

A survey of the international development of the motion picture from the silent period to the present, emphasizing film's narrative practices. Introduces students to the study of the art, history, technology, economics, and theory of cinema. Films and film makers of various nations, periods, movements, and genres examined. Mandatory weekly screenings in addition to class. Students cannot receive credit for both ENGL 533 and CMN 550. Special fee. Writing intensive.

Attributes: Humanities(Disc); Writing Intensive Course**ENGL 534 - 21st Century Journalism: How the News Works****Credits:** 4

This class explores ways new technology, including social media, has affected the practice of journalism, and examines journalism past and present. Students discuss libel law, ethics and how to define plagiarism in the digital age. This survey is meant not only to lay a foundation for prospective journalists, but also to provide a broad understanding of the news media for those interested in how the news works.

Attributes: Environment,TechSociety(Disc)**ENGL 549 - In the Groove: African American Music as Literature****Credits:** 4

This is a music appreciation course that focuses on getting students into, behind, and under "the groove" of African American music and its intellectual traditions of black pride, power, and cultural expressivity. This course will contain a broad introduction to African American music origins but it will also consider the impact of cultural contexts such as slavery and Euro-American musical influences on African American culture. Students will gain new appreciation for the multi-faceted and wide-ranging ways in which African American music is performed how this music has helped unite one nation under its soulful groove.

Attributes: FinePerformingArts(Discovery)**ENGL 550 - Introduction to the Literature and Culture of Race****Credits:** 4

This course introduces students to readings across the field of ethnic literature and culture in order to form their capacity to speak and think critically about race relations in America. Readings will include those in race theory, racial construction and authenticity, histories of raced subjects in America, the rise of ethnic studies, white ignorance and whiteness studies, the intersectionality of race with gender, sexual orientation, economic class, religion, and faith. Includes Asian American, African American, Native, and Latino/a literature. Writing intensive.

Attributes: Humanities(Disc); Inquiry (Discovery); Writing Intensive Course**ENGL 555 - Science Fiction****Credits:** 4

This course examines stories, novels, and film from the popular genre of science fiction. A variety of literary critical approaches are deployed to discuss a number of key authors and texts from the nineteenth century to the present.

Attributes: Humanities(Disc)**ENGL 557 - Crime and Espionage****Credits:** 4

This course examines stories, novels, and film from the popular genre of Crime Fiction and Espionage. A variety of literary critical approaches are deployed to discuss a number of key authors and texts from the nineteenth century to the present.

ENGL 560 - Introduction to Latinx Literature and Culture**Credits:** 4

This course introduces students to the field of Latinx literature and culture in order to develop the ability to speak and think critically about race relations in the USA. Course readings will be drawn from texts produced primarily in English by individuals of Latin American descent. Readings may include immigration and borderlands discourse, art, music, television and film, histories of Latinx subjects in America, and the intersectionality of race with gender, sexual orientation, economic class and religion. Writing intensive.

Attributes: Humanities(Disc); Inquiry (Discovery); Writing Intensive Course

ENGL 575 - Sex and Sensibility: The Rise of Chick Lit from Jane Austen to Bridget Jones**Credits:** 4

This course focuses on the novel of manners, a literary tradition that began in the nineteenth century, but enjoys widespread popularity in the contemporary phenomenon dubbed as "chick lit". We will survey how this qualitative sociology negotiates the interplay between romantic and economic concerns. Texts may include works by major writers of this subgenre, e.g. Jane Austen, Edith Wharton, and Evelyn Waugh, as well as new incarnations like 'Bridget Jones Diary' and 'Sex and the City'.

Attributes: Humanities(Disc)

ENGL 581 - Introduction to Postcolonial Literatures in English**Credits:** 4

Survey of fictional and nonfictional prose, drama, and poetry by Asian and African writers (1950s to the present). Primary focus on how literary form and language respond to political, social, and environmental issues shaped by colonialism, nationalism, and globalization. Topics both globally relevant (migration, natural resource scarcity, health) and regionally unique to Asia/Africa (class, caste, civil conflict, urbanization). Regional focus may vary any given semester. Writing intensive.

Attributes: World Cultures(Discovery); Writing Intensive Course

ENGL 581H - Honors/Introduction to Postcolonial Literatures in English**Credits:** 4

Survey of contemporary Asian, African, and Caribbean fiction, drama, travelogues, essays, and poetry from the 1950s to the present. Introduces political, historical, and cultural contexts within which these forms are produced. Writing intensive.

Attributes: World Cultures(Discovery); Writing Intensive Course

ENGL 585 - Introduction to Women in Literature**Credits:** 4

Survey of images of women in literature. Context and approach vary depending on instructor. Writing intensive.

Attributes: Writing Intensive Course

ENGL #585H - Honors/Introduction to Women in Literature**Credits:** 4

Survey of images of women in literature. Context and approach vary depending on instructor. Writing intensive.

Attributes: Writing Intensive Course

ENGL 595 - Literary Topics**Credits:** 1-4

Various faculty members investigate topics of special interest at a level appropriate for non-majors. Past topics have included Irish literature, animals in literature, and literature of the Vietnam War. See department for details of current offerings. May be repeated for credit, barring duplication of topic. Writing intensive.

Attributes: Writing Intensive Course

ENGL 595H - Honors/Literary Topics**Credits:** 1-4

Various faculty members investigate topics of special interest at a level appropriate for non-majors. Past topics have included Irish literature, animals in literature, and literature of the Vietnam War. See department for details of current offerings. May be repeated for credit, barring duplication of topic. Writing intensive.

Attributes: Writing Intensive Course

ENGL 600 - English for International Students**Credits:** 1-4

Designed for international students to provide additional support in course work. Students continue to develop skills in listening comprehension, speaking, reading, and writing in English. This is a variable credit course and may be repeated up to a total of 4 credits. No letter grades. Prereq: permission from ESL Institute. Cr/F. Writing intensive. Credits received for this course can help satisfy the requirements for student visa, but they will normally not count towards a graduate degree. Students are encouraged to check with their individual academic advisors.

ENGL 602 - Advanced Professional and Technical Writing**Credits:** 4

An advanced writing course focusing on writing in a global and technological workplace. In addition to fluency in the documents of the workplace, students focus on visual rhetoric in a technological environment through web design and usability while studying the issues of globalism, ethics, and the environment that affect all professional writing today. Writing intensive.

Attributes: Writing Intensive Course

ENGL 605 - Intermediate Linguistic Analysis**Credits:** 4

Introduces analysis methods and problem solving in phonology, morphology, and syntax using data from many languages. Emphasis will be both practical (learning how to describe the grammar and sound system of a language) and theoretical (understanding languages' behavior). Prereq: ENGL 405/LING 405, or permission. (Also offered as LING 605.)

ENGL 606 - Languages of the World**Credits:** 4

A survey of the languages of the world from genetic, areal, and typological perspectives. Students learn about the geographic and demographic distribution of language families and language isolates, as well as about structural characteristics of languages, language families and language areas. Additional topics include language endangerment and the question of linguistic universals. Students work collaboratively on a project investigating a particular language family, giving in class presentations and writing up a final project report. Some prior knowledge of phonetics, phonology, morphology, and syntax is necessary. Prereq: ENGL 605/LING 605 or ENGL 405/LING 405 and permission of the instructor.

ENGL #609 - Ethnicity in America: The African American Experience in the 20th Century**Credits:** 4

Investigation of the music, literature, and social history of African American America in the period of the Harlem Renaissance, in the Great Depression, World War II, and in the 1960s. Special attention to the theme of accommodation with and rejection of dominant white culture. (Also offered as AMST 609, HUMA 609.) Writing intensive.

Attributes: Writing Intensive Course**ENGL 616A - Studies in Film/Genre****Credits:** 4

Advanced, focused study of the narrative, dramatic, and poetic practices of cinema, within one of four possible subject areas: A) Genre; B) Authorship; C) Culture and Ideology; D) Narrative and Style. Precise issues and methods may vary, ranging from general and specific considerations of how a given subject area involves film theory, criticism, and history, to its use in diverse analyses of selected national cinemas, periods, movements, and filmmakers. Barring duplication of any four of the subject areas, and/or duplication of material taken for credit in CMN 650, course may be repeated for credit. Detailed course descriptions available in English department office during pre-registration. Special fee. Writing intensive.

Attributes: Writing Intensive Course**ENGL 616B - Studies in Film/Authorship****Credits:** 4

Advanced, focused study of the narrative, dramatic, and poetic practices of cinema, within one of four possible subject areas: A) Genre; B) Authorship; C) Culture and Ideology; D) Narrative and Style. Precise issues and methods may vary, ranging from general and specific considerations of how a given subject area involves film theory, criticism, and history, to its use in diverse analyses of selected national cinemas, periods, movements, and filmmakers. Barring duplication of any four of the subject areas, and/or duplication of material taken for credit in CMN 650, course may be repeated for credit. Detailed course descriptions available in English department office during pre-registration. Special fee. Writing intensive.

Attributes: Writing Intensive Course**ENGL 616C - Studies in Film/Culture and Ideology****Credits:** 4

Advanced, focused study of the narrative, dramatic, and poetic practices of cinema, within one of four possible subject areas: A) Genre; B) Authorship; C) Culture and Ideology; D) Narrative and Style. Precise issues and methods may vary, ranging from general and specific considerations of how a given subject area involves film theory, criticism, and history, to its use in diverse analyses of selected national cinemas, periods, movements, and filmmakers. Barring duplication of any four of the subject areas, and/or duplication of material taken for credit in CMN 650, course may be repeated for credit. Detailed course descriptions available in English department office during pre-registration. Special fee. Writing intensive.

Attributes: Writing Intensive Course**ENGL 616D - Studies in Film/Narrative and Style****Credits:** 4

Advanced, focused study of the narrative, dramatic, and poetic practices of cinema, within one of four possible subject areas: A) Genre; B) Authorship; C) Culture and Ideology; D) Narrative and Style. Precise issues and methods may vary, ranging from general and specific considerations of how a given subject area involves film theory, criticism, and history, to its use in diverse analyses of selected national cinemas, periods, movements, and filmmakers. Barring duplication of any four of the subject areas, and/or duplication of material taken for credit in CMN 650, course may be repeated for credit. Detailed course descriptions available in English department office during pre-registration. Special fee. Writing intensive.

Attributes: Writing Intensive Course**ENGL 618 - Film Theory****Credits:** 4

Examines basic theories of film and their relationship to the practice of close analysis of film. Theories are meant to provide students with a vocabulary for critical analysis and stress the many ways of seeing film.

ENGL 619 - Critical Approaches to Literature**Credits:** 4

A follow-up to ENGL 419, this course provides training in critical analysis of various texts (literature, film, and media) using different theoretical approaches like feminism, post-colonial theory, deconstruction, cultural studies, queer theory, trauma studies, intersectionality, and so on. Developing fundamental research, writing, and analytic skills at an intermediate level. See English department catalog for current course description. Prereq: ENGL 419 or equivalent. Writing intensive.

Attributes: Writing Intensive Course**ENGL 620 - English Major Internship****Credits:** 1-4

Open to all English majors. Internships allow students to use skills learned in the major in a supervised work setting. In addition to the job experience, the English major internship requires research and writing assignments overseen by a faculty sponsor. These supplementary assignments must be outlined in a written proposal describing the work involved in the internship and how it relates to the student's academic training. Registration requires permission from the employer, faculty sponsor, major advisor, and department chairperson. The employer must be an established organization approved by Career Services. This course does not count toward the English major or substitute for English 720, the Journalism Internship. May be repeated for a maximum of 8 credits. Cr/F.

ENGL 621 - Writing and Reporting the News I**Credits:** 4

Students get a strong journalistic foundation with hands-on experience reporting and writing compelling news stories for print and digital platforms. Skills taught include finding news stories and tracking down sources; conducting interviews and verifying facts; and drafting and revising stories. Prereq: ENGL 401, ENGL 534 and permission of the instructor. ENGL 621 may be taken more than once for credit with the approval of the Journalism Program Director, up to a maximum of 8.00 credits. Students must fill out a Permission to Repeat an English Course For Credit form, available in the department office. Special fee.

Attributes: Writing Intensive Course

ENGL 622 - Writing and Reporting the News II**Credits:** 4

An intermediate workshop that asks students to report in greater depth and experiment with different storytelling methods. Students delve into feature writing as well as newswriting. Prereq: B or better in ENGL 621 and written permission of instructor. Special fee. Writing intensive.

Attributes: Writing Intensive Course**ENGL 623 - Creative Nonfiction****Credits:** 4

Intensive writing course emphasizing the blend of basic elements that constitute creative nonfiction: research, observation, and personal experience. Also readings and discussion of some of the best published creative nonfiction. Prereq: ENGL 501, 526, 527 or permission of the instructor. May be taken more than once for credit, recommended with two different instructors. Students may repeat ENGL 623 up to a maximum of 8 credits. Special fee. Writing intensive.

Attributes: Writing Intensive Course**ENGL 625 - Intermediate Fiction Writing Workshop****Credits:** 4

Students continue to explore the aspects of fiction writing. Through short exercises students learn to create visual scenes, integrate exposition with dramatic scene, and construct convincing characters in believable situations. We'll continue to explore the basic elements of what makes a short story, such as point of view, dialogue, dramatization, voice, meaning, language. Students write short stories and significantly revise them.

Through discussion of student writing in a workshop format, as well as reading and responding to short stories by published authors, we'll address the questions: What is a short story? How do we create a world in which the reader is fully involved? Where does the story evoke emotion or meaning? Prereq: ENGL 501, 526, 527 or permission of the instructor.

ENGL 625 may be taken more than once for credit, recommended with two different instructors. Students may repeat ENGL 625 up to a maximum of 8 credits. Special fee. Writing intensive.

Attributes: Writing Intensive Course**ENGL 625A - Intermediate Fiction Writing Workshop: Screenwriting****Credits:** 4

In this course, intermediate creative writers will learn the craft of writing scripts for film and television. Students will continue to explore the elements of effective storytelling by writing and significantly revising loglines, outlines, and complete short screenplays. The course will combine in-depth analysis of classic and contemporary screenplays (including shorts, teleplays, and feature-length films) with lectures, writing exercises, and peer workshops. Topics will include dramatic structure, professional formatting and planning, and how to develop vividly compelling characters, scenes, conflict and dialogue. The aim of the course will not be to simply reinforce existing narrative principles but rather to test the validity of existing conventions. Throughout we will address the questions: What makes a story relevant, moving, thrilling, or meaningful? Why does this story need to be told visually? What makes a great script great? Prereq: ENGL 501, ENGL 526 or ENGL 527 or Permission of the Instructor. Course may be repeated up to a maximum of 8 credits.

Attributes: Writing Intensive Course**ENGL 627 - Intermediate Poetry Writing Workshop****Credits:** 4

Workshop discussion of poems written by students, with focus on more complex techniques and forms. Individual conferences with instructor. Prereq: ENGL 501, 526, 527 or permission of the instructor. ENGL 627 may be taken more than once for credit, recommended with two different instructors. Students may repeat ENGL 627 up to a maximum of 8 credits. Special Fee. Writing Intensive.

Attributes: Writing Intensive Course**ENGL 631 - Introduction to Digital Reporting****Credits:** 4

This course immerses students in the digital news landscape and teaches them to report across multiple platforms. Students learn reporting tools and strategies for producing dynamic digital journalism. Prereq: ENGL 534, ENGL 621 with a 'B' or better and written permission of the instructor. Writing intensive.

Attributes: Writing Intensive Course**ENGL 636 - Literature and the Environment****Credits:** 4

Literary and geographical approaches to place and space; readings and other materials exploring how cultures or authors represent nature. Writing intensive. May be repeated for credit if topic differs.

Attributes: Writing Intensive Course**ENGL 649 - Studies in British Literature and Culture****Credits:** 4

Special topics in British studies, varying from year to year. May be repeated for credit, barring duplication of topic. (Not offered every year.) Writing intensive.

Attributes: Writing Intensive Course**ENGL 650 - Studies in American Literature and Culture****Credits:** 4

Special topics in American studies, varying from year to year. May be repeated for credit, barring duplication of topic. (Not offered every year.) Writing intensive.

Attributes: Writing Intensive Course**ENGL 651 - Comparative Literature****Credits:** 4

Comparative studies of major authors representative of important periods of world literary achievement. Homer to Dante; common themes and the development of the epic tradition in early Western literature. Topics and approaches vary from semester to semester. Writing intensive.

Attributes: Writing Intensive Course**ENGL 657 - Shakespeare****Credits:** 4

An introduction to the main periods of Shakespeare's playwriting career, addressing representative works from each of the genres in which he wrote (tragedy, comedy, history, romance). We will discuss such matters as a Renaissance theater architecture and performance conventions, Shakespeare's poetic language, the representation of women, commoners and minorities on stage, royal power and court politics, love, sex, religion, and revenge. Live and filmed performances will be included as available. Prereq: ENGL 401.

Attributes: Writing Intensive Course

ENGL 657H - Honors/Shakespeare**Credits:** 4

An introduction to the main periods of Shakespeare's playwriting career, addressing representative works from each of the genres in which he wrote (tragedy, comedy, history, romance). We will discuss such matters as a Renaissance theater architecture and performance conventions, Shakespeare's poetic language, the representation of women, commoners and minorities on stage, royal power and court politics, love, sex, religion, and revenge. Live and filmed performances will be included as available. Prereq: ENGL 401.

Attributes: Writing Intensive Course**ENGL #680 - Early English Drama: From Cycles to the Globe****Credits:** 4

Where did English drama get its start? On what theatrical traditions did Shakespeare and his contemporaries draw, and how did they develop them? This course examines English drama from the great religious play cycles of the Middle Ages to the theater of Renaissance London. You'll sample folk plays, staging's of Biblical stories, allegorical drama, tragedies of revenge, satirical and romantic comedies, plays about London life, and deliciously lurid dramas of court intrigue. Prereq: ENGL 401.

ENGL 681 - Introduction to African Literatures in English**Credits:** 4

In-depth study of writers, literary movements, political contexts, and historical pressures that have shaped and continue to shape African literatures in the colonial and postcolonial periods. Primary focus on Anglophone texts but possibly some literature in translation. Writing intensive.

Attributes: Writing Intensive Course**ENGL #685 - Women's Literary Traditions****Credits:** 4

Intensive study of themes, topics, and techniques in women's literature. Topics vary from year to year. May be repeated for credit, barring duplication of topic.

ENGL #685W - Women's Literary Traditions**Credits:** 4

Intensive study of themes, topics, and techniques in women's literature. Topics vary from year to year. May be repeated for credit, barring duplication of topic. Writing intensive.

Attributes: Writing Intensive Course**ENGL 690 - Introduction to African American Literature in America****Credits:** 4

Selected prose, fiction, drama, and poetry. Individual works and historical-cultural background. Course varies from year to year. Writing intensive.

Attributes: Writing Intensive Course**ENGL 693 - Special Topics in Literature****Credits:** 4

A) Old English Literature, B) Medieval Literature, C) 16th Century, D) 17th Century, E) 18th Century, F) English Romantic Period, G) Victorian Period, H) 20th Century, I) Drama, J) Novel, K) Poetry, L) Nonfiction, M) American Literature, N) A Literary Problem, O) Literature of the Renaissance, R) Race and Racial Theories. The precise topics and methods of each section vary. Barring duplication of subject, course may be repeated for credit. For details, see course descriptions available in the English department. (Not offered every year.) Special fee on some topics. Writing intensive.

Attributes: Writing Intensive Course**ENGL 694 - Special Topics in Creative Writing****Credits:** 4

Courses offered under this number feature a variety of topics having to do with creative writing. Barring duplication of subject, course may be repeated for credit. For details, see the course descriptions available in the English Department. Writing intensive.

Attributes: Writing Intensive Course**ENGL 695 - The Internship Experience****Credits:** 4

Students will work with their peers to establish a personal definition of professionalism in their respective fields; they will read, critically analyze, and discuss articles covering a wide variety of topics, including writing at work, intended audiences, ethics in writing, navigating a difficult work environment or situation, and strategies for professional development. Class sessions in a discussion format, intended to be flexible and to directly support the changing needs of writing in the workplace. Students, along with their supervisors, will create their own learning objectives and evaluation tools. Students will write about their experiences at the end of term. Prereq: ENGL 419 and minimum GPA of 3.0. Not open to students with FR or SO status. Not open to English/Journalism or English Teaching majors.

ENGL 701 - Advanced Fiction Writing Workshop**Credits:** 4

Students come to this course with a firm grasp of all the elements of fiction, ready to write short stories that construct convincing characters in believable situations. In a workshop format, students give and receive critiques on classmates' work. Significant revisions of short stories and thorough discussions of work by published authors will round out the course as students continue to explore the art of writing the short story. Students are responsible for leading discussion of published stories. Prereq: ENGL 625 with a grade of B or better. ENGL 701 may be taken more than once for credit, recommended with two different instructors. Students may repeat ENGL 701 up to a maximum of 8 credits. Special fee. Writing intensive.

Attributes: Writing Intensive Course**ENGL #703 - Travel Writing****Credits:** 4

A workshop devoted to reading and writing and writing narratives of place. Travel writing requires the author to research and reflect, exploring both the external--the place--and the internal--the author's experience. Students write multiple travel pieces and read widely essays of place by writers such as John Steinbeck, Joan Didion, Pico Iyer and Eliza Griswold. Permission of instructor required. Prereq: ENGL 501, 621 or 623. Writing intensive.

Attributes: Writing Intensive Course**ENGL 703T - Travel Writing****Credits:** 4

A workshop devoted to reading and writing and writing narratives of place. Travel writing requires the author to research and reflect, exploring both the external--the place--and the internal--the author's experience. Students write multiple travel pieces and read widely essays of place by writers such as John Steinbeck, Joan Didion, Pico Iyer and Eliza Griswold. Permission of instructor required. Prereq: ENGL 501, ENGL 621 or ENGL 623. Writing intensive.

Co-requisite: INCO 589**Attributes:** Writing Intensive Course

ENGL #705 - Advanced Poetry Writing Workshop**Credits:** 4

Workshop discussion of advanced writing problems and submitted poems. Individual conferences with instructor. Prereq: ENGL 627 with a grade of B or better. ENGL #705 may be taken more than once for credit, especially with two different instructors. Student may be repeat ENGL #705 up to a maximum of 8 credits. Special fee. Writing intensive.

Attributes: Writing Intensive Course**ENGL #708 - Nonfiction: Form and Technique****Credits:** 4

A writer's view of contemporary nonfiction, emphasizing the choices the writer faces in the process of research writing. (Not offered every year.) Writing intensive.

Attributes: Writing Intensive Course**ENGL #709 - Poetry: Form and Technique****Credits:** 4

A writer's view of the problems, traditions, and structures of poetry. Writing intensive.

Attributes: Writing Intensive Course**ENGL 710 - Teaching Writing****Credits:** 4

This course will introduce you both to the theories and practices of teaching writing in middle and high school at a time of increased accountability. The course is designed for students who are interested in exploring teaching as a possible career. In the course we will try out varied literacy activities and study teaching writing using a process approach. We discuss different approaches to planning instruction and various forms of writing assessment, including state-wide tests. Open to juniors and seniors only. Writing intensive.

Attributes: Writing Intensive Course**ENGL 711 - Editing****Credits:** 4

Emphasis on newspaper editing but principles applicable to magazine and book editing are also covered. Prereq: B or better in ENGL 621 and written permission of instructor. Special fee. Writing intensive.

Attributes: Writing Intensive Course**ENGL 712 - Multimedia Storytelling****Credits:** 4

In this course, students explore the theory and practice of visual storytelling – including composition, lighting, editing and more – to produce short yet vibrant journalistic video documentaries. Students learn to shoot and edit audio and video. They explore narrative techniques and structure. They broaden their reportorial range, bringing visual sensitivity to storytelling. Prereq: ENGL 621 and ENGL 631 and permission of the instructor. Writing intensive.

Attributes: Writing Intensive Course**ENGL 715 - Teaching English as a Second Language: Theory and Methods****Credits:** 4

A course on the linguistic, psychological, and sociological theories that inform our understanding of language acquisition and current best practices in the teaching of ESOL. Provides an overview of first and second language acquisition, bilingualism, learner individual differences (e.g., age, motivation, aptitude, learning strategies), and sociocultural contexts of ESL teaching and learning.

Attributes: Writing Intensive Course**ENGL 716 - Curriculum, Materials and Assessment in English as a Second Language****Credits:** 4

A hands-on approach to developing curriculum and course material for teaching English as a Second Language. Students work on lesson plan development (needs analysis, objective writing, task sequencing, assessment of proficiency and objective), conduct ESL classroom observations, and engage in teaching demonstrations.

Attributes: Writing Intensive Course**ENGL 719 - Sociolinguistics Survey****Credits:** 4

How language varies according to the characteristics of its speakers: age, sex, ethnicity, attitude, time, and class. Quantitative analysis methods; relationship to theoretical linguistics. Focus is on English, but some other languages are examined. Prereq: ENGL or LING 405 (previously numbered 505) or permission.

ENGL 720 - Journalism Internship**Credits:** 1-16

Students intending to pursue careers in journalism spend a semester working full or part time for a daily newspaper under close supervision of editors. Reporting is stressed, but students may do some editing as well. The number of internships is very limited. Prereq: ENGL 622 required; ENGL 722 recommended; permission. Writing intensive.

Attributes: Writing Intensive Course**ENGL 721 - Advanced Reporting****Credits:** 4

While the theme of this course is teaching students advanced techniques of writing and reporting, each semester the course is offered it focuses on different areas of journalism. One semester, students may learn multimedia reporting - storytelling across multiple platforms, including video and audio - and in other semesters the course may focus on sportswriting. Yet in others, students will develop their news reporting skills. The course may be taken multiple times for credit with the approval of the Journalism Program Director. Prereq: 'B' or better in ENGL 621 and written permission of instructor. Special fee. Writing intensive.

Attributes: Writing Intensive Course**ENGL #723 - Issues in Journalism****Credits:** 4

This upper-level seminar focuses on the shifts in technology and public perception that are changing the definition of excellence in journalism. Special attention to legal and ethical issues reshaping journalism's public service role. Prereq: Grade of B in ENGL 621 and written permission. May be repeated once for credit with permission of the journalism director. Special fee. Writing intensive.

Attributes: Writing Intensive Course**ENGL 724 - Sports Writing****Credits:** 4

This class immerses students in all aspects of professional sports writing. Using in-class and real-world assignments, the class exposes students to such practical applications as covering live events; feature writing; covering breaking news; column writing/blogging; and writing a running game story on a real-time deadline. Prereq: ENGL 621 Newsriting with a 'B' or better.

ENGL 725 - Seminar in English Teaching**Credits:** 4

In this seminar on teaching English at the middle- and secondary-school levels, students meet the requirements for both English 710, Teaching Writing and English 792, Teaching Secondary School English. The two-semester course integrates the teaching of reading, writing, speaking, and listening, addressing both theoretical and practical issues. Through the study of different approaches, students develop their own philosophies of instruction. Writing intensive.

Attributes: Writing Intensive Course**ENGL 725L - Seminar in English Teaching: Lab****Credits:** 2

Classroom and research lab experiences give English Teaching majors enrolled in the Seminar in English Teaching opportunities to put their pedagogical and theoretical readings into practice and grow as teachers. This Lab should be taken simultaneously with ENGL 725. Students must have JR or SR status at the start of the course. Permission of instructor required.

Co-requisite: ENGL 725**ENGL 726 - Seminar in English Teaching****Credits:** 4

In this seminar on teaching English at the middle- and secondary-school levels, students meet the requirements for both English 710, Teaching Writing and English 792, Teaching Secondary School English. The two-semester course integrates the teaching of reading, writing, speaking, and listening, addressing both theoretical and practical issues. Through the study of different approaches, students develop their own philosophies of instruction. Writing intensive.

Attributes: Writing Intensive Course**ENGL 726L - Sem in English Teaching: Lab****Credits:** 2

Classroom and research lab experiences give English Teaching majors enrolled in the Seminar in English Teaching opportunities to put their pedagogical and theoretical readings into practice and grow as teachers. This lab should be taken simultaneously with ENGL 726. Students must have JR or SR status at the start of the course. Permission of instructor required.

Co-requisite: ENGL 726**ENGL 727 - Issues in Second Language Writing****Credits:** 4

Study of various issues in second language writing theory, research, instruction and administration. Topics include the characteristics and needs of second language writers, second language writing processes, contrastive rhetoric, grammar instruction, teacher and peer feedback, assessment, course design and placement. Writing intensive.

Attributes: Writing Intensive Course**ENGL 729 - Special Topics in Composition Studies****Credits:** 4

Advanced course on a topic chosen by the instructor. Precise topics and methods of each section vary. Possible topics include alternative discourses and rhetorics, contrastive rhetoric, electronic discourse and digital rhetoric, women's rhetorics and feminist pedagogies, Montaigne and the essay tradition, theories of literacy, theories of persuasive writing, theories of transactional writing, and written discourse analysis. Barring duplication of subject, may be repeated for credit. For details see descriptions available in the English Department. Writing intensive when topic is studies in rhetoric and composition.

ENGL 730 - Practicum in Teaching English and the Language Arts**Credits:** 1-6

A site-based course for practicing teachers that features in-class observations and demonstrations, individual consultation, and group meetings in the schools. Prereq: permission. May be repeated to a maximum of 8 credits.

ENGL #732 - Folklore and Folklife**Credits:** 4

Examines the materials and methods used to study folklife, emphasizing the historical context and development of folklore studies in North America and Europe, field research, performance theory, and other topics. (Also offered as ANTH #698.) Writing intensive.

Attributes: Writing Intensive Course**ENGL 733 - Special Studies in Film****Credits:** 4

Specialized and advanced study in film and cinema studies. Topics vary and may include literature and film, Asian-American film, film genres, and advanced film theory. May be repeated once for credit as long as topics are different. Special fee.

ENGL 733W - Special Studies in Film**Credits:** 4

Specialized and advanced study in film and cinema studies. Topics vary and may include literature and film, Asian-American film, film genres, and advanced film theory. May be repeated once for credit as long as topics are different. Special fee. Writing intensive.

Attributes: Writing Intensive Course**ENGL 734 - Special Topics in Literary Theory****Credits:** 4

Covers various topics dealing with diverse issues in literary and cultural theory. Prerequisite ENGL 619 or equivalent theory/philosophy class. Offered irregularly. For a specific description see English course offerings. Only open to English majors.

ENGL 735 - Entrepreneurial Journalism**Credits:** 4

This course teaches journalism students to think like business people so they can compete in the exploding world of online publishing. Students work on ways to monetize good journalism practices by studying opportunities available and applying what they learn to a publishing project. Those who prefer print will find the course valuable as they learn to balance business objectives with quality journalism. Prereq: ENGL 621 with a B or better and written permission of the instructor. Writing intensive.

Attributes: Writing Intensive Course**ENGL 736 - Environmental Theory****Credits:** 4

Theoretical approaches to nature writing. Topics vary but may include eco-memoirs, environmental rhetoric, native peoples and the land, land and national identity, animals in literature, and environmental activist non-fiction. Writing intensive. May be repeated for credit if topic differs.

Attributes: Writing Intensive Course

ENGL 738 - Topics in Asian American Studies**Credits:** 4

Study of the literature, history, scholarship, and current thought by and about Asian America. Representative works from among Japanese Americans, Chinese Americans, Korean Americans, Southeast Asian Americans, and South Asian Americans. (Also listed as AMST 615.) Writing intensive.

Attributes: Writing Intensive Course**ENGL 739 - American Indian Literature****Credits:** 4

Close study of traditional and/or contemporary American Indian literature and folklore with historical and cultural background. Writing intensive.

Attributes: Writing Intensive Course**ENGL #740 - Indigenous New England****Credits:** 4

An interdisciplinary introduction to the literatures, histories, and cultures of indigenous people located in what is now called New England. Course topics may include U.S. American Indian policy, tribal government structures and resistance, the history and forms of indigenous literacy, contemporary sovereignty struggles, popular culture, and film. Curricular activity with regional Native people required such as a visit to a Native community, work with tribal guest speakers, participation in a lecture or film series. (Also offered as AMST 611.) Writing intensive.

Attributes: Writing Intensive Course**ENGL 741 - Literature of Early America****Credits:** 4

English writings from settlement through the early U.S. (up to 1800): the literature of exploration, conquest, and cross-cultural contact; Puritan sermons, poetry, and a trial; captivity narratives; Native American writings; Enlightenment-era autobiographies, slave narratives, political writing, and fiction. These texts raise crucial issues: religion and violence; settler colonialism; New World race and gender constructions; and the social/textual constructions of nationhood. Prereq: ENGL 401.

Attributes: Writing Intensive Course**ENGL 742 - American Literature, 1815-1865****Credits:** 4

Antebellum writers tried to shape the nation through their texts, as they expressed the struggles over power and identity that led to the Civil War – and that continue to define U.S. discourses today. We encounter the genres – novels, oratory, poetry, appeals, slave narratives, essays, and nature writing – that authors used to grapple with slavery, social reform, environmental transformation, and aesthetics. Writers may include William Apess (Pequot), Margaret Fuller, Edgar Allan Poe, Frederick Douglass, and Emily Dickinson. Prereq: ENGL 401.

Attributes: Writing Intensive Course**ENGL #743 - American Literature, 1865-1915****Credits:** 4

Fiction, nonfiction, and poetry in the period of realism, naturalism, industrialism, big money. Individual works and background. Writing intensive.

Attributes: Writing Intensive Course**ENGL #744 - American Literature, 1915-1945****Credits:** 4

Fiction, poetry, and drama in the period of avant-garde and leftism, jazz age, and Depression. Individual works and cultural background. Writing intensive.

Attributes: Writing Intensive Course**ENGL 745 - Contemporary American Literature****Credits:** 4

A gathering of forms, figures, and movements since 1945. Individual works and cultural background. Writing intensive.

Attributes: Writing Intensive Course**ENGL 746 - Studies in American Drama****Credits:** 4

Topics vary from year to year. Examples: 20th-century American drama; contemporary playwrights; theatricality in American life. May be repeated for credit, barring duplication of topic. (Not offered every year.) Writing intensive.

Attributes: Writing Intensive Course**ENGL 747 - Studies in American Poetry****Credits:** 4

Topics vary from year to year. Examples: poets of the open road, Pound and his followers, major American poets, contemporary American poetry. May be repeated for credit, barring duplication of topic. (Not offered every year.) Writing intensive.

Attributes: Writing Intensive Course**ENGL #748 - Studies in American Fiction****Credits:** 4

Topics vary from year to year. Examples: the romance in America, the short story, realism and naturalism, the city novel, fiction of the thirties. May be repeated for credit, barring duplication of topic. Writing intensive.

Attributes: Writing Intensive Course**ENGL #749 - Major American Authors****Credits:** 4

Intensive study of two or three writers. Examples: Melville and Faulkner; Fuller, Emerson, and Thoreau; James and Wharton; Dickinson and Frost. May be repeated for credit, barring duplication of topic. Writing intensive.

Attributes: Writing Intensive Course**ENGL 750 - Special Studies in American Literature****Credits:** 4

Topics vary from year to year. Examples: the Puritan heritage, ethnic literatures in America, landscape in American literature, five American lives, pragmatism, American humor, transcendentalism, women regionalists. May be repeated for credit, barring duplication of topic. Writing intensive.

Attributes: Writing Intensive Course**ENGL 751 - Medieval Epic and Romance****Credits:** 4

The two major types of medieval narrative; comparative study of works from England, France, Germany, and Iceland, including Beowulf, Song of Roland, the Nibelungenlied, Njal's Saga, and Malory's Morte d'Arthur. All works read in modern English translations. (Not offered every year.) Writing intensive.

Attributes: Writing Intensive Course**ENGL 752 - History of the English Language****Credits:** 4

Evolution of English from the Anglo-Saxon period to the present day. Relations between linguistic change and literary style. (Not offered every year.) Writing intensive.

Attributes: Writing Intensive Course

ENGL #753 - Old English**Credits:** 4

Introduction to Old English language and literature through the reading of selected poetry and prose.

ENGL #756 - Chaucer**Credits:** 4

The Canterbury Tales in its original language. Writing intensive.

Attributes: Writing Intensive Course**ENGL 758 - Advanced Shakespeare****Credits:** 4

This course offers an in-depth look at a few Shakespeare plays, which you'll study intensively through the lens of a single topic. Topics vary from semester to semester. Recent examples include Shakespeare on Screen, Shakespeare and Race, Shakespeare's History Plays, Unknown Shakespeare, and Shakespearean Tragedy. Live and filmed performances will be included as available. Prereq: ENGL 401.

Attributes: Writing Intensive Course**ENGL 759 - Milton****Credits:** 4

Milton and his age. Generous selection of Milton's prose and poetry, with secondary readings of his sources and contemporaries. (Not offered every year.) Writing intensive.

Attributes: Writing Intensive Course**ENGL 767 - Literature of the Restoration and Early 18th Century****Credits:** 4

The English "Restoration" (roughly 1660-1688) was a comparatively free-spirited time following a decade of dogmatic and intolerant evangelical Christian rule. This course studies a variety of literary genres and academic disciplines, the opening of theaters and women performing on stage for the first time, the beginnings of the media, and the rise of scientific Enlightenment. Works by John Dryden, Aphra Behn, Jonathan Swift, and others. Prereq: ENGL 401.

Attributes: Writing Intensive Course**ENGL 768 - Literature of the Later 18th Century****Credits:** 4

Examines the economic, religious, and political preconditions necessary for the development of imperial Britain while analyzing how the material conditions of slavery and colonialism effectively underwrote the new British identity and literary world of the period. Explores the tension between reason and emotion characteristic of the Enlightenment.

Works by Jane Austen, Olaudah Equiano, Mary Wollstonecraft, William Blake, Adam Smith, Edmund Burke, Thomas Paine, and others. Prereq: ENGL 401.

Attributes: Writing Intensive Course**ENGL #769 - English Romantic Period****Credits:** 4

Major literary trends and authors, 1798 to 1832. Focus on poetry but attention also to prose works and critical theories. Wordsworth, Coleridge, Lamb, Hazlitt, DeQuincey. (Not offered every year.) Writing intensive.

Attributes: Writing Intensive Course**ENGL 771 - English Victorian Period****Credits:** 4

Fiction, nonfiction, and poetry from 1832-1870. The growth of the city and middle-class life, with particular emphasis on money and love. Authors include Charlotte and Emily Bronte, Charles Dickens, E.B. Browning, A.L. Tennyson. (Not offered every year.) Writing intensive.

Attributes: Writing Intensive Course**ENGL #772 - English Victorian Period****Credits:** 4

Fiction, nonfiction, and poetry from 1870-1900. The social conflicts created by gender politics and imperial expansion, with particular emphasis on aesthetics and gothic horror. Thomas Hardy, Oscar Wilde, R.L. Stevenson, Bram Stoker. (Not offered every year.) Writing intensive.

Attributes: Writing Intensive Course**ENGL 773 - Literary Modernisms: Return, Revolt, Recycle****Credits:** 4

This course focuses on modernist writers such as T.S. Eliot, who sought to revitalize modern culture by looking backward to the past; Virginia Woolf, who experimented with the form of the novel; and performance artist Kabe Wilson, who recycles texts of high modernism. We explore modernist literature in its geopolitical contexts with special attention to imperial expansion and contraction, the rise of fascism, world wars, and struggles for suffrage, and national belonging. Prereq: ENGL 401.

Attributes: Writing Intensive Course**ENGL 774 - Modern & Contemporary British Literature: New Departures****Credits:** 4

This course celebrates the growing diversity of British literature over the past half century. These years witnessed the final breakup of the British empire, a civil war in Northern Ireland, the rise of Scottish nationalism, and an influx of immigrants from former colonies worldwide. Beginning with the "little Englander" attitudes of the postwar era, we will explore the emergence of postmodern and postcolonial Britain in fiction, graphic narrative, poetry, drama, film and performance. Prereq: ENGL 401.

Attributes: Writing Intensive Course**ENGL 775 - Modern Irish Literature: A Changing Landscape****Credits:** 4

In this course we will explore Irish literature and culture from the Celtic Renaissance in the early twentieth century to the Celtic Tiger of the early twenty-first. Readings will trace Ireland's transformation from an inward-looking agricultural nation to one of the most globalized country's in the world. Recurring themes will include the status of the Church, changing gender roles, sectarian conflict, and Ireland's relation to the world. Prereq: ENGL 401.

ENGL 777 - Postcolonial Novel**Credits:** 4

Representative novels from writers such as Salman Rushdie, Amitava Ghosh, Bapsi Sidhwa, R. K. Narayan, Raja Rao, Romesh Gunasekara, Arundati Roy, Mahasweta Devi, U.R. Anantamoorthy, and others. Study of the development of the novel in English in South Asia from the mid-nineteenth century to the present day, Focus is on novels originally written in English; English translations from other South Asian languages when appropriate. Writing intensive.

Attributes: Writing Intensive Course

ENGL 778 - Race and Gender in Film and Popular Culture**Credits:** 4

This course explores representations of race and gender in American cinema and popular culture and features weekly readings in contemporary race and gender theories. Topics include the black women's gaze; woman as object; the action hero and hyper-masculinity; hybridity; race/ethnicity and hypersexuality; the crisis of white masculinity; white privilege; sexual orientation; transsexual and transgender performance. This course is reading and Canvas intensive, requiring weekly writing assignments and papers. It is NOT writing intensive.

Attributes: Writing Intensive Course**ENGL 779 - Linguistic Field Methods****Credits:** 4

Study of a non-Indo-European language by eliciting examples from an informant, rather than from written descriptions of the language. Students learn how to figure out the grammar of a language from raw data. Prereq: ENGL 405/LING 405. (Also offered as LING 779.) Special fee. (Not offered every semester) Writing intensive.

Attributes: Writing Intensive Course**ENGL #780 - Drama of Shakespeare's Contemporaries: Will and Company****Credits:** 4

Who were Shakespeare's contemporaries in the London theater, his models and mentors, his competitors, compatriots and rivals? Read the plays of those who inspired, fought with, befriended, and followed Shakespeare in one of the great eras of English literature. We'll discuss the development of revenge tragedy, histories and comedy, new styles of acting and theater buildings, presentations of court intrigue, the representation of women and "others," and the changing mores of early London. Prereq: ENGL 401.

Attributes: Writing Intensive Course**ENGL #781 - English Drama, 1660-1800****Credits:** 4

Study of the selected plays, their performance and their publication. Works by such figures as William Wycherley, Thomas Otway, Mary Pix, George Lillo, Susanna Centlivre, Richard Sheridan, and Elizabeth Inchbald. Special attention to the new prominence of women in the drama of this period, changes in theatre architecture, forms of non-dramatic spectacle, and the political and social significance of drama. Writing intensive.

Attributes: Writing Intensive Course**ENGL 783 - English Novel of the 18th Century****Credits:** 4

Study of the rise and development of the novel in the eighteenth century. Works by such figures as Daniel Defoe, Eliza Haywood, Samuel Richardson, Henry Fielding, Charlotte Lennox, Laurence Sterne, Frances Burney, and Jane Austen. Focus on writers who published their work in England but with examples from the colonial world and the continent (in translation) when appropriate. Writing intensive.

Attributes: Writing Intensive Course**ENGL 784 - English Novel of the 19th Century****Credits:** 4

The highly popular novels of nineteenth-century Britain produced such memorable characters as Sherlock Holmes, Count Dracula, Alice in Wonderland, Frankenstein's monster, and Dr. Jekyll. The novel's literary engagements with science, love, and the city are entangled with cultural discourses on animals, monstrosity, supernaturalism, degeneration, empire, race, and crime. In this course, students will sample a set of novels that exemplify the distinct generic and thematic innovations of the period. Prereq: ENGL 401.

Attributes: Writing Intensive Course**ENGL 785 - Fabulous Feminists, Women Warriors, Women Worriers****Credits:** 4

Literature and criticism by and about women writers, queer writers, gender issues, and literary history. Selection of writers and genres will vary by instructor and year (check English course description on lin at time of pre-registration). Prereq: ENGL 401.

Attributes: Writing Intensive Course**ENGL 787 - English Major Seminar****Credits:** 4

Intensive study of specialized topics that vary from year to year. Enrollment in each seminar is limited to 15 so that all students can take an active part in discussion and work closely with the instructor on their papers. For details, see course description available in the department office. Prereq: ENGL 419 with a grade of B or better. This course may be repeated for credit (up to a maximum of 8 credits) with the approval of the English Department. Writing intensive.

Attributes: Writing Intensive Course**ENGL 788 - Senior Honors****Credits:** 4

Open to senior English majors who, in the opinion of the department, have demonstrated the capacity to do superior work; permission required. An honors project consists of supervised research leading to a substantial thesis or writing of poetry or fiction portfolio. Required of students in the honors in major program. (Not offered every year.) Writing intensive.

Attributes: Writing Intensive Course**ENGL 789 - Special Topics in English Teaching****Credits:** 4

Advanced theories and practices course on English Teaching. Topics such as A) Teaching Young Adult Literature, C) Teaching English in Diverse Contexts, D) Teaching Drama, N) Teaching Nonfiction, R) English Teachers as Researchers, and T) Alternate Literacies and Teaching Technologies. Barring duplication of subject, course may be repeated for credit. For details see course descriptions available in the English department. Writing intensive.

Attributes: Writing Intensive Course**ENGL 790 - Special Topics in Linguistics****Credits:** 4

Advanced course on a topic chosen by the instructor. Inquire at the English department office for a full course description each time the course is offered. Topics such as word formation, dialectology, linguistic theory and language acquisition, history of linguistics, language and culture, cross-disciplinary studies relating to linguistics. Barring duplication of subject, may be repeated for credit. (Also offered as LING 790.) Writing intensive.

Attributes: Writing Intensive Course

ENGL 791 - English Grammar**Credits:** 4

An introduction to the terminology and major concepts in English grammar. Covers descriptive vs. prescriptive grammar, parts of speech, phrase structure, clause types, and basic sentence patterns. Useful for pre-service teachers seeking to acquire the background knowledge needed to make informed decisions about teaching of English grammar.

Attributes: Writing Intensive Course**ENGL 792 - Teaching Literature and Literacy****Credits:** 4

This course introduces theories and practices of teaching literature and literacy, including teaching reading and writing as well as teaching literary analysis at the secondary level. Students also learn to plan lessons, choose texts, and create learning activities for speaking, listening, and viewing in grade five through twelve. The course is designed for students who are interested in teaching as a possible career.

Attributes: Writing Intensive Course**ENGL 793 - Phonetics and Phonology****Credits:** 4

The sound system of English and other languages as viewed from the standpoint of modern linguistic theory, including the following topics: the acoustic and articulatory properties of speech sounds, the phonemic repertoires of particular languages, phonological derivations, and prosodic phenomena such as stress and intonation. (Also offered as LING 793.) Prereq: a basic linguistics course or permission.

ENGL 794 - Syntax**Credits:** 4

Relationship of grammar and meaning as viewed from the standpoint of modern linguistic theory. Emphasizes the syntax and semantics of English, with special attention to the construction of arguments for or against particular analyses. (Also offered as LING 794.) Prereq: a basic linguistics course or permission of the instructor. Writing intensive.

Attributes: Writing Intensive Course**ENGL 795 - Independent Study****Credits:** 1-4

Open to highly qualified juniors and seniors. To be elected only with permission of the department chairperson and of the supervising faculty member or members. Barring duplication of subject, may be repeated for credit up to a maximum of 8 credits. Writing intensive.

Attributes: Writing Intensive Course**ENGL 797 - Special Studies in Literature****Credits:** 4

A) Old English Literature, B) Medieval Literature, C) 16th Century, D) 17th Century, E) 18th Century, f) English Romantic Period, G) Victorian Period, H) 20th Century, I) Drama, J) Novel, K) Poetry, L) Non-fiction, M) American Literature, N) A Literary Problem, O) Literature of the Renaissance, R) Race and Racial Theories. The precise topics and methods of each section vary. Barring duplication of subject, may be repeated for credit. For details, see the course descriptions available in the English department. Special fee on some topics. Writing intensive.

Attributes: Writing Intensive Course**ENGL 799 - Study Abroad in Cambridge England****Credits:** 0

UNH Cambridge Summer Program at Gonville & Caius College of Cambridge University in Cambridge, England. This course number is a place-holder. Students register for both this administrative course number and two of the courses being offered through the program. These courses will vary from year to year. To view the courses offered visit <http://www.unh.edu/cambridge>. Permission required. Special fee. Cr/F.

Co-requisite: INCO 589**Attributes:** World Cultures(Discovery)**ENGL 799A - Study Abroad in Cambridge England Bonus Weekend****Credits:** 0

UNH Cambridge Summer Program Bonus Weekend excursion. This course is a place-holder. Location may change from year to year. To view Bonus Weekend description and location visit <http://www.unh.edu/cambridge>. Permission required. Special fee.

Co-requisite: ENGL 799

English/Speakers of Other Languages (ESL)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

ESL 410 - Elementary Reading, Writing, Grammar**Credits:** 4-12

Intensive English, with a focus on reading and writing, for English language learners at an elementary level. Students will develop a basic vocabulary in English and sufficient proficiency in the language to conduct essential business in an English-speaking environment. Permission required. May be repeated to a maximum of 8 credits.

ESL 411 - Speaking and Listening, Elementary Level**Credits:** 2-8

Intensive English, with a focus on speaking and listening, for English language learners at an elementary level. Students will develop a basic vocabulary in English and sufficient proficiency in the language to conduct essential business in an English-speaking environment. Permission required. May be repeated to a maximum of 8 credits.

ESL 420 - Intermediate Reading, Writing, Grammar**Credits:** 4-12

Intensive English, with a focus on reading and writing, for English language learners at an intermediate level. Students will expand their vocabulary and develop sufficient English proficiency to communicate with English speakers who have little experience with English language learners. Permission required. May be repeated to a maximum of 8 credits.

ESL 421 - Intermediate Listening and Speaking**Credits:** 2-8

Intensive English, with a focus on speaking and listening, for English language learners at an intermediate level. Students will expand their vocabulary and develop sufficient English proficiency to communicate with English speakers who have little experience with English language learners. Permission required. May be repeated to a maximum of 8 credits.

ESL 430 - Advanced Reading, Writing, Grammar**Credits:** 4-12

Intensive English, with a focus on reading and writing, for English language learners at an advanced level. Students will develop an extensive vocabulary in English, facility with complex sentence structures, and an ability to write coherent, comprehensible essays in English. Permission required. May be repeated to a maximum of 8 credits.

ESL 431 - Advanced Listening and Speaking**Credits:** 2-8

Intensive English, with a focus on speaking and listening, for English language learners at an advanced level. Students will develop an extensive vocabulary in English and sufficient English proficiency to function successfully in American university courses that do not rely heavily on language. Permission required. May be repeated to a maximum of 8 credits.

ESL 434 - High Advanced Integrated Skills**Credits:** 2-8

Intensive English with a focus on incorporating, analyzing, and synthesizing information from lectures and readings into academic writing. This course is intended for students whose skills are uneven in the reading, writing, listening, and speaking modalities. Students enrolled in ESL 434/ESL 634 will be simultaneously enrolled in ESL 430/ESL 630 or ESL 431/ESL 631. Permission required. May be repeated to a maximum of 8 credits. Special fee.

ESL 440 - English as a Second Language Bridge Program**Credits:** 4-8

This course is intended for speakers of other languages who have already achieved a 500 score on the TOEFL (or an equivalent score on another standardized test of English proficiency). Students will learn to read academic materials, write coherent essays on academic topics, and participate in group work and class discussion. Students enrolled in ESL 440/ESL 640 are also eligible to enroll in one University of New Hampshire course. Permission required. May be repeated to a maximum of 8 credits.

ESL 445 - Introduction to US Academic Culture**Credits:** 4

This course will introduce students to the academic expectations, resources, policies and traditions of university life in the US and serve as an ongoing orientation to the University of New Hampshire. The course is designed to help new international students adjust to college life, establish skills that will help them be successful through their transition into their academic program and develop a sense of belonging and engagement with all the university has to offer.

ESL 450 - Academic English for English as a Second Language Students**Credits:** 4

This course is intended for speakers of other languages who have already achieved a score of 525 or higher on the TOEFL (or an equivalent score on another standardized test of English language proficiency). Students will learn to read academic materials, do basic library research, write short papers in standard academic form, understand academic lectures, and participate in group work and class discussion. Writing Intensive. Students enrolled in ESL 450/ESL 650 are also eligible to enroll in two University of New Hampshire courses. Permission required. May be repeated to a maximum of 8 credits. Special fee.

ESL 610 - Elementary Reading, Writing, Grammar**Credits:** 4-12

Intensive English, with a focus on reading and writing, for English language learners at an elementary level. Students will develop a basic vocabulary in English and sufficient proficiency in the language to conduct essential business in an English-speaking environment. Permission required. May be repeated to a maximum of 8 credits.

ESL 611 - Speaking and Listening, Elementary Level**Credits:** 2-8

Intensive English, with a focus on speaking and listening, for English language learners at an elementary level. Students will develop a basic vocabulary in English and sufficient proficiency in the language to conduct essential business in an English-speaking environment. Permission required. May be repeated to a maximum of 8 credits.

ESL 620 - Intermediate Reading, Writing, Grammar**Credits:** 4-12

Intensive English, with a focus on reading and writing, for English language learners at an intermediate level. Students will expand their vocabulary and develop sufficient English proficiency to communicate with English speakers who have little experience with English language learners. Permission required. May be repeated to a maximum of 8 credits.

ESL 621 - Intermediate Listening and Speaking**Credits:** 2-8

Intensive English, with a focus on speaking and listening, for English language learners at an intermediate level. Students will expand their vocabulary and develop sufficient English proficiency to communicate with English speakers who have little experience with English language learners. Permission required. May be repeated to a maximum of 8 credits.

ESL 630 - Advanced Reading, Writing, Grammar**Credits:** 4-12

Intensive English, with a focus on reading and writing, for English language learners at an advanced level. Students will develop an extensive vocabulary in English, facility with complex sentence structures, and an ability to write coherent, comprehensible essays in English. Permission required. May be repeated to a maximum of 8 credits.

ESL 631 - Advanced Listening and Speaking**Credits:** 2-8

Intensive English, with a focus on speaking and listening, for English language learners at an advanced level. Students will develop an extensive vocabulary in English and sufficient English proficiency to function successfully in American university courses that do not rely heavily on language. Permission required. May be repeated to a maximum of 8 credits.

ESL 634 - High Advanced Integrated Skills**Credits:** 2-8

Intensive English with a focus on incorporating, analyzing, and synthesizing information from lectures and readings into academic writing. This course is intended for students whose skills are uneven in the reading, writing, listening, and speaking modalities. Students enrolled in ESL 434/634 will be simultaneously enrolled in ESL 430/ESL 630 or ESL 431/ESL 631. Permission required. May be repeated to a maximum of 8 credits. Special fee.

ESL 640 - English as a Second Language Bridge Program**Credits:** 4-8

This course is intended for speakers of other languages who have already achieved a 500 score on the TOEFL (or an equivalent score on another standardized test of English proficiency). Students will learn to read academic materials, write coherent essays on academic topics, and participate in group work and class discussion. Students enrolled in ESL 440/ESL 640 are also eligible to enroll in one University of New Hampshire course. Permission required. May be repeated to a maximum of 8 credits.

ESL 645 - Introduction to US Academic Culture**Credits:** 4

This course will introduce students to the academic expectations, resources, policies and traditions of university life in the US and serve as an ongoing orientation to the University of New Hampshire. The course is designed to help new international students adjust to college life, establish skills that will help them be successful through their transition into their academic program and develop a sense of belonging and engagement with all the university has to offer.

ESL 650 - Academic English for English as a Second Language Students**Credits:** 4

This course is intended for speakers of other languages who have already achieved a score of 525 or higher on the TOEFL (or an equivalent score on another standardized test of English language proficiency). Students will learn to read academic materials, do basic library research, write short papers in standard academic form, understand academic lectures, and participate in group work and class discussion. Writing Intensive. Students enrolled in ESL 450/ESL 650 are also eligible to enroll in two University of New Hampshire courses. Permission required. May be repeated to a maximum of 8 credits. Special fee.

Environmental & Resource Economics (EREC)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

EREC 411 - Environmental and Resource Economics Perspectives**Credits:** 4

Microeconomic theory and analysis in resource management and use decisions. Survey of significant resource problems from an economic perspective and the application of economic analysis. Repeat rules apply with ECN 412, ECON 402, ECON 402A, and ECON 402H.

Attributes: Social Science (Discovery)**EREC 444 - The New Pirates of the Caribbean****Credits:** 4

Inquiry into many facets of tourism from the standpoint of tourists and tour destination. Economic and institutional factors affecting human well-being from the use of land and water resources; discussions of distributional aspects of benefits from tourism activities.; environmental impacts; ownership patterns and uses; cultural attributes; and local economies in small Caribbean island nations. Cruise ships, time-shares, all-inclusive resorts, hurricanes, casinos, bars, rum, sex, and drugs are investigated through extensive readings and web surfing. Writing intensive.

Attributes: World Cultures(Discovery); Inquiry (Discovery); Writing Intensive Course**EREC 525 - Statistical Methods and Applications****Credits:** 4

Applications of elementary statistical concepts and methods including probability, descriptive techniques, statistical inference and bivariate and multivariate statistical analysis. Orientation is toward analysis and interpretation of data commonly encountered in social science disciplines. No credit for students who have completed ADM 430; BIOL 528; ADMN 420; HHS #540; MATH 439; MATH 539; MATH 644; PSYC 402; SOC 502.

Attributes: Quantitative Reasoning(Disc)**EREC 535 - Being a Locavore****Credits:** 4

Explores the growth of the Locavore movement in the United States, starting with the evolution of the mainstream agricultural system. Topics such as the Argicultural Adjustment Act, farm subsidies, the development of mono-culture large scale farms, as well as the Magnusen-Stevens Act and the current state of fisheries. Ethical, economic, and social phenomenon will be discussed, followed by nutrition, and environmental impacts. Students will keep a food journal, which will be used as a basis to source, budget, and plan for years of eating local food. The class concludes with an investigation into the growing trend of local farmers' markets, CSAs, and on farm sales. How and why more and more people are going local and perhaps becoming "Locavores".

Attributes: Social Science (Discovery)**EREC 572 - Introduction to Natural Resource Economics****Credits:** 4

Introduces theory, methods of analysis, and current literature of natural resource economics and policy. Topics include multiple use, taxation, optimal harvest scheduling, market failure, property rights, public goods, benefit-cost analysis, amenity values, non-market resource services and natural resource policy. Topics applied to forests and forestry, wildlife management, outdoor recreation, public lands, agriculture, fisheries, water, energy and mining/nonrenewable resources.

EREC 595 - Problems in Natural and Agricultural Resources**Credits:** 2-4

Students pursue field, laboratory, or library problems in natural and environmental resources that are not covered by other courses. Faculty consultant and study topic must be chosen before registration. In consultation with the faculty adviser, students select the problem area, create a bibliography for reflection, and pursue the topic. A professionally written paper is expected at termination of the study. May be repeated once for credit. Prereq: permission.

EREC 595W - Problems in Natural and Agricultural Resources**Credits:** 2-4

Students pursue field, laboratory, or library problems in natural and environmental resources that are not covered by other courses. Faculty consultant and study topic must be chosen before registration. In consultation with the faculty adviser, students select the problem area, create a bibliography for reflection, and pursue the topic. A professionally written paper is expected at termination of the study. May be repeated once for credit. Prereq: permission. Writing intensive.

Attributes: Writing Intensive Course

EREC 596 - Problems in Natural and Agricultural Resources**Credits:** 2-4

Students pursue field, laboratory, or library problems in natural and environmental resources that are not covered by other courses. Faculty consultant and study topic must be chosen before registration. In consultation with the faculty adviser, students select the problem area, create a bibliography for reflection, and pursue the topic. A professionally written paper is expected at termination of the study. May be repeated once for credit. Prereq: permission.

EREC 596W - Problems in Natural and Agricultural Resources**Credits:** 2-4

Students pursue field, laboratory, or library problems in natural and environmental resources that are not covered by other courses. Faculty consultant and study topic must be chosen before registration. In consultation with the faculty adviser, students select the problem area, create a bibliography for reflection, and pursue the topic. A professionally written paper is expected at termination of the study. May be repeated once for credit. Prereq: permission. Writing intensive.

Attributes: Writing Intensive Course**EREC 600 - Field Experience****Credits:** 1-4

A supervised experience providing the opportunity to apply academic experience in settings associated with future professional employment and/or related graduate opportunities. Must be approved by a faculty advisor selected by the student. May be repeated to a maximum of 8 credit hours. Prereq: permission. Cr/F.

EREC 601 - Agribusiness Economics and Management**Credits:** 4

Applications of economic and management principles in production, marketing, finance, and other operational decisions facing small agribusiness firms. Prereq: EREC 411 or ECON 402 or equivalent.

EREC 606 - Land Economics Perspectives: Uses, Policies, and Taxes**Credits:** 4

Economic and institutional perspectives affecting human use of land resources; discussion of land ownership patterns and uses; land rent, location, and resource use; institutional constraints; partial ownership policies; and local planning for more efficient use of land. Real estate markets, transfers, valuation, and taxation. Prereq: EREC 411 or equivalent or permission.

EREC #608 - Environmental Economics for Non-Economists**Credits:** 4

This course will examine different aspects of natural resource allocation and protection of environmental quality from an economic standpoint. The course will examine the economic factors which lead to environmental problems such as air and water pollution, the common property problem, and other areas where existing markets do a less than satisfactory job of resource allocation. Economic incentives for alleviating these environmental problems will also be surveyed. Specific topics covered will include benefit cost analysis, valuation of "nonmarket" goods, policy tools which have economic bases, and sustainable development. Where possible, guest lecturers from other disciplines and selected films will be used to present alternative viewpoints and stimulate discussion. Class participation is encouraged and expected. Students completing this course will gain an overview of key issues in environmental economics, and how economics can be used as an aid in policy decisions regarding natural resources. Prereq: EREC 411, ECON 401 or their equivalents or permission. Does not count toward major requirements for EREC electives.

EREC 627 - Community Economics**Credits:** 4

Economic factors affecting community and local government decisions. Emphasizes use of economic theory for decision making and community problem solving. Prereq: EREC 411 or equivalent.

EREC 680 - Agricultural and Food Policy**Credits:** 4

Analysis of issues that led to government involvement in the agricultural and food sector. Application of economic concepts and tools to the evaluation of public policies affecting agriculture and food. Prereq: EREC 411 or equivalent.

EREC 708 - Environmental Economics**Credits:** 4

Environmental pollution, the market economy, and optimal resource allocation; alternative control procedures; levels of environmental protection and public policy; property right issues. Prereq: intermediate microeconomic theory; permission. Writing intensive.

Attributes: Writing Intensive Course**EREC 710 - Seminar****Credits:** 2-4

Seminars arranged to students' needs and offered as demand warrants: A) Rural Development, B) Marine Economics, C) Community Economics, D) Land and Water Economics, E) Quantitative Methods, F) Recreation Economics, G) Small Business Economic and Managerial Issues. In-depth treatment of area, including classic works. May be repeated.

EREC #711 - Marine Resource Economics**Credits:** 4

Economic overview of the marine environment; interactions/conflicts surrounding this multiple-use resource. Economics of fisheries; marine recreation; aquaculture; endangered species; non-market ecosystem services. Prereq: EREC 411, ECON 401 or ECON 402 or equivalent or permission. (Offered every other semester.)

EREC 756 - Rural and Regional Economic Development**Credits:** 4

Concepts and methods of delineating regional economies, methods of measuring activity, regional development, and public policies. Emphasizes empirical research studies. Prereq: intermediate economic theory or permission. Writing intensive.

Attributes: Writing Intensive Course**EREC 760 - Ecological-Economic Modeling for Decision Making****Credits:** 4

In this course, students will develop ecological-economic models and use them to inform economic decision making related to the management of natural resources. These models range from analytical models using algebra and calculus, to computational models using coding and simulations. The course will focus on spatial-dynamic computational bio-economic models because of their ability to capture economic decision making and ecological processes over time and space. Prereq: ECON 605 or equivalent; MATH 420, or equivalent.

EREC 775 - Research Methods**Credits:** 4

Study of the process, methods, and techniques of conducting scientific research in the social sciences. Includes problem identification, data collection and management, qualitative quantitative data analyses, and communicating scientific research. Prereq: EREC 411 or equivalent; EREC 525 or equivalent; junior/senior standing.

EREC 795 - Investigations**Credits:** 2-4

Special assignments in readings, investigations, or field problems. Topics may include agricultural marketing, agricultural production and farm management, community development, economics of human resources, economics of population and food, land economics, marine economics, rural economic development, regional economics, water economics, or teaching experience. Prereq: permission. May be repeated.

EREC 795W - Investigations**Credits:** 2-4

Special assignments in readings, investigations, or field problems. Topics may include agricultural marketing, agricultural production and farm management, community development, economics of human resources, economics of population and food, land economics, marine economics, rural economic development, regional economics, water economics, or teaching experience. Prereq: permission. May be repeated. Writing intensive.

Attributes: Writing Intensive Course**EREC 799 - Honors Senior Thesis****Credits:** 1-4

Honor/thesis students conduct an independent research project, relevant to the student's area of specialization in the major, under the direction of a faculty sponsor. Students submit a research proposal, write a final report, and provide an oral presentation. One or two semester sequence. Restricted to Senior/Natural Resource Majors. Permission required. Writing intensive.

Attributes: Writing Intensive Course

Exchange (EXCH)

EXCH 595 - Exchange**Credits:** 18

Special fee. Cr/F.

Forest Technology (FORT)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

FORT 461 - Dendrology**Credits:** 3

Identification and nomenclature of forest trees and shrubs which are important to the ecology and economy of the Northeastern forest. The study of forested plant relationships with other plants, animals, soil, and site regimes. 1 lec/1 2-hr lab.

FORT 463 - Forest Ecology**Credits:** 3

Study the interactions of forest trees with their environment, both as individuals and as tree communities; explore environmental problems affecting plant communities; the history and classification of North American forests. Study of soils as they affect forest distribution and tree growth. Includes a series of field-based exercises used to reinforce the principles introduced in lectures.

FORT 465 - Forest Orientation Seminar**Credits:** 1

Seminar to prepare first year students for study and placement in the broad area of forest technology. Focus on history and development of modern forestry systems and agencies at the state, regional and federal levels. The lives of key individuals like John Muir, Gifford Pinchot, and Aldo Leopold will help place forest management philosophies in perspective. Cr/F.

FORT 466 - Forest Surveying and Mapping**Credits:** 4

Provides instruction and experience in running cruise lines and in the survey and identification of rural property lines. The focus is on field surveying techniques and problem solving of special importance to foresters. Use of magnetic survey data in rural property measurement. Skill and efficiency is developed in analyzing field survey data, plotting, lettering and finishing topographic and planimetric maps, and road plans, both manually and by Computer Assisted Drafting using multiple software applications.

FORT 470 - Applied Silviculture**Credits:** 4

Silvicultural practices in the U.S. including reforestation systems. Improvement of forest stands employing the basic tending practices of weeding, thinning, and pruning. Marking of stands prior to logging operations. Prereq: permission of instructor or FORT461 and FORT 463. 2 lec/1 4-hr lab.

FORT 475 - Forestry Field Practice**Credits:** 1

A week long introduction to the various components of the forest industry of the northeast. Students visit with members of the forest industry in the work-place and learn how they are interrelated. Students gain background experience that will prove beneficial in understanding their studies during their second year in the Forest Technology curriculum. One week of concentrated field study. Forest Technology majors only.

FORT 490 - NH Sustainable Forest Resource**Credits:** 4

An overview of forestry in New Hampshire and the northeast. History shows how our forests have been used in the past and how they developed into what we see today. Discover the science of Forest Ecology and Silviculture and how foresters use these to manage our forests sustainably for a variety of forest products. Learn how these products are harvested, processed and used. Understand how pathogens and pests can threaten our forests. On-line course.

FORT 564 - Arboriculture**Credits:** 3

Tree selection, care, and maintenance in the urban environment. Includes climbing, safety practices, pruning, hazard tree assessment, and removals. Prereq: FORT 463 or permission. 1 lec/1 4-hr lab.

FORT 567 - Leadership, Supervision & Safety**Credits:** 2

Fundamentals of leadership and supervision including effective communication in the workplace and public sector are explored. Project management, personnel training and motivation, plus problem-solving and conflict resolution applied through a practical community service forestry project. Accident prevention, first aid, and CPR instruction also included. 2 lec.

FORT 569 - Wildlife Ecology & Conservation**Credits:** 3

Foresters directly influence wildlife by manipulating habitat through silvicultural operations. Course focuses on the ecology of New England wildlife species with emphasis on their habitat requirements and the enhancement of habitat through silviculture and the use of best management practices. 1 lec/1 4-hr lab.

FORT 572 - Mensuration**Credits:** 4

Field application of forest inventory and timber cruising techniques. Measurement of tree form, volume, quality, and defect. Growth prediction of individual trees and stands. Use of basic statistical methods as a tool in cruising. Prereq: FORT 461 or instructor permission. 2 lec/1 4-hr lab.

FORT 573 - Management Operation&Analysis**Credits:** 3

Forest appraisal and valuation methods, timber sale contracts, depreciation and depletion calculations, forest taxation. Essentials of forest regulation and management planning. 2 lec/1 2-hr lab.

FORT 574 - Industrial Forest Management Tour**Credits:** 1

Concentrated field experience and intensive observations of industrial, private, and federal forest holdings and facilities; emphasizing forest utilization and management operations as currently practiced in New England. One week of concentrated field study. Cr/F. Forest Technology majors only.

FORT 576 - Forest Products**Credits:** 4

Basics of structure and properties of wood as a raw material. Conversion of logs to lumber at Thompson School sawmill. Lumber and log grading and measuring. Studies in processing efficiency, lumber drying, and physical plant operations. Introduction to paper, veneer, and chip products. Marketing of forest products. 2 lec/1 4-hr lab.

FORT 577 - Forest Harvesting Systems**Credits:** 4

A study in harvesting methods and their relation to forest management and silviculture of the state and region. Theory and practice of conventional harvesting systems including hands-on application of techniques with a strong emphasis on protection of the environment and the safety and health of workers. Department permission for non-majors. 2 lec/4-hr lab.

FORT 578 - Forest Insects & Diseases**Credits:** 2

An introduction to the role of forest insects and microorganisms in the context of managing woodlands. Students learn to recognize the signs and symptoms of insect and disease damage in forest trees and products. They study the life cycles and identify common forest insect and disease pests impacting North American tree species. Pest management methods are introduced. 1 lec/3-hr lab.

FORT 579 - Forest Fire Control and Use**Credits:** 2

A study in basic fire ecology and instruction in forest fire suppression methods. Interactions of forest fuels, topography, and weather as they affect forest fire behavior. Use of controlled fire as a tool in forest and wildlife management. When appropriate, field work will include actual burning.

FORT 581 - Applied Geographic Information Systems (GIS) Techniques**Credits:** 4

Geographic Information Systems (GIS) are integral to natural resource management and these technologies/software have become widespread throughout various fields. Proficiency in fundamental GIS skills is imperative for resource managers. Students will 1) develop an understanding of imagery acquisition and remote sensing systems/technologies; 2) develop skills in identification, interpretation, and mapping of land/vegetation features, including an understanding of map projection; 3) gain experience in GIS software to perform fundamental geoprocessing and mapping techniques.

FORT 591 - Independent Studies in Forest Technology/Urban Tree Care**Credits:** 1-4

Students who have the ability and adequate preparation to work independently may propose a contract to design a course or research project on a topic not available through existing course offerings. The purpose of this research is to explore new areas in the student's field of study or to pursue course material in greater depth. Work is supervised by an appropriate faculty/staff member and credit varies depending on the proposed project/research. Examples include forest management, forest products, forest protection, wildlife management, or urban tree care. Permission required. Course may be repeated up to a maximum of 8 credits.

FORT 592 - Independent Studies in Forest Technology/Urban Tree Care**Credits:** 1-4

Students who have the ability and adequate preparation to work independently may propose a contract to design a course or research project on a topic not available through existing course offerings. The purpose of this research is to explore new areas in the student's field of study or to pursue course material in greater depth. Work is supervised by an appropriate faculty/staff member and credit varies depending on the proposed project/research. Examples include forest management, forest products, forest protection, wildlife management, or urban tree care. Permission required. Course may be repeated up to a maximum of 8 credits.

FORT 597 - Work Experience**Credits:** 0

Career-related employment (10 weeks, generally in the summer following freshman year) in a forestry, urban tree care, or other department-approved natural resources area. Cr/F.

French (FREN)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

FREN 401 - Elementary French I**Credits:** 4

Conducted in French, the course introduces students to French language and culture through speaking, listening, reading, writing, labs and films. Designed for students without previous training in French. Credit only for students who have had less than two years of French in secondary school. 401-402 taken together satisfies the foreign language requirement. Special fee.

FREN 402 - Elementary French II**Credits:** 4

See description for FREN 401. FREN 401 is a prerequisite for this course. Cannot be taken separately except with permission of instructor.

Attributes: Foreign Language Requirement

FREN 403 - Review of French**Credits: 4**

Conducted in French. Course emphasizes the active use of French through speaking, listening, reading, writing, labs, and films while providing a review of basic grammar. Designed for those students whose study of French has been interrupted for a significant amount of time or who have had two or more years of high school French. Special fee. FREN 403 does not satisfy the foreign language requirement.

FREN 500 - Selected Topics in World Literature**Credits: 4**

Topics will be chosen that introduce students to major themes and genres. (Also offered as CLAS 500, GERM 500, ITAL 500, PORT 500, RUSS 500, SPAN 500.) May be repeated for credit. Credit/Fail. Writing intensive.

Attributes: Writing Intensive Course

FREN 503 - Intermediate French I**Credits: 4**

Conducted in French. Review of grammar with emphasis on the development of reading, writing, speaking, and listening skills. With modules on culture tailored to the needs of students in STEM disciplines as well as in agriculture, business, hospitality, and health and human services (among others). Prereq: one year of elementary French or equivalent.

Attributes: World Cultures(Discovery)

FREN 503H - Honors/Intermediate French I**Credits: 4**

Conducted in French. Review of grammar with emphasis on the development of reading, writing, speaking, and listening skills, and on culture. Discussion in French of literary and cultural readings. Labs and films. Special fee. Writing intensive.

Attributes: World Cultures(Discovery); Writing Intensive Course

FREN 503W - Intermediate French I**Credits: 4**

Conducted in French. Review of grammar with emphasis on the development of reading, writing, speaking, and listening skills, and on culture. Discussion in French of literary and cultural readings. Labs and films. Special fee. Writing intensive.

Attributes: World Cultures(Discovery); Writing Intensive Course

FREN 504 - Intermediate French II**Credits: 4**

Conducted in French. Review of grammar with emphasis on the development of reading, writing, speaking, and listening skills, and on culture. Discussion in French of literary and cultural readings. Labs and films. Special fee. Writing intensive.

Attributes: World Cultures(Discovery); Writing Intensive Course

FREN 504H - Honors/Intermediate French II**Credits: 4**

Conducted in French. Review of grammar with emphasis on the development of reading, writing, speaking, and listening skills, and on culture. Discussion in French of literary and cultural readings. Labs and films. Special fee. Writing intensive.

Attributes: World Cultures(Discovery); Writing Intensive Course

FREN 525 - A Road Trip Through France: Baguette, Brie, Bordeaux, and Beyond**Credits: 4**

What makes France France, and how did it evolve from a mostly agricultural to a modern society? Using films, essays, newspaper articles, and television this course examines major social, political, and gastronomic trends, events, debates and personalities that help shed light on contemporary French culture. Taught in English. Not for major credit. May be repeated for credit barring duplication of materials. Special fee. Offered in Spring. Writing intensive.

Attributes: World Cultures(Discovery); Inquiry (Discovery); Writing Intensive Course

FREN 525H - Honors/A Road Trip Through France: Baguette, Brie, Bordeaux, and Beyond**Credits: 4**

What makes France, France, and how did it evolve from a mostly agricultural to a modern society? Using films, essays, newspaper articles, and television this course examines major social, political, and gastronomic trends, events, debates and personalities that help shed light on contemporary French culture. Taught in English. Not for major credit. May be repeated for credit barring duplication of materials. Offered in the Spring.

Attributes: World Cultures(Discovery); Inquiry (Discovery); Writing Intensive Course

FREN #526 - Introduction to Francophone Cultures**Credits: 4**

Taught in English. Focus on French-speaking cultures other than France. Includes historical, geographical, and artistic expressions of these cultures. Not for major credit. May be repeated for credit barring duplication of materials. Special fee. (Not offered every year.) Writing intensive.

Attributes: World Cultures(Discovery); Inquiry (Discovery); Writing Intensive Course

FREN 595 - French Practicum**Credits: 2**

Practical use of French language or cultural skills outside the classroom through special projects. May be repeated up to 4 credits. Prereq: Permission. Special fee. Cr/F.

FREN 595A - A Culinary Exploration in Southern France**Credits: 0**

A 2-week long experience abroad intended to immerse students in French language and culture. The intensive and impactful in-country travel will augment on-campus instruction, and will provide a "living lab" experience for students who have taken FREN 595. Prereq: FREN 595.

FREN #625 - Cuisine, Culture, and the Creation of French Identity**Credits: 4**

What makes France, France, and how did it evolve that way? How do strong regional identities complement and compete with national identity in a globalizing world? Using film, short stories, scholarly articles, and mass media, we examine the development of regional cuisine, literature, art, music, and folk traditions in light of broader French history and politics. Focus on Provence, Alsace, the Southwest, and Burgundy, emphasizing Dijon. Works by Varda, Berri, Zola, Colette, and Merimee. Special fee.

FREN 631 - Advanced French: Reading and Writing**Credits:** 4

This course is intended to refine students' ability to write in French through the study and practice of stylistic techniques, pertinent grammatical structures, and vocabulary used in contemporary written French. Working with a variety of texts, students become familiar with, and practice different forms of French rhetoric and styles in creative, argumentative, and analytical writings. Revision and rewriting are an integral part of the course, with students' own work providing a focus for in-class analysis and feedback. Prereq: FREN 504. Offered during the fall semester. The course sequence FREN 631- FREN 632 may be taken in any order. Special fee.

Attributes: World Cultures(Discovery); Writing Intensive Course**FREN 632 - Advanced French: Listening and Speaking****Credits:** 4

This course is intended to refine students' ability to communicate in French, through the practice of debating and exchanging ideas, and a variety of pronunciation exercises. While reviewing and refining pertinent grammatical structures, students discuss current events and other material in class and on-line. Students also have the opportunity to actively practice their French during the weekly Zoom session with French students from Bordeaux. Prereq: FREN 504. Offered during the spring semester. FREN 631 and FREN 632 may be taken in any order.

Attributes: World Cultures(Discovery)**FREN 651 - Readings in French Literature****Credits:** 4

Reading and rigorous oral and written analysis of texts selected to illustrate important themes/genres in French literature. May be taken before or after FREN 652. Pre- or Co-Req: FREN 631 and FREN 632. Required for majors. Special fee. Writing intensive.

Attributes: Humanities(Disc); Writing Intensive Course**FREN 651H - Honors/Readings in French Literature****Credits:** 4

Reading and rigorous oral and written analysis of texts selected to illustrate important themes/genres in French literature. May be taken before or after FREN 652. Pre- or Co-Req: FREN 631 and FREN 632. Required for majors. Special fee. Writing intensive.

Attributes: Humanities(Disc); Writing Intensive Course**FREN 652 - Readings in French Literature****Credits:** 4

Reading and rigorous oral and written analysis of texts selected to illustrate important themes/genres in French literature. May be taken before or after FREN 652. Pre- or Co-Req: FREN 631 and FREN 632. Required for majors. Special fee. Writing intensive. May be taken before or after FREN 651. Writing intensive.

Attributes: Humanities(Disc); Writing Intensive Course**FREN #652H - Honors/Readings in French Literature****Credits:** 4

Reading and rigorous oral and written analysis of texts selected to illustrate important themes/genres in French literature. May be taken before or after FREN 652. Pre- or Co-Req: FREN 631 and FREN 632. Required for majors. Special fee. Writing intensive. May be taken before or after FREN 651. Writing intensive.

Attributes: Humanities(Disc); Writing Intensive Course**FREN 675 - Topics in French Civilization****Credits:** 4

Topics drawn from all aspects and periods of French civilization. Prereq: FREN 631, FREN 632, and FREN 651 or FREN 652. May be repeated for credit barring duplication of materials. Special fee. (Not offered every year.) Writing intensive.

Attributes: Writing Intensive Course**FREN 676 - Topics in Francophone Culture****Credits:** 4

Topics drawn from all aspects and periods of French civilization. Prereq: FREN 631, FREN 632 and FREN 651 or FREN 652. May be repeated for credit barring duplication of materials. Special fee. (Not offered every year.) Writing intensive.

Attributes: Writing Intensive Course**FREN 677 - France in the European Union****Credits:** 4

Topics drawn from all aspects of contemporary French culture in its relationship with the fifteen member states of the European Union, with emphasis on the role of France in the building of the European Union. Special fee. Prereq: FREN 631-FREN 632. Coreq: FREN 651 or FREN 652. (Not offered every year.) Writing intensive.

Attributes: Writing Intensive Course**FREN 683 - Summer Study in Dijon (4 weeks)****Credits:** 4

This course offers four weeks of intensive study of French language at the Centre International d'Etudes Francaises (CIEF) in Dijon, France. The prerequisite is at least elementary French or equivalent and depends on the student's level at the time of registration. Minimum GPA of 2.5 or better and permission. Special UNH fee. Student responsible for personal and travel expenses. Offered summers only.

Co-requisite: INCO 589**FREN 690 - Study Abroad in Dijon France****Credits:** 16

Spring semester at the University of Burgundy (Dijon, France) for juniors. This one-semester program is open to majors who have completed with a B- or better FREN 631 and FREN 632 and FREN 651 or FREN 652, or equivalent. Non-majors need to speak with the program director to determine their eligibility. Non-credit orientation meetings are required during the fall semester prior to departure. The normal UNH requirements for studying abroad apply to this program. For further information, interested students should consult with the director in the French program. Special fee. Prereq: FREN 504 with a C or better and permission. Non-majors FREN 631, 632; FREN 651 or FREN 652 for majors. Special fee. May be repeated. Cr/F.

Co-requisite: INCO 588**Attributes:** World Cultures(Discovery)**FREN 691 - Summer Study in Dijon (8 weeks)****Credits:** 8

This course offers eight weeks of intensive study of French language at the Centre International d'Etudes Francaises (CIEF) in Dijon, France. The prerequisite is at least elementary French or equivalent and depends on the student's level at the time of registration. This course is also open to French majors who cannot fulfill their semester-long study abroad requirement for documented academic reasons. By petition only. Minimum GPA of 2.5 or better and permission. Special UNH fee. Student responsible for personal and travel expenses. Offered summers only.

Co-requisite: INCO 589

FREN 695 - Special Advanced Language Study in France**Credits:** 4

Four weeks of intensive language study at the Centre International d'Etudes Francaises (CIELF) in Dijon, France. Prereq: FREN 631 and FREN 632 with grade of B- or better and permission. Special UNH fee and DCE administrative fee. Student responsible for personal and travel expenses as well as tuition and other costs at CIELF. (Offered summer only.) Special fee.

Co-requisite: INCO 589**FREN 762 - 17th Century French Literature****Credits:** 4

Prereq: FREN 651 and FREN 652 or equivalent. Special fee. (Offered fall semester in alternate years.) Writing intensive.

Attributes: Writing Intensive Course**FREN 765 - 18th Century French Literature****Credits:** 4

Prereq: FREN 651 and FREN 652 or equivalent. Special fee. (Offered spring semester in alternate years.) Writing intensive.

Attributes: Writing Intensive Course**FREN #775 - 19th Century French Literature****Credits:** 4

Prereq: FREN 651 and FREN 652 or equivalent. Special fee. (Offered fall semester in alternate years.) Writing intensive.

Attributes: Writing Intensive Course**FREN 785 - Topics in Francophone Literatures****Credits:** 4

Readings in French literatures from outside of France (e.g., Quebec, Africa, the Caribbean). Taught in French. Prereq: FREN 651 and FREN 652. Special fee. (Not offered every year.) Writing intensive.

Attributes: Writing Intensive Course**FREN 790 - Advanced Language and Style****Credits:** 4

Translation of contemporary texts, intensive study of major writing techniques (such as narration, explication de texte, compte rendu, dissertation). Required for major. Prereq: at least two literature courses in French numbered above 652. Special fee. (Fall semester only.) Writing intensive.

Attributes: Writing Intensive Course**FREN 795 - Special Studies in French Language and Literature****Credits:** 1-4

Individual guided study of the work of a major author, a genre, or specific topics in literature. Training in bibliography and organization of material. Prereq: permission. Special fee. (Not offered every year.)

FREN 796 - Special Studies in French Language and Literature**Credits:** 1-4

Individual guided study of the work of a major author, a genre, or specific topics in literature. Training in bibliography and organization of material. Prereq: permission. Special fee. (Not offered every year.)

FREN 798 - Special Topics in French Translation**Credits:** 4

Selected topics in language, literature, and culture, "hands on" training in translation of the student's target language and individual focus area.

Translation from and into the target language. Pre- or Coreq: FREN 651, FREN 652, FREN 790; LLC 642. Special fee.

FREN 799 - Honors Senior Thesis**Credits:** 2

Yearlong course leading to an honors senior thesis. Open only to seniors seeking honors in major whose individually designed research projects have been approved by the department honors committee and who have been assigned an adviser. Students must enroll for both fall and spring semesters. Students defend the resulting written thesis in an oral presentation before department members and others. Prereq: permission. Special fee.

Genetics (GEN)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

GEN 401 - Professional Perspectives in Genetics**Credits:** 1

Introduction to the fields of genetics and genomics and to the genetics faculty and their research. Careers and professional opportunities for genetic majors presented by invited speakers. Emphasis on skills needed for academic success and strategies for achieving professional goals. Cr/F.

GEN 600 - Field Experience**Credits:** 1-4

Supervised experience providing the opportunity to apply academic experience in settings associated with future professional employment and/or related graduate opportunities. Must be approved by a faculty advisor selected by the student. Permission required. May be repeated to a maximum of 4 credits. Cr/F.

GEN 604 - Principles of Genetics**Credits:** 4

Chemical structure of genetic material, gene recombination, mutation, and chromosome mapping. Gene expression and regulation; recombinant DNA; evolutionary, quantitative, and population genetics. Prereq: BIOL 411 and BIOL 412 or equivalent; CHEM 403 and CHEM 404 or equivalent; or permission. College math or statistics suggested.

GEN 606 - Genetics Lab**Credits:** 4

Hands-on experience with some of the important model organisms used for research in genetics (fruit flies, bacteria, yeast, nematodes, and plants). Investigation of fundamental genetic concepts in the laboratory, experience with transmission and molecular genetic techniques, introduction to bioinformatics, analysis and interpretation of data. Prereq: GEN 604. Special fee.

GEN 704 - Genetics of Prokaryotic Microbes**Credits:** 5

Maintenance, exchange, and expression of genetic material in bacteria and their viruses. Historical overview of the role microbial genetics played in development of modern molecular biology. Contemporary perspective on methods used to understand the function of genes and their applications to basic science, biomedical research, and biotechnology. Prereq: BMS 503 and BMS 504; GEN 604; or permission. Lab. Special fee. Writing intensive.

Attributes: Writing Intensive Course

GEN 705 - Population and Quantitative Genetics**Credits: 4**

Exploration of the forces (mutations, selection, random drift, inbreeding, assortative mating) affecting the frequency and distribution of allelic variation in natural populations. Quantifying the structure of populations. Analysis of continuous variation in populations simultaneously at multiple loci. Interactions between genes and their environment underlying phenotypic variation. Methods of analysis for theoretical and practical applications. Prereq: GEN 604; BIOL 528 or equivalent; MATH 424B or equivalent. Computer Lab.

GEN 706 - Human Genetics**Credits: 4**

Genetic basis of human traits and diseases including both traditional methods of diagnosis and contemporary molecular genetic approaches stemming from the human genome project. Case studies exemplify common practices in human genetic counseling and integrate the scientific basis of diagnosis with the special ethical implications of human genetic analysis. Prereq: GEN 604 or permission.

GEN 711 - Genomics and Bioinformatics**Credits: 4**

Methods, applications, and implications of genomics—the analysis of whole genomes. Medical, ethical and legal implications of genomic data. Computer lab provides exposure and experience in a range of bioinformatics approaches used in genome analysis. Prereq: GEN 604. Computer Lab.

GEN 711W - Genomics and Bioinformatics**Credits: 4**

Methods, applications, and implications of genomics—the analysis of whole genomes. Microbial, plant and animal genomics are addressed, as well as medical, ethical and legal implications. The lab provides exposure and experience on a range of bioinformatics approaches—the computer applications used in genome analysis. Prereq: GEN 604. Lab. Writing intensive. Only offered in Manchester.

Attributes: Writing Intensive Course

GEN 712 - Programming for Bioinformatics**Credits: 5**

Development of programming skills that enable life science students to ask fundamental biological questions that require computers to automate repetitive tasks and handle query results efficiently. Topics include: computer values of important parameters of biological sequence data; pattern search and motif discovery scripts; accessing, querying, manipulating, retrieving, parsing, analyzing, and saving data from local and remote databases. Prereq: GEN 604 and GEN 711. Computer Lab.

GEN 713 - Microbial Ecology and Evolution**Credits: 4**

Evolutionary and ecological forces that generate the tremendous diversity of microbial life on Earth with emphasis on viruses, archaea and bacteria. Functional roles of microorganisms, their population dynamics and interactions, and their mechanisms of evolutionary change in a variety of environmental settings, including natural communities and laboratory microcosms. Prereq: GEN 604; BMS 503 and BMS 504; or permission. Writing intensive.

Attributes: Writing Intensive Course

GEN 714 - Personal Genomics**Credits: 4**

Analysis and implications of personal genomic data is the focus of this course. Students understand and appreciate all aspects of the availability of personal genomic information and tools including scientific, medical, social, ethical and legal issues. Students have the opportunity to analyse their own individual genome or one of the publicly available genomes to learn about all various aspects of this emerging field. The course will be an entirely online format. Prereq: GEN 604. UNHM only.

GEN 715 - Molecular Evolution**Credits: 4**

Rates and patterns of evolutionary change in biomolecules. Forces affecting the size and structure of genomes. Molecular mechanisms of organismal evolution. Emphasizes integrating evidence from biochemistry, molecular genetics and organismal studies. Methods for reconstructing phylogeny from molecular sequences. Prereq: GEN 604. Some knowledge of statistics recommended. Computer Lab.

GEN 717 - Molecular Microbiology**Credits: 5**

Fundamental physiological and metabolic processes of archaea, bacteria and fungi with a strong emphasis on prokaryotes. Literature-based course. Topics include regulation and coordination of microbial metabolism, bacterial cell cycle, global control of gene expression, signal transduction, and microbial cell differentiation. Prereq: BMS 503 and BMS 504; GEN 604; or permission. Special fee. Lab. Writing intensive.

Attributes: Writing Intensive Course

GEN 721 - Comparative Genomics**Credits: 4**

Explores the central questions and themes in contemporary comparative genomics, including genome biology, phylogenomics, human origins, population genomics, and ecological genomics. Provides the conceptual framework required to evaluate new work in this fast-changing field. Prereq: GEN 604 or equivalent.

GEN 771 - Molecular Genetics**Credits: 4**

Structure, organization, replication, dynamics, and expression of genetic information in eukaryotes. Focus on molecular genetic and epigenetic mechanisms of gene expression and its control; molecular genetic control of cell division and differentiation during development. Prereq: GEN 604 or permission.

GEN 772 - Evolutionary Genetics of Plants**Credits: 4**

Mechanisms of genetic change in plant evolution, both in nature and under human influence. Topics include neo-Darwinian theory; speciation and hybridization; origins and co-evolution of nuclear and organelle genomes; gene and genome evolution; transposable elements; chromosome rearrangements; polyploidy; genetic modification. Lab introduces methods in information gathering, bioinformatics, genome analysis, plant breeding, and genetic manipulation. Prereq: GEN 604 or equivalent. Lab. Writing intensive.

Attributes: Writing Intensive Course

GEN 774 - Techniques in Plant Genetic Engineering and Biotechnology**Credits:** 4

Theory and hands-on experience with techniques used in plant genetic engineering, including cell and tissue culture, gene cloning, and analysis of foreign gene expression. Discussion of role of plant biotechnology in sustainable agriculture and climate change; modifying plants for better nutrition and stress response, environmental remediation, and production of pharmaceuticals; controversies associated with this technology. Lab. Special fee. Prereq: GEN 604 or permission.

GEN 790 - Undergraduate Teaching Experience**Credits:** 1-4

Provide academic support to graduate teaching assistants or faculty in preparing, presenting, and executing Genetics lectures or labs. May be repeated up to a maximum of 4 credits. Permission required.

GEN 795 - Investigations in Genetics**Credits:** 1-4

Advanced research or scholarly projects developed and conducted under the supervision of a faculty member. Provides the opportunity to apply advanced knowledge and techniques of the major to a specific problem or question. Permission required. May be repeated for a maximum of 4 credits.

GEN 795W - Investigations in Genetics**Credits:** 1-4

Advanced research or scholarly projects developed and conducted under the supervision of a faculty member. Provides the opportunity to apply advanced knowledge and techniques of the major to a specific problem or question. Permission required. May be repeated for a maximum of 4 credits.

Attributes: Writing Intensive Course**GEN 799 - Senior Thesis****Credits:** 1-4

Independent research project under the direction of a faculty sponsor for seniors in genetics. Final product is a written thesis. One or two semesters. May be repeated to a maximum of 8 credits. Permission required. Writing intensive.

Attributes: Writing Intensive Course**GEN 799H - Honors Senior Thesis****Credits:** 1-4

Independent research project under the direction of a faculty sponsor for seniors in genetics and in the Honors Program. Final product is a written thesis. One or two semesters. May be repeated to a maximum of 8 credits. Permission required. Writing intensive.

Attributes: Writing Intensive Course

Geography (GEOG)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

GEOG 401 - Regional Geography of the Western World**Credits:** 4

An introduction to the people, places, and problems of six Westernized regions of the world – Europe, Russia, Latin America, the Caribbean, North America, and Australia and Oceania. The course emphasizes five themes: environmental geography, population and settlement, cultural coherence and diversity, geopolitical framework, and economic and social development.

Attributes: World Cultures(Discovery)**GEOG 401H - Honors/Regional Geography of the Western World****Credits:** 4

An introduction to the people, places, and problems of six Westernized regions of the world – Europe, Russia, Latin America, the Caribbean, North America, and Australia and Oceania. The course emphasizes five themes: environmental geography, population and settlement, cultural coherence and diversity, geopolitical framework, and economic and social development.

Attributes: World Cultures(Discovery)**GEOG 402 - Regional Geography of the Non-Western World****Credits:** 4

Major culture areas of the non-Western world and the unique interaction of human and physical phenomena that produces the distinctive character of these areas. Emphasizes the manner in which people of different cultures have made use of opportunities and solved problems existing in the major regions occupied by non-Western cultures: the Middle East and North Africa, Africa south of the Sahara, Oriental Asia and the Pacific Islands.

Attributes: World Cultures(Discovery)**GEOG 402H - Honors/Regional Geography of the Non-Western World****Credits:** 4

Major culture areas of the non-Western world and the unique interaction of human and physical phenomena that produces the distinctive character of these areas. Emphasizes the manner in which people of different cultures have made use of opportunities and solved problems existing in the major regions occupied by non-Western cultures: the Middle East and North Africa, Africa south of the Sahara, Oriental Asia and the Pacific Islands.

Attributes: World Cultures(Discovery)**GEOG 405 - Human-Environment Geography****Credits:** 4

Introduces human-environment relations as a central focus of geography, spanning social and environmental sciences. Considers mapping, natural resource use, commons and markets, hazards, political ecology, and land use change. Case studies link core concepts with examples from local to international scales.

Attributes: Environment,TechSociety(Disc)**GEOG 473 - Elements of Weather****Credits:** 4

Basic principles of weather phenomena and the physical processes underlying these phenomena. Emphasis on weather patterns of New England. Lab.

Attributes: Discovery Lab Course; Physical Science(Discovery)**GEOG #514 - Geography of the United States and Canada****Credits:** 4

An introduction to the physical and human geography of the United States and Canada, including landforms, climate and biogeography, environmental issues, population and settlement, culture and identity, political geography, urban patterns, natural resources and economic development. Course content alternates between topics that are large in scope and scale, and others that are more narrowly focused.

GEOG #520 - Geography of Latin America and the Caribbean**Credits:** 4

Utilizes regional and topical approaches to explore the physical, cultural, and historical geography of Latin America and the Caribbean. Particular aspects of the economy, politics, language, religion, and ethnicity is examined. The goal of the course is to lay a foundation for critical analysis of historical and contemporary concerns such as environmental issues, uneven development and poverty, social conflict and violence, and international relations.

GEOG 530 - Geography of China**Credits:** 4

This course will examine China's diverse physical environments, politics, economies, and cultures across her vast territory. Students will learn to adopt a relational and spatial perspective to study the contemporary issues in China.

Attributes: World Cultures(Discovery)**GEOG 530W - Geography of China****Credits:** 4

This course will examine China's diverse physical environments, politics, economies, and cultures across her vast territory. Students will learn to adopt a relational and spatial perspective to study the contemporary issues in China. Writing intensive.

Attributes: World Cultures(Discovery); Writing Intensive Course**GEOG 540 - Geography of the Middle East****Credits:** 4

Environmental, cultural, political-geographic, and ecological foundations of the Middle East. Selected regional problems and issues, e.g., geographical dimensions of the Arab-Israeli conflict, oil, urbanization, population growth, and nomadism.

Attributes: World Cultures(Discovery)**GEOG 550 - Geography of Sub-Saharan Africa****Credits:** 4

Overview of major physical features and human patterns, with an emphasis on the interaction between people and place and the dynamic issues and challenges facing contemporary African societies. Environmental and resource issues, historical impacts on development, culture and social characteristics, rural and urban organization, industrialization and trade, and prospects for the future.

Attributes: World Cultures(Discovery)**GEOG 560 - Geography of Natural Hazards****Credits:** 4

A survey of natural hazards with a focus on what makes them hazardous to humans and how humans respond to those risks. Hazards that are considered include earthquakes, volcanoes, tsunamis, floods, hurricanes and other severe weather events. The geography of community vulnerability to natural hazards is also examined.

Attributes: Environment,TechSociety(Disc)**GEOG 572 - Geography of the Natural Environment****Credits:** 4

Provides an introduction to geography of the natural environment, including landforms, weather and climate, water resources, and biogeography. Examines the processes that shape the different elements of the environment and the relationships between them.

Attributes: Physical Science(Discovery)**GEOG #573 - Biogeography****Credits:** 4

Explores the introductory concepts of plant geography and biogeography, two interconnected disciplines that document and explain the changing distributions of plants and animals from both a spatial and temporal context. Gives equal emphasis to ecology (biomes, climates, soils), evolution (migration, speciation, dispersal), and applied biogeography and plant geography.

GEOG 574 - Geography of Landforms**Credits:** 4

Explores the geography of earth's major landforms and the geographic factors that influence their development, distribution, and morphology. Topics include mountain building, river systems, desert migration and expansion, glacial and periglacial environments, shoreline evolution, and how these processes interact to form surface features that are unique to their geographic environment. Students analyze geographic information in class and in the field using air photos, topographic maps, and spatial data.

Attributes: Physical Science(Discovery)**GEOG 581 - Human Geography****Credits:** 4

Differentiation of the world in terms of population, race, language, religion, political territory, and economic life. Collection and critical use of empirical data; emphasis on spatial and ecological analysis.

Attributes: Social Science (Discovery); Inquiry (Discovery)**GEOG 581O - Human Geography****Credits:** 4

Differentiation of the world in terms of population, race, language, religion, political territory, and economic life. Collection and critical use of empirical data; emphasis on spatial and ecological analysis.

Attributes: Social Science (Discovery)**GEOG 582 - Global Trade and Local Development****Credits:** 4

This course examines the ways in which global trade interacts with local development across the world. It studies the special organization of economic activities through basic approaches in economic geography. It also studies the history and contemporary state of international competition and collaboration.

Attributes: Social Science (Discovery)**GEOG 582W - Global Trade and Local Development****Credits:** 4

This course examines the ways in which global trade interacts with local development across the world. It studies the special organization of economic activities through basic approaches in economic geography. It also studies the history and contemporary state of international competition and collaboration. Writing intensive.

Attributes: Social Science (Discovery); Writing Intensive Course**GEOG #583 - Urban Geography****Credits:** 4

Spatial structure of cities and the city system. Emphasizes the North American city and its problems: land use, transportation, political fragmentation, physical environment, and residential patterns. Trends in urbanization in the developed and developing worlds. Global cities. (Not offered every year.)

GEOG 584 - Political Geography**Credits:** 4

Interactions between geographic and political phenomena at the sub-national, national, and international levels. Emphasis on geographical aspects of current political problems within and between states. (Not offered every year.) Writing intensive.

Attributes: Writing Intensive Course**GEOG 590 - Field Research****Credits:** 4

Explores a range of research methods, emphasizing collection and analysis of field data to understand human-environment dynamics and/or spatial relations. Topics include ethics, sample design, surveys, interviews, participant observation, and qualitative and quantitative analyses. Students complete hands-on research activities.

GEOG 595 - Statistics for Spatial Science**Credits:** 4

Introduces elementary statistics to students of social sciences from a spatial perspective. It is designed to help students approach introductory-level quantitative analysis using basic statistical problem-solving techniques with social and physical science data models. These elementary statistical tools and concepts will be explained during classroom lectures and proficiency obtained during practical exercises.

GEOG 658 - Introduction to Geographic Information Systems**Credits:** 4

An introduction to the use of geographic information systems (GIS) for natural resources and related fields. Data models/structures, map projections, data input/output/storage, data analysis/modeling, interpolation, and data/quality standards. Hands-on using ArcView 3.x GIS software. Students are strongly encouraged to complete an introductory course in statistics before enrolling in course. Majors only. (Also offered as NR 658.)

GEOG 670 - Climate and Society**Credits:** 4

An introduction to climate science and the interaction between humans and climate. Examines the processes that control climate, the mechanisms that drive climate change, and the impact of climate change on society. Writing intensive.

Attributes: Writing Intensive Course**GEOG 671 - Weather Forecasting****Credits:** 4

Examines in depth, the physical processes that govern the development and movement of weather systems. Topics include the relationship between surface and upper-level winds, vertical motion and pressure systems, storm development, and techniques used in weather forecasting.

GEOG 673 - Political Ecology**Credits:** 4

Examines human-environment relations through the geographic subfield of political ecology, integrating social and biophysical sciences. Emphasizes cross-scalar relationships in resource decisions and community development, with substantial coverage of rural, non-US contexts. Seminar-style course with regular readings, writings and discussion. Writing intensive.

Attributes: Writing Intensive Course**GEOG 685 - Geography of Population and Development****Credits:** 4

A regional approach to the study of population geography with concern for the interaction between the focus of economic growth and the components of population change and development. Considers the environmental impact of developing trends in the developed and developing worlds and the relationship of these trends to sustainable growth and population patterns. Writing intensive.

Attributes: Writing Intensive Course**GEOG 686 - World Economy and Globalization****Credits:** 4

Emphasizes the spatial development of the world economy and the evolution into today's "globalized" economy. Topical emphasis includes the processes of global economic production changes, the role of transnational corporations, and the role of the state in globalization. Writing intensive.

Attributes: Writing Intensive Course**GEOG #690 - Geography of Third World Development****Credits:** 4

Explores the geography of development in the Third World (Africa, Asia, Latin America, and Oceania). Addresses factors that affect development spatially and temporally. Emphasis on geographic scale (local, national, regional, and global). Students write and present critical thinking papers that address the interactions of development factors at different scales.

GEOG 695 - Internship**Credits:** 1-4

Internships provide an opportunity for on-the-job skill development and practical experience in a closely supervised work setting. The student must provide a written proposal to a supervising faculty member before an internship program is approved. At the end of the semester, the student must make a presentation, provide work samples, or submit a detailed report, log, or portfolio describing the internship experience. May be repeated for up to 8 hours of credit. Cr/F.

GEOG 757 - Remote Sensing of the Environment**Credits:** 4

Practical and conceptual presentation of the use of remote sensing and other geospatial technologies for mapping the environment. The course begins with the use of aerial photographs (Photogrammetry and photo interpretation) and includes measures of photo scale and area, parallax and stereo viewing, object heights, flight planning, photo geometry, the electromagnetic spectrum, camera image analysis, global positioning systems (GPS), and geographic information systems (GIS). Conceptual lectures are augmented with practical homework assignments and hands-on lab exercises. Prereq: Algebra. Special fee. Lab. (Also offered as NR 757).

GEOG 759 - Digital Image Processing for Natural Resources**Credits:** 4

Introduction to digital remote sensing, including multispectral scanners (Landsat and SPOT), radar, and thermal imagery. Hands-on image processing including filtering, image display, ratios, classification, registration, and accuracy assessment. GIS as it applies to image processing. Discussion of practical applications. Use of ERDAS image-processing software. Knowledge of PCs required. Prereq: GEOG 757 or equivalent and permission. (Also offered as NR 759).

GEOG 760 - Geographic Information Systems in Natural Resources**Credits:** 4

Introduces the use of geographic information systems (GIS) for use with natural resources including data input, manipulation, storage, analysis, and display. Accuracy of spatial data and use of digital elevation models. Discussion of practical applications. Use of PC Arc/Info software. Prereq: permission. Lab. (Also listed as NR 760.)

GEOG 795 - Special Project**Credits:** 2 or 4

Readings, library, archival, and fieldwork. Primarily for geography seniors. Prereq: permission. Writing intensive.

Attributes: Writing Intensive Course**GEOG 796 - Special Topics****Credits:** 4

Special Topics in Geography: A) Climatology, B) Environmental Geography, C) Urban Geography, D) Political Geography, E) Population Geography, F) Economic Geography, G) Cultural Geography.

GEOG 797 - Seminar**Credits:** 2

Exploration of geography as a research discipline. Definition and investigation of research problems. Primarily for geography seniors. May be repeated up to a maximum of 4 credits.

GEOG 799 - Honors Thesis**Credits:** 4

Independent research project conducted under supervision of a faculty sponsor culminating in a written thesis. Students must also make a public presentation of their thesis. Required for all honors students. Open only to geography majors who are part of the honors program. Before registering for the course, students must secure a faculty sponsor, obtain approval for a thesis topic, and complete an honors thesis student/sponsor agreement. Only open to Geography majors.

German (GERM)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

GERM 401 - Elementary German I**Credits:** 4

For students without previous training in German. Aural comprehension, speaking, writing, reading, language labs. No credit for those with two or more years of German in secondary school. Special fee.

GERM 402 - Elementary German II**Credits:** 4

See description for GERM 401.

Attributes: Foreign Language Requirement**GERM 500 - Selected Topics in World Literature****Credits:** 4

Topics are chosen that introduce students to major themes and genres. (Also offered as CLAS 500, FREN 500, ITAL 500, PORT 500, RUSS 500, SPAN 500.) May be repeated for credit. Credit/Fail. Writing intensive.

Attributes: Writing Intensive Course**GERM 503 - Intermediate German I****Credits:** 4

Review of grammar; practice in oral and written expression; readings and cultural material. Prereq: GERM 401-GERM 402 or equivalent. Labs. Special fee.

Attributes: World Cultures(Discovery); Foreign Language Requirement**GERM 504 - Intermediate German II****Credits:** 4

Review of grammar; practice in oral and written expression; readings and cultural material. Prereq: GERM 401-GERM 402 or equivalent. Labs. Special fee.

Attributes: World Cultures(Discovery)**GERM 521 - Major German Authors in English****Credits:** 4

Selected masterpieces of the 18th, 19th, and 20th centuries by authors such as Goethe, Mann, Kafka, Hesse, Bachmann, Koeppen, Brecht, Frisch, Wolf, and Durrenmatt. Readings and discussions in English. May be taken for major credit. Special fee.

Attributes: Humanities(Disc)**GERM 524 - German Cinema****Credits:** 4

Aquaints students with major German film texts. Using analytical and critical tools, students read film texts as aesthetic works (with a form and a narrative) and as historical works (with a social function). Through cinema the course explores German society and history. The course is conducted in English. Special fee.

Attributes: Humanities(Disc); Writing Intensive Course**GERM #524H - Honors/Special Topics in German Film****Credits:** 4

Using analytical and critical tools, students read film texts as aesthetic works (with a form and a narrative) and as historical works (with a social function). Culminates in an investigation of a distinct historical period of German film or of a particular theme through the history of German film. Special fee.

GERM 525 - Introduction to German Culture and Civilization**Credits:** 4

Aspects of the political, social, and cultural life of Germany, Austria, and Switzerland. Conducted in English. Required of German majors; strongly recommended for any students planning study abroad in a German-speaking country. Special fee.

Attributes: World Cultures(Discovery); Inquiry (Discovery)**GERM 525H - Honors/Introduction to German Culture and Civilization****Credits:** 4

Aspects of the political, social, and cultural life of Germany, Austria, and Switzerland. Conducted in English. Required of German majors; strongly recommended for any students planning study abroad in a German-speaking country. Special fee.

Attributes: World Cultures(Discovery); Inquiry (Discovery)

GERM 586 - Study in Berlin**Credits:** 8

Gives students a immersion experience in the German language and culture. Students will study one week at UNH and 5 weeks in Berlin, where they will take an intensive language course (80 hours) at the BSI Private Language School, receive cultural instruction from the on-site UNH faculty member, and pursue an individual research project. Permission required. Special fee. May be repeated for a maximum of 8 credits.

Co-requisite: INCO 589**GERM 595 - Internship****Credits:** 2-4

The German Internship consists of unpaid placement in an approved business, social service or educational organization in a German-speaking context with on-site supervision. Student is responsible for keeping a journal to be evaluated by a UNH faculty mentor. Site supervisor evaluates intern's work on location in consultation with UNH mentor. Prereq: GERM 504. Variable credit 2 to 4 credits per unit. May count up to 4 credits toward German major or minor and an additional 4 as graduation elective. Does not replace Study Aboard requirement for major. Special fee.

GERM 596 - Practicum**Credits:** 2

Practical use of German language and culture through special projects outside the classroom. May be repeated for a maximum of 4 credits. permission. Cr/F.

GERM #601 - Introduction to German Literature**Credits:** 4

Reading and analysis of poems, dramas, and short prose; introduction to theory of literary forms and methods of analysis. Required of all German majors; must be taken as soon as possible after GERM 504. Prereq: knowledge of German. Special fee.

GERM 631H - Honors/Advanced Communications Skills I**Credits:** 4

Intensive practice in vocabulary building and developing a sense of appropriate style for various contexts of oral and written communication. Special emphasis on conversational and expository speaking. Discussion of topics of current interest, oral reports, role play, and simulation of everyday situations, reinforced by written work. Required for the German major and minor. Special fee. Prereq: GERM 504. Writing intensive.

Attributes: Writing Intensive Course**GERM 631W - Advanced Communications Skills I****Credits:** 4

Intensive practice in vocabulary building and developing a sense of appropriate style for various contexts of oral and written communication. Special emphasis on conversational and expository speaking. Discussion of topics of current interest, oral reports, role play, and simulation of everyday situations, reinforced by written work. Required for the German major and minor. Special fee. Prereq: GERM 504. Writing intensive.

Attributes: Writing Intensive Course**GERM 632 - Advanced Communications Skills II****Credits:** 4

Intensive practice in vocabulary building and coherent expression in a variety of stylistic contexts. Special emphasis on writing skills, from expository prose to letter and resume writing, essays, journalistic reports, and creative writing, focusing on topics of current interest. Required for the German major. Special fee. Prereq: GERM 504.

GERM 685 - Study Abroad**Credits:** 16

A summer, semester, or year of study in one or a combination of the departmentally recognized programs such as the New England Universities Salzburg Program (UNH students as consortium members receive a discount on this program), the work-study program in Hamburg, or any other appropriate, approved programs. Open to students of any major with GERM 504 or equivalent training. Financial aid applies to all approved programs. Interested students should inquire at department for program brochures and specific requirements and should apply in consultation with a German adviser. For information on other study abroad programs, students should contact the Center for International Education. Cr/F. An IA (continuous grading) grade will be assigned until an official transcript is received from the foreign institution.

Attributes: World Cultures(Discovery)**GERM 686 - Study Abroad****Credits:** 16

A summer, semester, or year of study in one or a combination of the departmentally recognized programs such as the New England Universities Salzburg Program (UNH students as consortium members receive a discount on this program), the work-study program in Hamburg, or any other appropriate, approved programs. Open to students of any major with GERM 504 or equivalent training. Financial aid applies to all approved programs. Interested students should inquire at department for program brochures and specific requirements and should apply in consultation with a German adviser. For information on other study abroad programs, students should contact the Center for International Education. Cr/F. An IA (continuous grading) grade will be assigned until an official transcript is received from the foreign institution.

Attributes: World Cultures(Discovery)**GERM #728 - Modern German Literature****Credits:** 4

Major literary movements from 1872 to 1945. Reading and analysis of selected works. Special fee. Writing intensive.

Attributes: Writing Intensive Course**GERM 728H - Honors/Modern German Literature****Credits:** 4

Major literary movements from 1872 to 1945. Reading and analysis of selected works. Special fee. Writing intensive.

Attributes: Writing Intensive Course**GERM 745 - Contemporary German Literature and Culture****Credits:** 4

Literary trends in the German-speaking countries since 1945. Analysis and interpretation of works by major authors. Special fee. Prereq: GERM 504. Writing intensive.

Attributes: Writing Intensive Course**GERM 795 - Independent Study****Credits:** 1-4

Open to highly qualified juniors and seniors. To be elected only with permission of the department chairperson and of the supervising faculty member or members. Barring duplication of subject, may be repeated for credit. Special fee.

GERM 795H - Honors/Independent Study**Credits:** 1-4

Open to highly qualified juniors and seniors. To be elected only with permission of the department chairperson and of the supervising faculty member or members. Barring duplication of subject, may be repeated for credit. Special fee.

GERM 796 - Independent Study**Credits:** 1-4

Open to highly qualified juniors and seniors. To be elected only with permission of the department chairperson and of the supervising faculty member or members. Barring duplication of subject, may be repeated for credit. Special fee.

GERM 796H - Honors/Independent Study**Credits:** 1-4

Open to highly qualified juniors and seniors. To be elected only with permission of the department chairperson and of the supervising faculty member or members. Barring duplication of subject, may be repeated for credit. Special fee.

GERM 797 - Special Studies in German Language and Literature**Credits:** 4

Selected topics in language, culture, and literature.

GERM 798 - Special Studies in German Language and Literature**Credits:** 2 or 4

Selected topics in language, culture, and literature. Special fee.

Gerontology (GERO)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

GERO 500 - I'm Old, So What! An introduction to aging in the United States**Credits:** 4

This is the first of two mandatory courses for the GERO Minor, but any student may take it as an elective. It introduces the learner to the field of gerontology (the study of how people age). It explores the biological, psychosocial, and cognitive changes within the context of society. The history of ageism and its influence on how it has affected the individual, families, and society is presented. The range of independence among older people is examined. Various disciplines that work within the field of gerontology are reviewed. Lectures, novels, films and guest speakers help to examine growing old in the U.S. Writing intensive.

Attributes: Writing Intensive Course**GERO 795 - Independent Study****Credits:** 1-6

Open to Gerontology Minor students only. Content area determined by student and faculty mentor, topic must have a major aging component. A proposal of work must be signed by both student and faculty mentor and given to the Gerontology Minor Coordinator for final approval. Proposals are filed in the student's declared major academic folder. Work may be completed over two semesters, especially if it involves thesis/internship work. Credits compensatory with work: 1 to 6. Prereq: GERO 500 and KIN 607.

Greek (GREK)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

GREK 400 - Grammar for Students of Greek**Credits:** 1

A one-semester review of grammar provides a background in concepts for those students who have never studied Greek or who need review. Weekly meetings introduce topics; readings and assignments reinforce them. Enrollment is limited to students enrolled in GREK 401 and GREK 402. Course does not count toward major or minor requirements. May be repeated for up to 2 credits. Coreq: GREK 401 or GREK 402. Cr/F.

GREK 401 - Elementary Classical Greek I**Credits:** 4

Grammar, simple composition, and translation. For students without previous training in Greek. Special fee.

GREK 402 - Elementary Classical Greek II**Credits:** 4

Grammar, simple composition, and translation. For students without previous training in Greek. Special fee.

Attributes: Foreign Language Requirement**GREK 403 - Elementary Modern Greek I****Credits:** 4

Aural-oral practice and the study of fundamental speech patterns, reading, and writing to achieve a firm basis for an active command of the language. (No credit for students who have had two or more years of modern Greek in secondary school.) Special fee.

GREK 404 - Elementary Modern Greek II**Credits:** 4

Aural-oral practice and the study of fundamental speech patterns, reading, and writing to achieve a firm basis for an active command of the language. (No credit for students who have had two or more years of modern Greek in secondary school.) Special fee.

Attributes: Foreign Language Requirement**GREK 503 - Intermediate Classical Greek I****Credits:** 4

Readings from Xenophon, Plato, Herodotus, Euripides, and the New Testament. Prereq: GREK 402. Special fee.

Attributes: World Cultures(Discovery)**GREK 504 - Intermediate Classical Greek II****Credits:** 4

Readings from Xenophon, Plato, Herodotus, Euripides, and the New Testament. Prereq: GREK 402. Special fee.

Attributes: World Cultures(Discovery)**GREK 505 - Intermediate Modern Greek I****Credits:** 4

Short selections from modern Greek literature with grammar review and oral practice. Readings from such authors as Solomos, Cavafy, Palamas, Kazantzakis, Venezis, Myrivilis, Seferis, and Elytis. Prereq: GREK 404 or equivalent. Special fee.

Attributes: World Cultures(Discovery)**GREK 506 - Intermediate Modern Greek II****Credits:** 4

Short selections from modern Greek literature with grammar review and oral practice. Readings from such authors as Solomos, Cavafy, Palamas, Kazantzakis, Venezis, Myrivilis, Seferis, and Elytis. Prereq: GREK 404 or equivalent. Special fee.

Attributes: World Cultures(Discovery)

GREK 595 - Directed Reading in Greek**Credits:** 2 or 4

Independent study of a classical, Byzantine, or modern Greek author. May be repeated for a maximum of 8 credits. Prereq: GREK 503, GREK 504, GREK 505, and GREK 506, or equivalent. Special fee.

GREK 596 - Directed Reading in Greek**Credits:** 2 or 4

Independent study of a classical, Byzantine, or modern Greek author. May be repeated for a maximum of 8 credits. Prereq: GREK 503, GREK 504, GREK 505, and GREK 506, or equivalent. Special fee.

GREK 635 - Third Year Modern Greek I**Credits:** 4

Rapid review of basic grammatical structures and in-depth study of more complex linguistic patterns. Vocabulary building. Frequent compositions and oral presentations using materials on contemporary culture and literary texts as well as various media. Students develop oral/aural skills in lab and class. Prereq: GREK 505 and GREK 506; or GREK 595 and GREK 596 (if approved) with a grade of C or better. Special fee.

GREK 636 - Third Year Modern Greek II**Credits:** 4

Rapid review of basic grammatical structures and in-depth study of more complex linguistic patterns. Vocabulary building. Frequent compositions and oral presentations using materials on contemporary culture and literary texts as well as various media. Students develop oral/aural skills in lab and class. Prereq: GREK 505 and GREK 506; or GREK 595 and GREK 596 (if approved) with a grade of C or better. Special fee.

GREK 751 - Homer and the Archaic Period**Credits:** 4

Readings from the Iliad, the Odyssey, the Homeric hymns, Hesiod, Pindar, and the lyric poets. Prereq: permission. Special fee.

GREK 753 - Advanced Study in Athenian Literature**Credits:** 4

A) Aeschylus, B) Sophocles, C) Euripides, D) Aristophanes, E) Herodotus, F) Thucydides, G) Xenophon, H) Plato, I) Aristotle, J) Lysias, K) Demosthenes, L) Isocrates. Major Attic authors from the Battle of Marathon to the death of Alexander the Great. Prereq: permission. Special fee. Each special topic may be repeated two times for up to eight credits.

GREK 754 - Advanced Study in Athenian Literature**Credits:** 4

A) Aeschylus, B) Sophocles, C) Euripides, D) Aristophanes, E) Herodotus, F) Thucydides, G) Xenophon, H) Plato, I) Aristotle, J) Lysias, K) Demosthenes, L) Isocrates. Major Attic authors from the Battle of Marathon to the death of Alexander the Great. Prereq: permission. Special fee. Each special topic may be repeated two times for up to eight credits.

GREK 795 - Special Studies**Credits:** 4

A) Pre-Socratic Philosophers; B) Hellenistic Greek Authors; C) Menander; D) Callimachus; E) Apollonius of Rhodes; F) Theocritus; G) Polybius; H) Greek Authors of the Roman Empire; I) Plutarch; J) Septuagint; K) New Testament; L) Greek Church Fathers; M) Byzantine Authors; N) Spoken Greek O) Advanced Greek Composition; P) Introduction to Classical Scholarship; Q) Greek Epigraphy; R) Greek Dialects; S) Comparative Grammar of Greek and Latin; T) Homer: A Linguistic Analysis; U) Greek Institutions; V) Paleography and Textual Criticism. Topics selected by instructor and student in conference. Prereq: permission. Special fee. Writing intensive. Each special topic may be repeated two times for up to eight credits.

Attributes: Writing Intensive Course**GREK 796 - Special Studies****Credits:** 4

A) Pre-Socratic Philosophers; B) Hellenistic Greek Authors; C) Menander; D) Callimachus; E) Apollonius of Rhodes; F) Theocritus; G) Polybius; H) Greek Authors of the Roman Empire; I) Plutarch; J) Septuagint; K) New Testament; L) Greek Church Fathers; M) Byzantine Authors; N) Spoken Greek O) Advanced Greek Composition; P) Introduction to Classical Scholarship; Q) Greek Epigraphy; R) Greek Dialects; S) Comparative Grammar of Greek and Latin; T) Homer: A Linguistic Analysis; U) Greek Institutions; V) Paleography and Textual Criticism. Topics selected by instructor and student in conference. Prereq: permission. Special fee. Writing intensive. Each special topic may be repeated two times for up to eight credits.

Attributes: Writing Intensive Course

Health & Human Services (HHS)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

HHS 401 - College of Health and Human Services Seminar**Credits:** 1

This course is an introduction to the curricular and co-curricular aspects of the University and specifically the College of Health and Human Services. The course will focus on resource navigation, major and career exploration and fostering "knowledge for healthy living". Permission required.

HHS 444 - The Right to be Disabled in the Extreme Makeover Society**Credits:** 4

Explores how society's view of disability, its "construction," is influenced by a variety of cultural variables and the implications of that construction on institutions such as medicine and health care, education, the arts, the legal system, architecture and engineering, etc.

Attributes: Social Science (Discovery); Inquiry (Discovery)**HHS #540 - Statistics for Health and Human Service Professionals****Credits:** 4

A conceptual and analytical approach to the use of statistics in the health and human service professions. Emphasizes the logic and purpose of statistics. Attention to special problems of statistical design such as random assignment, single subject trials, and the ethics of control groups. Basic computer skills for manipulating data. No credit for students who have completed ADM 430; BIOL 528; ADMN 420; EREC 525; MATH 439; MATH 539; MATH 644; PSYC 402; SOC 502.

Attributes: Quantitative Reasoning(Disc)**HHS 598 - Special Topics****Credits:** 2

Explores areas related to specific professional health interests. May repeat but not duplicate subject areas. A) Communication Disorders, B) Health Management and Policy, C) Medical Laboratory Science, D) Nursing, E) Occupational Therapy, F) Kinesiology, G) Recreation Management and Policy, J) Family Studies, K) Social Work, L) Health Promotion, M) Women's Leadership N-Z) Interdisciplinary.

HHS 698 - Special Topics**Credits:** 1-4

Explores areas related to specific professional health interests. May repeat but not duplicate subject areas. A) Communication Disorders, B) Health Management and Policy, C) Medical Laboratory Science, D) Nursing, E) Occupational Therapy, F) Kinesiology, G) Recreation Management and Policy, J) Family Studies, K) Social Work, L) Health Promotion, M-Z) Interdisciplinary. Cr/F.

HHS 798 - Special Topics**Credits:** 1-4

Explores areas related to specific professional health interests. May repeat but not duplicate subject areas. A) Communication Disorders, B) Health Management and Policy, C) Medical Laboratory Science, D) Nursing, E) Occupational Therapy, F) Kinesiology, G) Recreation Management and Policy, J) Family Studies, K) Social Work, L) Health Promotion, M-Z) Interdisciplinary. Prereq: permission. Special fee on some topics.

HHS 798W - Special Topics**Credits:** 1-4

Explores areas related to specific professional health interests. May repeat but not duplicate subject areas. A) Communication Disorders, B) Health Management and Policy, C) Medical Laboratory Science, D) Nursing, E) Occupational Therapy, F) Kinesiology, G) Recreation Management and Policy, J) Family Studies, K) Social Work, L) Health Promotion, M-Z) Interdisciplinary. Prereq: permission. Special fee on some topics. Writing intensive.

Attributes: Writing Intensive Course

Health Management & Policy (HMP)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

HMP 401 - United States Health Care Systems**Credits:** 4

Nature and functions of health care services and health professionals; impact of social, political, economic, ethical, professional, legal, and technological forces on health care systems. Current health policy issues.

Attributes: Social Science (Discovery)**HMP 401H - Honors/United States Health Care Systems****Credits:** 4

Nature and functions of health care services and health professionals; impact of social, political, economic, ethical, professional, legal, and technological forces on health care systems. Current health policy issues. Writing intensive.

Attributes: Social Science (Discovery); Writing Intensive Course**HMP 401W - United States Health Care Systems****Credits:** 4

Nature and functions of health care services and health professionals; impact of social, political, economic, ethical, professional, legal, and technological forces on health care systems. Current health policy issues. Writing intensive.

Attributes: Social Science (Discovery); Writing Intensive Course**HMP 403 - Introduction to Public Health****Credits:** 4

This course describes and defines "what is public health" and seeks to convey its critical importance and relevance to both public and individual (personal) wellbeing. It presents an overview of the structure, function, and organization of the public health system/services (government, proprietary, and voluntary sectors) and how they operate, emphasizing core functions and major divisions (public health administration, epidemiology and biostatistics, environmental health, social and behavioral health). Addresses the social, ethical, issues; bioterrorism; epidemics; obesity; tobacco, alcohol, and opioid use; violence. Seeks to challenge students to think critically about existing and emerging U.S. and global public health issues. Introduces public health careers.

HMP 440A - Honors/Global Public Health Issues**Credits:** 4

This course is designed to provide students with an introduction to and overview of the key areas of global health by addressing the major determinants of health and how health status is measured to determine the burden of disease in the developing world. This course is part of the Honors Symposium titled: Reinventing Healthy Communities Nationally and Globally: Medical, Legal, and Cultural Perspectives. This course is the same course as HMP 444A Honors/Global Public Health Issues, that was approved by the Discovery Program as an Inquiry, World Cultures Category course. HMP 440A will not be offered as an Inquiry course, but will maintain the World Cultures Category. Prereq: Permission.

Attributes: World Cultures(Discovery)**HMP 444 - From Frankenstein to Dolly, and Beyond****Credits:** 4

This course is an interdisciplinary introductory course designed specifically for first year students. It seeks to stimulate, provoke, and support student inquiry, discussion, and exploration of a wide variety of social and ethical issues associated with scientific research and advances, with an emphasis on ones related to the biomedical and health sciences. It explores the value-laden questions that they often precipitate, and their impact on individuals, population groups, and society at large. (Also listed as MICR 444.)

Attributes: Environment,TechSociety(Disc); Inquiry (Discovery)**HMP 444A - Global Public Health Issues****Credits:** 4

This course is designed to provide students with an introduction to and overview of the key areas of global health by addressing the major determinants of health and how health status is measured to determine the burden of disease in the developing world. Using the perspectives of public health, the course will cover factors associated with the development of health problems and efforts to prevent disease in impoverished areas. Students will also explore the role of social communication, politics, religion, economics, education and culture in contributing to global public health issues and will integrate these factors and values in developing solutions to the widespread public health issues impacting communities worldwide. Students will learn about the magnitude of disease in the developing world (e.g., communicable and non-communicable disease, women and child health, nutrition, and unintentional injuries), how health is assessed and how health systems effectively work together to improve global health.

Attributes: World Cultures(Discovery); Inquiry (Discovery)

HMP 501 - Epidemiology and Community Medicine**Credits:** 4

The distribution and determinants of disease, illness, and health in the community. Community health and illness measures, health status, and source of data. Development of hypotheses and study designs to reduce community health problems using epidemiological reasoning, methods, and analyses. Lab.

Attributes: Biological Science(Discovery); Discovery Lab Course**HMP 501H - Honors/Epidemiology and Community Medicine****Credits:** 4

The distribution and determinants of disease, illness, and health in the community. Community health and illness measures, health status, and source of data. Development of hypotheses and study designs to reduce community health problems using epidemiological reasoning, methods, and analyses. Lab.

Attributes: Biological Science(Discovery); Discovery Lab Course**HMP 505 - Public Health: History and Practice****Credits:** 4

Blends a board overview of the historical development of public health with important areas of contemporary public health practice. Traces the history and practices of public health and disease prevention from classical times, through the Middle Ages, the Renaissance, and European Enlightenment, and more modern times. Special emphasis on the historical evolution, development, and future of public health in the U.S. The latter includes the organization of public health in the U.S., its major functions and practices, its infrastructure, its programs and services, and its future challenges. It examines the historical close interrelationships and influences of religion, culture, social determinants, environment, science, and politics on public health through the ages.

Attributes: Historical Perspectives(Disc)**HMP 511 - Introduction to Health Information Systems****Credits:** 4

This course introduces the student to the nomenclature and foundations of health information technology and systems in health care delivery settings and the management and strategic uses for those systems. It is relevant for those studying health care management and those using clinical health information systems. It examines health care information flow, information systems, technology standards and information security, and presents relevant examples, practical applications and case studies. Prereq: HMP 401.

HMP 569 - Human Behavior and the Public Health**Credits:** 4

Provides a grounding in fundamental concepts of the behavioral sciences as they illuminate public health. Individual and community responses to prevention, identification of symptoms, diagnoses, treatments, chronic ailments, and rehabilitation are discussed. In each of these areas, the course explores the interaction between community, family, patient, and health care provider.

HMP 600 - Special Topics**Credits:** 1-4

A) Hospital Management, B) Long-term Care Management, C) Ambulatory Care Management, D) Clinical Services Management, E) Home Care Management, F) Mental Health Management, G-Z) Interdisciplinary. May repeat, but may not duplicate subject areas. Prereq: junior major or permission. Special fee on some sections.

HMP 621 - Pre-practicum Seminar**Credits:** 1-2

Preparation for field practicum experience, orientation to experiential learning and competency development. Prereq: major, HMP 401m 403, 501, MATH 420 MATH 424/MATH 425.

HMP 622 - Field Practicum in Organizational and Project Analysis, and Management Skills Development**Credits:** 3

Experiential learning in a health care organization; application of theories to practice. Planned learning objectives are accomplished through three distinct components. Organizational Analysis, Project Analysis and Management Skills Development, with Supervision by agency personnel. This will include analysis of assigned health care agency, from external and internal viewpoints, development of the basic quantitative and interpersonal skills required for a health services manager, and demonstration of knowledge and analysis of specific problem-solving skills. Prereq: HMP 401, HMP 403, HMP 501, MATH 420/Statistics. Pre- or Coreq: HMP 511, HMP 621, HMP 642, HMP 711, HMP 721, HMP 740, HMP 744, HMP 746. Cr/F.

HMP 624 - Post Practicum Seminar**Credits:** 2

Summary and conclusion from field practicum experience. Individual analysis and panel discussions to include site assessment, project description and methodologies employed, critique of individual skills and knowledge base in relation to internship. Major only.

HMP 631 - Health Issues Seminar**Credits:** 2

Discussion of current issues in the fields of health management, health policy and public health. Prereq: major or permission.

HMP 642 - Health Economics**Credits:** 4

Theoretical and empirical analysis of the U.S. health care delivery sector. Topics include health insurance markets and their effects on patients demand, uninsured populations and their access to health care services, breakdowns in the principal/agent relationship between patients' and providers, competition in the medical sector, technology, pharmaceuticals and the scope and effect of government involvement in the delivery of health care. (Also listed as ECON 642.)

HMP 711 - Health Systems Research I**Credits:** 4

Introduces intermediate techniques for data manipulation and analysis for the health care field. Also introduces methods for survey research and large data set manipulation and analysis. There is a lab section utilizing a statistical software package where students perform tasks from a large national data set. Prereq: introduction to statistics.

HMP 712 - Health Analytics**Credits:** 4

This course introduces students to the field of health analytics and data science. It expands upon introductory statistical and data manipulation methods to include data mining, predictive analytics, cluster analysis, trend and pattern recognition, and data visualization. It couples data skills with interpretive and communication skills. Students will also be exposed to basic statistical programming. There will be a graduate component of the course (812) where students will work on advanced concepts and complete a separate culminating project.

HMP 715 - Environmental Health**Credits: 4**

This course offers a general introduction to environmental health from the community, regional, and global perspective by addressing fundamental topics and current controversies such as air pollution, water pollution, built environment/urban sprawl, food safety, waste disposal, and occupational health. Students learn about environmental health assessment methods. Major issues in environmental health and related regulatory efforts and public health policy reform are examined. Prereq: HMP 403 & HMP 501.

HMP 721 - Managing Health Care Organizations**Credits: 4**

Organizational characteristics of ambulatory, acute, and long-term care facilities. Management issues and strategies involving governance, clinical services, human and fiscal resources, and community-based services. Prereq: major or permission.

HMP 722 - Health Care Management II**Credits: 4**

A continuation of HMP 721 - Managing Health Care Organizations with specific lectures and assignments devoted to organizational behavior, leadership, and managerial skills. Case studies and examples will relate specifically to health care organizations. Prereq: HMP 721; HMP majors only.

HMP 723 - Health Planning**Credits: 4**

Theoretical and historical foundations of health planning; the relationship of health planning and regulation; the application of planning methods; and the utilization of strategic planning and its relationships to marketing. Prereq: major or permission. Special fee.

HMP 735 - Social Marketing**Credits: 4**

An introduction to the vocabulary and tools of social marketing. Expanding upon the traditional principles of marketing and consumer behavior, students are exposed to the challenges of trying to effect behavior change.

HMP 740 - Health Care Financial Management**Credits: 4**

Techniques, principles, and practices of managing fiscal aspects of health care organizations. Exploration of concepts and techniques associated with variance analysis, cost allocation, management of working capital, and capital decision analysis. Analysis of the impact of reimbursement on health care organizations. Prereq: Major or permission.

HMP 741 - Health Care Financial Management II**Credits: 4**

This course focuses on issues related to effective financial management of health care organizations and programs, building upon material covered in HMP 740, Health Care Financial Management. Topics include the time value of money, long-term debt, stocks and equity, and evaluation of capital projects. Prereq: HMP 740; HMP majors only.

HMP 742 - Strategic Management for Health Care Organizations**Credits: 4**

Application of managerial methods involving financial, marketing, and operational analysis to health management. Case studies. Prereq: major or permission; HMP 622A, HMP 622B, HMP 622C, HMP 740. Lab. Special fee. Can be taken concurrently with HMP 631. Writing intensive.

Attributes: Writing Intensive Course

HMP 744E - Health Ethics**Credits: 2**

Ethical theories, principles, and decision-making models that facilitate argumentation and critical analysis related to health issues where values often conflict; patient and employee rights, responsibilities/duties; the relationship between ethics and the law; selected ethical dilemmas and conflicts facing health professionals. Issues may include confidentiality and privacy, personnel/managerial communications, advertising and marketing, health care and profits, quality of life, pre-birth and end-of-life, electronic medical records and personal health information, immunization and communicable disease, human genetics, human rights and social justice, the right to health care and human experimentation. Students examine ethical issues, and the implications of alternatives and decisions on multiple stakeholders, including patients and family members, various health care providers and their respective organizations, health policy makers, and the public at large. Prereq: major or permission.

HMP 744L - Health Law**Credits: 2**

This course provides an introduction to the legal foundations of health care in the U.S. Health law is examined as it applies to professionals entering the field of health management and other health professions. The legal system, regulations affecting health and safety, and issues facing practitioners are presented. Current status of the law, future directions, and its complexity are explored. Topics include privacy, liberty, and proprietary interests, from the perspective of the provider and the patient; laws related to the regulation of medical services, medical professionals, and standards of care; medical malpractice, institutional and corporate liability; antitrust; contracts; and patient rights. This course will complement HMP 744E Health Ethics.

HMP 746 - Health Policy**Credits: 4**

Analysis of the public policy process, the development of health policies in the U.S., and discussion of specific health policy issues. Prereq: major or permission. Writing intensive.

Attributes: Writing Intensive Course

HMP #748 - Health Policy Analysis**Credits: 4**

Public policy outputs analyzed for effectiveness, efficiency, and equity, focusing on public policies in the United States. Prereq: major or permission. Lab. Special fee.

HMP 796 - Independent Study**Credits: 1-4**

In-depth study with faculty supervision. Prereq: permission of major adviser and faculty in the area concerned.

HMP 798H - Honors Project/Research Design**Credits: 2**

Examines selected research designs and methods used in health services research/program evaluation. Establishes theoretical and methodological foundation for honors-in-major research project to be conducted during the subsequent semester under a faculty member's supervision. Prereq: senior honors-in-major status and permission.

HMP 799H - Honors Project/Research**Credits:** 2-4

In-depth research project (conducting and analysis) under supervision of faculty member. Includes scholarly presentation of findings to faculty and other interested parties and preparation of manuscript suitable for publication in peer-viewed journal. Prereq: HMP 798H and permission. Writing intensive.

Attributes: Writing Intensive Course

History (HIST)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

HIST 405 - History of Early America**Credits:** 4

America from the early era of European discovery through the American Civil War. Emphasizes the interaction of European, Native American, and African peoples; the separation of the English colonies from Great Britain; and the establishment and early history of the United States. Course meets the History major requirement for Group 1.

Attributes: Historical Perspectives(Disc)**HIST 405H - Honors/History Early America****Credits:** 4

America from the early era of European discovery through the American Civil War. Emphasizes the interaction of European, Native American, and African peoples; the separation of the English colonies from Great Britain; and the establishment and early history of the United States. Writing intensive. Course meets the History major requirement for Group 1.

Attributes: Historical Perspectives(Disc); Writing Intensive Course**HIST 405W - History of Early America****Credits:** 4

America from the early era of European discovery through the American Civil War. Emphasizes the interaction of European, Native American, and African peoples; the separation of the English colonies from Great Britain; and the establishment and early history of the United States. Writing intensive. Course meets the History major requirement for Group 1.

Attributes: Historical Perspectives(Disc); Writing Intensive Course**HIST 406 - History of the Modern United States****Credits:** 4

History of the United States since the mid-19th century. Political, social, and economic developments as well as relationships of the modern U.S. with other countries. Course meets the History major requirement for Group 1.

Attributes: Historical Perspectives(Disc)**HIST 406H - Honors/History of the Modern United States****Credits:** 4

History of the United States since the mid-19th century. Political, social, and economic developments as well as relationships of the modern U.S. with other countries. Writing intensive. Course meets the History major requirement for Group 1.

Attributes: Historical Perspectives(Disc); Writing Intensive Course**HIST #406W - History of the Modern United States****Credits:** 4

History of the United States since the mid-19th century. Political, social, and economic developments as well as relationships of the modern U.S. with other countries. Writing intensive. Course meets the History major requirement for Group 1.

Attributes: Historical Perspectives(Disc); Writing Intensive Course**HIST 410 - Historic Survey of American Civilization****Credits:** 4

Topical survey, within broad chronological divisions, of the development of American civilization since 1600. Students may take the course up to two times as long as the topic for the two courses is different. Writing intensive. Course meets the History major requirement for Group 1.

Attributes: Historical Perspectives(Disc); Writing Intensive Course**HIST 410H - Honors/Historic Survey of American Civilization****Credits:** 4

Topical survey, within broad chronological divisions, of the development of American civilization since 1600. Writing intensive. Course meets the History major requirement for Group 1.

Attributes: Historical Perspectives(Disc); Writing Intensive Course**HIST 421 - World History to the 16th Century****Credits:** 4

The global experience of human communities with special emphasis on the development of the major civilizations and their interactions. Comparisons of social, cultural, religious, and political life and the emergence of distinctive and diverse human societies are examined. Course meets the History major requirement for Group III.

Attributes: Historical Perspectives(Disc)**HIST 422 - World History in the Modern Era****Credits:** 4

Emergence of major global human interactions due to the growth of major civilizations. The global context for the rise of the modern West. The rise and decline of Western global domination and the emergence of new states and changing societies throughout the world. Course meets the History major requirement for Group III.

Attributes: Historical Perspectives(Disc)**HIST 422H - Honors/World History in the Modern Era****Credits:** 4

Emergence of major global human interactions due to the growth of major civilizations. The global context for the rise of the modern West. The rise and decline of Western global domination and the emergence of new states and changing societies throughout the world. Course meets the History major requirement for Group III.

Attributes: Historical Perspectives(Disc)**HIST 425 - Foreign Cultures****Credits:** 4

Introduces the culture of a particular nation or region; preparation for experiencing a foreign culture. Consult department for listing of topics. Course meets the History major requirement for Group II or III, depending on the topic.

Attributes: World Cultures(Discovery)

HIST 425H - Honors/Foreign Cultures**Credits:** 4

Introduces the culture of a particular nation or region; preparation for experiencing a foreign culture. Consult department for listing of topics. Writing intensive. Course meets the History major requirement for Group II or III, depending on the topic.

Attributes: World Cultures(Discovery); Writing Intensive Course**HIST 425W - Foreign Cultures****Credits:** 4

Introduces the culture of a particular nation or region; preparation for experiencing a foreign culture. Consult department for listing of topics. Writing intensive. Course meets the History major requirement for Group II or III, depending on the topic.

Attributes: World Cultures(Discovery); Writing Intensive Course**HIST 435 - Origins of European Society****Credits:** 4

This course traces the contours of human experience in what has come to be called "Western Civilization," from its beginnings in the ancient Near East, Greece, and Rome, to the dawn of the modern global world in sixteenth-century Europe. Although topics will vary by instructor, all sections examine the myriad forms of social, political, religious, military, and economic organization that emerged in this rich tradition, Course meets the History major requirements for Group II.

Attributes: Historical Perspectives(Disc)**HIST 435H - Honors/Origins of European Society****Credits:** 4

This course traces the contours of human experience in what has come to be called "Western Civilization," from its beginnings in the ancient Near East, Greece, and Rome, to the dawn of the modern global world in sixteenth-century Europe. Although topics will vary by instructor, all sections examine the myriad forms of social, political, religious, military, and economic organization that emerged in this rich tradition, Course meets the History major requirements for Group II. Writing intensive.

Attributes: Historical Perspectives(Disc); Writing Intensive Course**HIST 435W - Origins of European Society****Credits:** 4

This course traces the contours of human experience in what has come to be called "Western Civilization," from its beginnings in the ancient Near East, Greece, and Rome, to the dawn of the modern global world in sixteenth-century Europe. Although topics will vary by instructor, all sections examine the myriad forms of social, political, religious, military, and economic organization that emerged in this rich tradition, Course meets the History major requirements for Group II. Writing intensive.

Attributes: Historical Perspectives(Disc); Writing Intensive Course**HIST 436 - Europe and the Modern World****Credits:** 4

The course focuses on major encounters between Europe and its Global rivals from the Age of the Revolution to the rise of modern terrorism. While the topics covered will vary by instructor, all sections address the rise of Democracy, the birth of Capitalism, the apocalyptic destruction of the two World Wars, and the emergence of a diverse multi-cultural Europe in the years following World War II. Course meets the History major requirements for Group II.

Attributes: Historical Perspectives(Disc)**HIST 436H - Honors/Europe and the Modern World****Credits:** 4

The course focuses on major encounters between Europe and its Global rivals from the Age of the Revolution to the rise of modern terrorism. While the topics covered will vary by instructor, all sections address the rise of Democracy, the birth of Capitalism, the apocalyptic destruction of the two World Wars, and the emergence of a diverse multi-cultural Europe in the years following World War II. Course meets the History major requirements for Group II. Writing intensive.

Attributes: Historical Perspectives(Disc); Writing Intensive Course**HIST 436W - Europe and the Modern World****Credits:** 4

The course focuses on major encounters between Europe and its Global rivals from the Age of the Revolution to the rise of modern terrorism. While the topics covered will vary by instructor, all sections address the rise of Democracy, the birth of Capitalism, the apocalyptic destruction of the two World Wars, and the emergence of a diverse multi-cultural Europe in the years following World War II. Course meets the History major requirements for Group II. Writing intensive.

Attributes: Historical Perspectives(Disc); Writing Intensive Course**HIST 440A - Martin Luther King, Jr., and the Struggle for Racial Justice****Credits:** 4

This course examines Martin Luther King's life, philosophy, and career on the front lines of the civil rights movement. In our study of King as well as the larger black freedom struggle, we seek an understanding of how certain questions related to racial justice played out in American history. We focus on issues of civil disobedience, just and unjust laws, love and hate, violence and non-violence. Students will read many of King's famous writings such as the Letter from Birmingham Jail, as well as his lesser-known speeches - among them King's 1967 address denouncing the Vietnam War. More generally, this seminar introduces students to the rudiments of historical thinking and asks broader questions about the role of individuals in history and how social change happens. Course meets the History major requirement for Group I.

Attributes: Historical Perspectives(Disc)**HIST 440B - Honors/Medicine, Society, Science, and the Law: Who Makes Your Health Care Decisions?****Credits:** 4

Every person interacts with the health care system – including you. In this class, students will study the interactions between law, society, science, and medicine to gain an understanding about how the American health care system developed and who has and does make decisions about health. Topics covered include vaccination, health care providers, discrimination, and epidemics. Course meets the History major requirement for Group I.

Attributes: Historical Perspectives(Disc)

HIST 440C - Honors/Collective Guilt and Collective Responsibility in History**Credits:** 4

Most Americans recognize the Holocaust as an extraordinary crime, though there is less agreement about who was responsible, whether justice was rendered and appropriate compensation was awarded survivors. Things become more complicated when examining what might be considered crimes committed by Americans. This course concentrates both on the Holocaust and the underside of American history and poses questions about the connections between the past and the responsibility of citizenship in the present. Writing intensive. Course meets the History major requirement for Group I or II.

Attributes: Historical Perspectives(Disc); Writing Intensive Course**HIST 440D - Honors/Citizens and Persons****Credits:** 4

Definitions of citizenship have changed dramatically in the course of history. In this class, we will trace the evolution of expanding (and occasionally contracting) political and civil rights and responsibilities over time, with an emphasis on events in multicultural American nations and emphasizing how laws, social practices, unique historical contexts, and individuals' understanding of self and other have mutually produced each other. The course is part of the Honors Symposium "Being Human" and will engage in an interdisciplinary conversation about personhood, humanity, rights and responsibilities, and dehumanization.

Attributes: Historical Perspectives(Disc)**HIST 440E - Honors/Drugs and Addiction in World History****Credits:** 4

As drug addiction rates in the US are reaching epidemic proportions, new solutions and perspectives are becoming increasingly important. This course teaches students how a variety of cultures, including the Aztecs, Maya, Vedic India, China, and Greco-Roman antiquity, confronted the problems of drug use and addiction in their own societies. By examining these phenomena through the lens of other culture's values, students will gain a valuable perspective by which to address these problems today.

Attributes: World Cultures(Discovery)**HIST 440F - Honors/Islam, Art, and the Past****Credits:** 4

While the world is all too familiar with images of ISIS using explosives and frills to destroy ancient sites and artifacts in Iraq and Syria, there has been little attention given to the dynamic role of art within past and present Islamic societies. Yet, Islam has a rich and vibrant artistic tradition, one in which ancient civilizations played and continue to play a major role. This course introduces students to Islamic art and cultural heritage through a study of Islam's engagement with past artistic traditions in the fields of architecture and the fine arts. It also addresses how the recent actions of ISIS have changed questions about cultural heritage and stewardship in the Middle East and the West. Finally, the course asks students what they can and should do to preserve cultural heritage.

Attributes: FinePerformingArts(Discovery)**HIST 444 - Through Their Eyes: The American Civil War from Primary Sources****Credits:** 4

Introduces the nature of historical research through an intensive study of the Civil War era, including slavery, abolitionism, and political conflict before the war, as well as the military, social, and political history of the war itself. Use of primary sources such as newspapers, public documents, letters, and diaries, including unpublished manuscripts held in Special Collections, Dimond Library. Writing intensive. Course meets the History major requirement for Group I.

Attributes: Historical Perspectives(Disc); Inquiry (Discovery); Writing Intensive Course**HIST #444B - Revolutions Across the Atlantic****Credits:** 4

An exploration of the Age of Revolution, 1776-1800 on both sides of the Atlantic. Beginning with Tom Paine's declaration "Tis Time to Part" that launched the American Revolution and ending with the spread of the French Revolution by bayonets into Switzerland, we investigate the clubs organized against the slave trade, we read the plays that projected imaginary revolutions onto desert islands, and we follow the rumors that spread news of Caribbean revolts to Philadelphia and Paris. This course will be primarily discussion, with some short writing assignments in the first half of the course. Students will research and write their own histories of some facet of revolutionary history in the second half of the course. Writing intensive. Course meets the History major requirements for Group I or II.

Attributes: Historical Perspectives(Disc); Inquiry (Discovery); Writing Intensive Course**HIST #444C - World War Propaganda in Britain and the United States****Credits:** 4

Examines multi-media propaganda in World War I and World War II Britain and the U.S. to investigate the total war experience, the relationship between these two nations, and the workings of a critical weapon. Propaganda was a bloodless weapon in an era of high-tech tools, but it was also a feared and ubiquitous one. Some of the issues addressed in this course include: Who were some of the targets of propaganda? How were posters different from films or radio broadcasts? What were the messages of propaganda? What does propaganda say about these nations as cultures and societies as well as about their war efforts? We analyze multimedia primary sources as well as use secondary ones in our discussions. Writing intensive. Course meets the History major requirements for Group I or II.

Attributes: Historical Perspectives(Disc); Inquiry (Discovery); Writing Intensive Course

HIST 444D - Slavery and Society in Pre-Colonial Africa**Credits: 4**

Examines the evolution and practice of the institution of slavery in Africa from the earliest times to the era of European colonialism. Using contemporary personal narratives by the slaves, the course examines specific historical contexts of various slave systems, continuity and change in the ideologies and practices of slavery, religion and slavery, race and slavery, gender and slavery, conditions of slaves, as well as the making and uses of slaves - as domestics, concubines, eunuchs, officials, soldiers, labor and capital. Using films, slide images, and a comparative approach, African slavery will be examined within the context of the early evolution of slavery in the Mediterranean and Islamic worlds as well as its later expressions in the Atlantic world of the Americas. Course meets the History major requirements for Group III.

Attributes: Historical Perspectives(Disc); Inquiry (Discovery); Writing Intensive Course

HIST #444E - American at War: Society, Culture, and the Home Front**Credits: 4**

Course will examine how the preparation for war, war itself, and the legacy of war shape American society, culture, and national identity. Students explore the relationship of war to topics such as American politics, literature, music, visual arts, popular culture, as well as gender, ethics, and race relations. Primarily discussion with short writing assignments in the first part of the course. Students research topics of their choice in the second and third parts of the course. Writing intensive. Course meets the History major requirements for Group I.

Attributes: Historical Perspectives(Disc); Inquiry (Discovery); Writing Intensive Course

HIST 444G - Voices from Modern China**Credits: 4**

Human voices—written or vocal—left records of history. Yet too often we hear only the voice of the statesman, which is too partial to bring to life a colorful history like China's. This seminar explores China's dramatic changes in modern times through revolution, reform, and war as experienced by a wide range of individuals who witnessed or participated in these huge events and left their voices in record. We will read and discuss the lived experiences of some iconic (well-known) political or cultural leaders, as well as working women, male and female revolutionaries, youthful rebels, a leading industrialist, and foreign observers during China's extraordinary transformations over the past two centuries. Writing intensive. Course meets History major requirement for Group III.

Attributes: Historical Perspectives(Disc); Inquiry (Discovery); Writing Intensive Course

HIST 444J - Global Citizenship: In Pursuit of Liberty**Credits: 4**

What does it mean to be a global citizen? Are we? What are human rights? Are they universal? This honors discovery course will explore with the men and women who traveled and thought beyond the borders of their locality and their moment of time and who imagined themselves citizens of the world. We will start with early revolutions that traversed oceans and national borders. We'll read utopias that saw their world differently. In the end, we will investigate major global challenges of our own world. We will move backwards, but also forwards in history. We will read novels, and perform plays. We will listen to Beethoven and Berlioz, in class and discuss larger questions of our international community, from sustainability to diversity, as they echo through different disciplines. Course meets History major requirement for Group I or II.

Attributes: Historical Perspectives(Disc); Inquiry (Discovery); Writing Intensive Course

HIST 483 - History of World Religions**Credits: 4**

Introduces the religions of the world in terms of historical development, relationship to society, belief system, central texts, and ritual practices. Begins with the religions of small and tribal societies (e.g., African, Native American), moves through religions of complex societies (e.g., Hinduism), and then studies the various traditions that emanated from ancient revelations: Zoroastrianism, Buddhism, Judaism, Christianity, Islam, and certain new forms of Christianity. Course meets History major requirement for Group III.

Attributes: Historical Perspectives(Disc)

HIST 483W - History of World Religions**Credits: 4**

Introduces the religions of the world in terms of historical development, relationship to society, belief system, central texts, and ritual practices. Begins with the religions of small and tribal societies (e.g., African, Native American), moves through religions of complex societies (e.g., Hinduism), and then studies the various traditions that emanated from ancient revelations: Zoroastrianism, Buddhism, Judaism, Christianity, Islam, and certain new forms of Christianity. Writing intensive. Course meets History major requirement for Group III.

Attributes: Historical Perspectives(Disc); Writing Intensive Course

HIST 490 - Medieval History through Film**Credits: 4**

This course is intended to give students an opportunity to come to grips with some of the central questions that historians ask, namely how do we know what we know (epistemology), and what image of the past are we trying to create (history). Students read (1) scholarly literature (2) contemporary narrative sources (3) and watch films that depict events that are described in these narrative sources. Course meets History major requirement for Group II.

Attributes: Historical Perspectives(Disc)

HIST 497 - Explorations in Historical Perspectives**Credits: 4**

In-depth exploration of a particular historical question or topic: for example, the French Revolution, Chaucer's England, or the New Deal. Students should consult with the Department of History for a list of topics and instructors. Course meets the History major requirements for Group I, II, or III, depending on the topic.

Attributes: Historical Perspectives(Disc)

HIST #497H - Honors/Explorations in Historical Perspectives**Credits:** 4

In-depth exploration of a particular historical question or topic: for example, the French Revolution, Chaucer's England, or the New Deal. Students should consult with the Department of History for a list of topics and instructors. Writing intensive. Course meets the History major requirements for Group I, II, or III, depending on the topic.

Attributes: Writing Intensive Course**HIST #497W - Explorations in Historical Perspectives****Credits:** 4

In-depth exploration of a particular historical question or topic: for example, the French Revolution, Chaucer's England, or the New Deal. Students should consult with the Department of History for a list of topics and instructors. Writing intensive. Course meets the History major requirements for Group I, II, or III, depending on the topic.

Attributes: Writing Intensive Course**HIST 498 - Explorations of Historical Perspectives****Credits:** 4

In-depth exploration of a particular historical question or topic: for example, the French Revolution, Chaucer's England, or the New Deal. Students should consult with the Department of History for a list of topics and instructors. Course meets the History major requirements for Group I, II, or III, depending on the topic.

Attributes: Historical Perspectives(Disc)**HIST 500 - Introduction to Historical Thinking****Credits:** 4

Basic skills essential to the study of history: critical reading of historical literature, improvement of written and oral analysis of historical material, and use of library resources. Intensive study of books and documents from varying historical fields and periods. Required of history majors; open to other interested students. Writing intensive.

Attributes: Inquiry (Discovery); Writing Intensive Course**HIST 501 - Medieval Military History****Credits:** 4

Western societies from the Roman Empire to the emerging nation states of early modern Europe spent an enormous proportion of their surplus wealth on war. This course introduces this crucial aspect of Western history and examines the period extending from the third century AD, to just before the extensive introduction into Europe of gunpowder weapons in the fifteenth century. Discussion of not only battlefield tactics and famous generals but also the effect that war had upon society as a whole and the economic ramifications of war, the Christianization of war, and the effect of war upon literature. Course meets the History major requirements for Group II.

HIST 505 - African American History**Credits:** 4

Explores the forced integration of the Atlantic World through the African slave trade and the development of creole cultures in America, and takes the story of Black Americans' "creative survival" and the evolution of African-American culture through the end of the Civil War. Writing intensive. Course meets the History major requirements for Group I.

Attributes: Historical Perspectives(Disc); Writing Intensive Course**HIST 506 - African American History****Credits:** 4

Experiences, aspirations, and contributions of black Americans from their ethnic origins in Africa to the present American crisis in race relations; comparative study of cultures and institutions. Reconstruction to the present. Writing intensive. Course meets the History major requirements for Group I.

Attributes: Historical Perspectives(Disc); Inquiry (Discovery); Writing Intensive Course**HIST 509 - Law in American Life****Credits:** 4

Investigates the role of law in American social, political, and economic life from the European settlements to the present. Traces the development of legal institutions, but focuses on the various functions of law (e.g., in structuring social relationships, allocating resources, defining governmental authority, expressing social and moral values, and as a mechanism for control). Course meets the History major requirements for Group I.

HIST 511 - History of New Hampshire**Credits:** 4

This course reconstructs the surprising past of the place we call New Hampshire. Beginning with the 17th-century encounter between English and Native people, it runs to the present. Literature, documents, photos and films provide access to New Hampshire's changing natural environment, its rural life, industrialization, politics and recent struggles. Writing intensive. Course meets the History major requirements for Group I.

Attributes: Historical Perspectives(Disc); Writing Intensive Course**HIST 515 - Game of Thrones: Power and Politics in Medieval and Renaissance Europe****Credits:** 4

George R.R. Martin's popular medieval fantasy series, A Song of Ice and Fire better known from HBO's Game of Thrones brilliantly portrays the brutal dynastic wars that unfolded between noble houses for control of Westeros. But did you know that pre-modern European history was one of Martin's greatest inspirations? Join us as we explore a real "Game of Thrones", the gripping series of national and international struggles between actual noble European houses for supremacy from the eleventh through the sixteenth centuries that ultimately forged the modern European state system. Writing intensive.

Attributes: Writing Intensive Course**HIST 521 - Origins of Modern Science****Credits:** 4

Development of scientific ideas in Europe from the Renaissance through the Scientific Revolution to the Enlightenment. Topics include themes in the physical and biological sciences and their relations to cultural and social contexts. No special science background is required. Course meets the History major requirements for Group II.

Attributes: Historical Perspectives(Disc)**HIST 522 - Science in the Modern World****Credits:** 4

Development of science, particularly in Europe and North America, from the 18th century to the present. Themes including Darwinism, the growth of modern physical and biological sciences and science in the contemporary world. No special science background is required. Course meets the History major requirements for Group II.

Attributes: Historical Perspectives(Disc)

HIST 532 - Modern Latin America**Credits:** 4

Provides a broad overview of Latin America from the 18th century to the present. It examines the breakdown of colonial rules, the establishment of independent countries, the formation of viable nation states, the importance of geography, the roles of the different elements of society. Social, political, and economic changes and continuities emphasized to give a sense of the ambiguities of the historical process. Cultural differences illustrated with slides and music. The effects of elite rule and of United States interventions studied. Writing intensive. Course meets the History major requirements for Group III.

Attributes: Historical Perspectives(Disc); Writing Intensive Course**HIST 537 - Espionage and History****Credits:** 4

Introduces the history and politics of espionage and intelligence organizations from the 20th century to the present. Special attention to intelligence work among the major powers in World War I, World War II, and the Cold War. Readings include autobiographical accounts and other primary sources as well as novels. Course meets the History major requirements for Group II.

HIST 538 - Modern European War and Society: The Napoleonic Wars to World War II**Credits:** 4

This course is organized around three conflicts: the Napoleonic Wars, World War I, and World War II. As we study them, we'll discuss the evolution and impact of total war in order to understand how societies work in wartime and how these conflicts have shaped Europe. In our exploration of each war, we examine a range of participants from international alliances to individual soldiers and to civilians involved in the conflict. Total war, by its nature, incorporates most elements of society, so we will spend time looking at the homefronts as well as the battlefronts. We will survey the conflicts as a whole, but also devote time to some special events or elements. For example, we will look at the battle of Somme during the portion of the course dedicated to World War I. We will also study some of the art that arose out of the conflict. The core of the class will be lectures, but we will engage in some discussion almost every day and there are some classes that will be dedicated to discussion. Course meets the History major requirements for Group II.

HIST #540 - Foundations of Medieval History: 300-1300 CE**Credits:** 4

Introduces the history of Western Europe from the end of the Roman Empire to the late twelfth century. Particular focus on the history of Christianity, social and economic structures, the role of women in medieval culture, and literacy and learning. Writing intensive. Course meets the History major requirements for Group II.

Attributes: Writing Intensive Course**HIST 560 - Modern Britain****Credits:** 4

This course explores Great Britain from the American Revolution to the reign of Elizabeth II. We examine Britain's unparalleled Imperial power, the vibrancy of Victorian Culture, and the devastating impact of the two World Wars, which initiated Britain's post-war decline. During the Cold War, Britain rebuilt its position through cultural exports like rock-n-roll music, royal pomp, and the mini-skirt, but has never fully recovered its status, despite its vibrant multi-cultural allure. Course meets the History major requirements for Group II.

HIST 563 - Introduction to Russian Culture and Civilization**Credits:** 4

Interdisciplinary course on the development of Russian culture from its origins through the end of the 19th century. Historical documents, literary works, ethnographic materials, films, slides of Russian art, and music. Course meets the History major requirements for Group II.

Attributes: World Cultures(Discovery)**HIST 564 - Russia and the Soviet Union in World War II****Credits:** 4

This course examines World War II from the perspective of Russia and the Soviet Union. Readings, lectures, and discussions cover the major battles, Stalin's leadership, experiences of the soldiers (both men and women), life on the home front, the Holocaust on Soviet territory under German occupation, and propaganda. Students also read the most important Russian novel set in World War II. Midterm, final, short papers. Writing intensive. Course meets the History major requirements for Group II.

Attributes: Writing Intensive Course**HIST 565 - Women in Modern Europe****Credits:** 4

A social history of women in Europe from 1700 to the present. Examines the development of the "modern nuclear family," transformations in women's work during the industrial revolution, and women's political evolution from bread rioters to hearth tenders to petitioners. Sources include published diaries, historiographical studies, and novels. Course meets the History major requirements for Group II.

Attributes: Historical Perspectives(Disc)**HIST 566 - Comparative Revolutions: How to Make a Revolution in the World before Marx****Credits:** 4

This course in HOW TO MAKE A REVOLUTION (if you lived more than 100 years ago) will ask why the Sea Beggars flooded Holland, the Levellers dug up the Commons, and Black Loyalists fled the independent Americans after their revolution. The class asks how slaves in Haiti defeated Napoleon's troops, utopian socialists built a railway around a cross at the center of Europe, and Marx rallied the workers of the world to unite. Course meets the History major requirements for Group II.

HIST 575 - Ancient Near East**Credits:** 4

From the Neolithic revolution to the time of Alexander the Great. Rise of civilization; nature of human artistic and intellectual development in the earliest civilizations of Mesopotamia and Egypt; Judaism in its historical setting. Course meets the History major requirements for Group III.

HIST 579 - History of China in Modern Times**Credits:** 4

This course introduces students to major historical developments in China from 1600 to the end of the twentieth century. Major themes include: ethnicity, alien rule, political reforms and revolution, industrialization, interactions with the rest of the world (such as cross-cultural relations and military conflict), social and cultural transformation. Readings for the course are a combination of secondary and primary sources in translation, including scholarly articles, memoirs, biography, fictions, and journalist reports, most of which are landmark works indispensable for the study of modern Chinese history. Course meets the History major requirements for Group III.

Attributes: Historical Perspectives(Disc)

HIST 580 - History of Japan in Modern Times**Credits: 4**

Surveys major historical changes in Japan from 1600 to the end of the 20th century. Topics include Tokugawa centralized feudalism, samurai class, Edo culture, foreign relations with Asian countries and the United States, wars, postwar reforms under American Occupation, and the rise of Japanese economic power. Sources include official documents, personal memoirs, literary works, films, as well as slides of ukiyo-e (woodblock paintings). Course meets the History major requirements for Group III.

HIST 585 - Medieval Islam**Credits: 4**

This course examines the origins and expansion of Islam and the development of the Muslim community from the time of Muhammad until the Islamic empires of the 16th century. We will address the associated geographies, artifacts, and legal formations associated with the medieval and early modern Islamic world. The course focuses on major developments in politics, religion, and the arts. Course meets the History major requirements for Group III.

Attributes: Historical Perspectives(Disc)

HIST 586 - Islam in the Modern Age, 15th Century to present**Credits: 4**

Emergence of modern Middle Eastern states and societies from the time of the Ottoman Empire to the present. A survey of major developments, including the emergence of nationalism, the Islamic resurgence, and social transformations. Course meets the History major requirements for Group III.

HIST 587 - History of Africa from the Earliest Times to 1870**Credits: 4**

This survey course introduces students to the major landmarks in the making of African history and societies from the earliest times to 1870 AD. Beginning with the dual premises that Africa is the birthplace of both the human species as well as some of the oldest and most varied civilizations in the world, the course examines the early civilizations of both Egypt and the Nile Valley, the development and of the Swahili culture, the Sudanese and forest empires, religious beliefs and the moral order, gender and class, warfare and diplomacy, the advent and impact of Islam and Christianity, migrations and cultural formations in central and southern Africa, commerce, and encounters with Europe, slavery and the Trans-Atlantic slave trade, and the end of formal African independence. Films and other visuals are streamed to supplement the readings. No pre-requisite required. Course meets the History major requirements for Group III.

HIST 588 - History of Modern Africa: 1870 to the Present**Credits: 4**

This survey course introduces students to the major forces and dynamics of change in the modern history of Africa, from the late 19th century to the present. The primary focus is on European imperialism and its aftermaths in Africa. Issues to be examined include: the scramble for and partition of Africa; resistance to colonization; the rise and fall of apartheid in Southern Africa; religion and society, music and culture, gender and sexuality, art and literature, pan-Africanism, military rule, HIV/AIDS, democratization, and nation building. Emphasis on African initiatives, and on an exploration of contemporary challenges and the major forces reshaping the history of this oldest, most diverse, and most fascinating continent. Feature films, drama skits, literary works, and guest lectures are utilized. No prerequisites required. Course meets the History major requirements for Group III.

HIST #589 - Islam in Africa**Credits: 4**

Focuses on the advent, spread, and major consequences of Islam in Africa. Examines the major phases of Islamic expansion: early conquests in North Africa and the Iberian Peninsula, the spread of Islam across the Sahara into the Sudan, the jihadist and reformist movements of the 18th and 19th centuries and the development of Islam during the colonial and postcolonial era. Emphasizes the varieties of the practice of Islam, the role of Islam in states formation and the impact of Islam on the religious and social life of the African peoples. The intersections of Islam with the issues of trade, slavery, politics, gender, imperialism, and modernization, the rise of Islamic fundamentalism, the place of North Africa within the Mediterranean Islamic culture, as well as the relationships of Islam with indigenous religions and with Christianity in African history and societies explored. Course meets the History major requirement for Group III.

HIST 595 - Explorations**Credits: 1-4**

See department listings for semester topic. Course meets History major requirement for Group I, II, or III depending on the topic.

HIST 596 - Explorations**Credits: 1-4**

Explorations in one of the fields listed below: A) American History, B) Atlantic History, C) Canadian History, D) Latin American History, E) Medieval History, F) History, G) History of Islam, H) Ancient History, I) East Asian History, J) African History, K) Middle Eastern History, L) Historiography, M) Russian History, N) World History, O) British History, P) New Hampshire History, Q) Historical Methodology, R) Irish History, S) History of Science, T) Maritime History, U) Museum. May be repeated to a maximum of 8 credits. Course meets History major requirement for Group I, II, or III depending on the topic.

HIST #597 - Medicine and Society in Pre-Modern Europe**Credits: 4**

Explores the history of medical theory and practice in Europe from the twelfth to the early seventeenth century. Themes include: 1) varieties of healing strategies, including naturalistic, magical, astrological, religious, and supernatural; 2) attitudes to the body, health and disease; 3) the broad range of healers who practiced healing arts, including learned physicians, surgeons, barbers, midwives, wise women, saints, and even charlatans; 4) the kinds of institutions devoted to promoting health, including the home, the hospital, and the monastery. Course meets the History major requirement for Group II.

HIST 600 - Explorations**Credits: 4**

Advanced explorations in one of the fields listed below: A) American History, B) European History, C) World History, D) Ancient History. Barring duplication of subject, may be repeated to a maximum of 12 credits. Course meets History major requirement for Group I, II, or III depending on the topic.

HIST 601 - Seminar in Religious Texts**Credits: 4**

Close study of sacred text(s) from a particular religious tradition (Islam, Christianity, Buddhism, Judaism, etc.) or a thematic selection of texts across religions. (Also offered as RS 601.) Course meets History major requirement for Group I, II, or III depending on the topic.

HIST #602 - Holocaust: The War on Europe's Jews**Credits: 4**

The attempted destruction of European Jewry during the Third Reich is one of the pivotal events in the history of modern Western Civilization. Course explores the circumstances and behavior of the Jews (as victims, resisters, survivors), the perpetrators (German and non-German), bystanders (German, European, and American), and rescuers (German and non-German). Attention is also given to such post-1945 matters as justice, compensation, and memory. Course meets History major requirement for Group II.

HIST 603 - European Conquest of North America**Credits: 4**

European Conquest of America explores many of the major issues relating to the creation and development of colonial North America. We will focus particularly on the extraordinary heterogeneous mixture of peoples who lived in North America and the Caribbean, and on the complexity and consequences of their interactions. Throughout the semester we will continually evaluate arguments among historians about whether or not it makes sense to understand the colonial period in terms of a conquest, or whether Native Americans retained enough power and resistance throughout the colonial period to make such an interpretation inaccurate. Course meets History major requirement for Group I.

HIST #604 - History of Medicine in the United States**Credits: 4**

Have you been a patient, a nurse, or a holder of insurance? Almost everyone in the United States has a role in health care. We study the growth and development of the field of American medicine from colonial times to the present, examining the changing relationships between patients, health care professionals, technology, government, and others. The focus will be shifts in responsibility and authority over time from patients, to doctors, and even to businesses. Course meets History major requirement for Group I.

HIST 605 - American Revolution, 1750-1800**Credits: 4**

Examines the transformation of thirteen British colonies into the United States through the election of Thomas Jefferson as president in 1801. Topics include the revolution's origins, the social and political impact of war, the changing structure of the family, the role of religion, the drafting and ratification of the Constitution, and the revolution's consequences for Indians and African Americans. Course meets History major requirement for Group I.

HIST 606 - History of the Early Republic**Credits: 4**

Explores the histories of the people and institutions that transformed the new United States from a coastal republic of largely independent freeholders to a transcontinental democracy increasingly driven by class. Topics include slavery, the family, reform movements, and the formation of national identity. Course meets History major requirement for Group I.

HIST 609 - Special Topics in American Legal History**Credits: 4**

In-depth thematic exploration of law in American life. Topics include race and equality in America; community, pluralism, and American law; property, liberty, and law; gender and law. May be repeated for credit with instructor's permission. Consult department listings of topics. Writing intensive. Course meets History major requirement for Group I.

Attributes: Writing Intensive Course**HIST 611 - Civil War Era****Credits: 4**

Surveys the period from the presidency of Andrew Jackson to the end of the Reconstruction. Focuses on causes, course, and consequences of the Civil War. Topics include slavery in the Old South, antebellum reform movements, creation and breakdown of the Second Party System, social and economic (as well as military) events during the war and major developments during Reconstruction after the war. Course meets History major requirement for Group I.

HIST 612 - Emergence of Industrial America**Credits: 4**

Investigates the economic transformation of 19th-century America from a rural, agricultural society to an urban, industrial one. Explores the sweeping economic changes and focuses on such topics as change in work and leisure, westward expansion and its effects on Native Americans, shifts in gender roles, growth of a consumer culture, rise of the labor unions, Populism, immigration, reform and regulation movements, growth of American imperialism, and intellectual developments. Course meets History major requirement for Group I.

HIST #613 - American Ways of War**Credits: 4**

"Is there an American way of war?" This commonly asked question will be the focal point of the course. To answer that we will study the interactions of both war and society in the United States from the Civil War onwards, addressing such issues as the causes, courses, diplomacy, homefront, legacy, and the art of the great and small wars. Course meets the History major requirement for Group I.

HIST 615 - The Rise of Modern United States, 1900-1945**Credits: 4**

By 1900, the United States had emerged as the world's leading industrial power and leading destination for millions of immigrants and had begun to become a major player in world affairs. Americans enjoyed unprecedented prosperity and became eager consumers of new inventions and popular culture: cars, radios, jazz records, and the "motion pictures." But they also experienced the worst depression the country had ever known and struggled to make sense of a world that went to war twice within a generation. Women, African Americans, immigrants - all struggled to carve out their place in the new political order. By World War II, the United States assumed many of its "modern" characteristics. Using novels, movies, photographs, sporting events, political speeches and political debates, we will explore both the domestic and the international aspects of the development of modern U.S. Course meets the History requirements for Group I.

HIST 616 - United States Since World War II**Credits: 4**

This course presents a framework for understanding American history from 1945 to the present. We explore major events and themes, beginning with the Cold War and the domestic anti-communism crusade, and continuing with the civil rights movement, the Vietnam War, and the women's movement. In our study of national politics, we chart the rise of liberalism – focusing on the presidencies of John F. Kennedy and Lyndon Johnson – as well as the conservative response, punctuated by the "Reagan Revolution." We conclude with a brief study of the 21st century.

HIST #617 - Vietnam War**Credits: 4**

An advanced interdisciplinary study of the American experience in Vietnam which utilizes fiction, film, music, and historical analysis to examine such matters as how and why the United States became involved in Vietnam, went to war there, and failed to win, as well as the consequences and legacies of that fateful conflict. It is strongly suggested that students first complete courses in modern American history. Course meets the History major requirement for Group I.

HIST 618 - American Environmental History**Credits: 4**

Examines how nature has been a factor in American history and how Americans have wrestled with the concepts of nature and culture. Topics include industrialization, evolution, conservationism, environmentalism, and environmental diplomacy. Course meets the History major requirement for Group I.

HIST 619 - Foreign Relations of the United States**Credits: 4**

The history of American diplomacy from the colonial era to the present, with the dividing point at 1900. The focus will be on both the foreign and domestic influences that shaped American diplomacy. Course meets the History major requirement for Group I.

HIST 620 - Foreign Relations of the United States**Credits: 4**

The history of American diplomacy from the colonial era to the present, with the dividing point at 1900. The focus will be on both the foreign and domestic influences that shaped American diplomacy. Course meets the History major requirement for Group I.

HIST 621 - History of American Thought**Credits: 4**

This course introduces the subfields of American intellectual and cultural history by assessing the ideas of some of the brightest minds that thought about life on the land we know of as the United States of America before the middle of the nineteenth century. This course surveys more than two centuries of thinkers and their connection to America's plural and evolving popular culture. Ultimately, this course seeks to answer the question: What is the history of American thought?

HIST 622 - History of American Thought**Credits: 4**

Influential thinkers and ideas have shaped American politics, society, economy, and culture since the Civil War. Among the topics explored are American Victorianism, Social Darwinism, Pragmatism, Modernism and its opponents, gender and identity politics and post modernism. Mark Twain, Elizabeth Cady Stanton, Thorstein Veblen, W.E.B. DuBois, John Dewey, F. Scott Fitzgerald, Hannah Arendt, Thomas Kuhn, Malcolm X, Susan Sontag and William F. Buckley Jr. will be among the thinkers explored. Course meets the History major requirement for Group I.

HIST 624 - Topics in Modern US History**Credits: 4**

Advanced study of topics in U.S. history. Barring duplication of subject, may be repeated to a maximum of 8 credits. Course meets the History major requirement for Group I.

HIST #625 - Southern History and Literature since the Civil War**Credits: 4**

Equal focus on the history and literature of the South since the Civil War. Topics include reconstruction, the age of segregation, and the Civil Rights Movement. Literary focus is on the period since 1920, including the "Southern Renaissance." Authors include William Faulkner, Robert Penn Warren, Flannery O'Connor, and Zora Neale Hurston. Course meets the History major requirement for Group I.

HIST 632 - Latin American History: Topics**Credits: 4**

Topics vary (see department listing for current semester). Seminar entails reading, discussion, and research on literature and documents related to the selected topic. Provides students with the opportunity to do research under close direction. Course meets the History major requirement for Group III.

HIST 633 - Medieval England 800-1300**Credits: 4**

This course provides students with an opportunity to gain an in-depth understanding of the history of medieval England from the beginning of the period of consolidation under the Wessex dynasty in the ninth-century through the end of the thirteenth century. In addition to obtaining a large corpus of information through the reading of a significant monographs dealing with England during this period, students will be challenged to develop the critical analytical skills necessary for the thorough understanding and practice of historical methodologies, with a particular focus on the practice of historical method in writing medieval history. Finally, students will be given the opportunity to improve their communications skills through extensive class discussions dealing with the scholarly works read for this course, and in writing assignments. Course meets the History major requirement for Group II.

HIST 634 - Medieval Empires**Credits: 4**

This course will explore the intellectual and political foundations of imperial rule in the Middle Ages with a particular focus on the Carolingian, German, and byzantine empires of the early and high Middle Ages. The course will begin with the development of the idea of empire under Alexander the Great and then during the Roman empire. The course will then turn to an examination of how the rulers of the three great empires of the western Middle Ages adapted the classical ideas and practices of empire for their purposes. The course focuses on sources. Background material will be provided in short lectures. Course meets the History major requirement for Group II.

HIST 640 - Holy War in the Holy Land: The Medieval Crusades**Credits: 4**

Survey of the medieval military expeditions organized by Christians to secure the Holy Land during the 12th and 13th centuries. Topics considered include the formulation of a "just war" theory; political, intellectual, religious, and military interactions between Christians, Jews, and Muslims; the Crusader State of Jerusalem; and the histories of individual crusades. Course meets the History major requirement for Group II.

HIST 641 - Europe after the Black Death**Credits: 4**

Explores the dramatic changes that characterized Western Europe as it rebounded in the fifteenth through the seventeenth centuries from the ravages of the Black Death of 1348. Examines the social, political, and artistic developments in late medieval and Renaissance Italy before "crossing the Alps" to trace the expansion of Renaissance culture in Northern Europe. Topics include the humanist movement; new patterns of social organization; the revival of classical antiquity in the arts, architecture, religion, and political theory; the effects on European society of the encounter with the "New World"; shifting roles for men and women in early modern European societies; religious war and conflict. Course meets the History major requirement for Group II.

HIST 642 - Saints, Sinners, and Heretics: Europe in the Age of Religious Reform**Credits: 4**

Examines the history of Western Christendom from roughly 1400 to 1600, a period of tumultuous religious change throughout Europe. We begin in the Middle Ages where the seeds of religious division were sown. We then tackle Martin Luther's challenge to the Catholic church, trace the diffusion of his message throughout Europe, and address the Catholic response to the evangelizing movements that he inspired. Finally we investigate some of the regional varieties of Protestantism that developed in the latter half of the sixteenth century with a particular focus on Switzerland, Germany, England, Scotland, France, and the Netherlands. Course meets the History major requirement for Group II.

HIST #644 - Victorian Britain**Credits: 4**

The Victorian Era was a time of contrasts. Queen Victoria, a monarch known for her moral strictness, sexual probity and rigid sense of decorum ruled over a vast world Empire. The streets of London, however, teemed with prostitutes, pickpockets and impoverished immigrants from Ireland, Europe and beyond, whose lives seemed untouched by either the prosperity or moral stringency that characterized the age. In this class we explore the varieties of Victorian experience both at home and in the global empire. We will examine the glittering lives of the rich as well as the abject poverty of the working poor and explore our own fascination with the dress, the homes, and the lives of the Victorians. Examining sources such as novels, decorative arts, corsets & bustles, Parliamentary debates, architecture, and scientific writings, we will attempt to uncover the many-faceted culture, society and political life of Victorian Britain. Course meets the History major requirement for Group II.

HIST #645 - 19th Century European Great Powers - Diplomacy and International Law**Credits: 4**

In this course, we will study power in Europe during the apogee of that region's strength. The long nineteenth century is a period during which Europe avoided major continent-wide (and world-wide) wars, despite constant upheavals. That is a remarkable accomplishment when one compares the events of the nineteenth century with those of the twentieth, despite the fact that the former influenced the latter. Focus is on those who wielded power internationally, including dealmakers, deal-breakers, manipulators, and idealists. To express, test, restrain, or leverage power, actors engaged in wars and negotiations that led to a range of contracts from treaties, such as the Treaty of Fontainebleau ending Napoleon's reign; to alliances, like the Anglo-Japanese Naval Alliance ending Britain's "splendid isolation" from international partnerships; to conferences, including the Hague Conventions regulating wars. In addition, it is important to look at statutes influencing foreign policy, as did the Second German Naval Law of 1900 which increased European tensions before World War I. Examining the relations of powerful nineteenth century states, therefore, illuminates international law as well as more traditional elements of diplomacy. Students learn about 19th century great powers of Europe and important pieces of international legal relationships as well as develop critical thinking and communication skills. Course meets the History major requirement for Group II.

HIST 652 - Topics in European Intellectual History**Credits: 4**

Explores such major developments as the Enlightenment, Russian intellectual history, and the relationship between gender and intellectual history. Includes topics since the Renaissance. Since topics vary, students should check the department newsletter or office for course theme in any given term. May be repeated as topics change to a maximum of 12 credits. Course meets the History major requirement for Group II.

HIST 654 - Topics in History of Science**Credits: 4**

Advanced study of a selected topic in the history of European science since the Renaissance. Course meets the History major requirement for Group II.

HIST 656 - Twentieth Century Europe**Credits: 4**

The Twentieth Century began with European nations at the apex of their global power. It ended with their world dominance in ruins. Two World Wars, the rise of Nazism, and communist revolutions had left Europe in the shadow of the United States. Examining European history from the birth of the automobile to the fall of the Berlin Wall, we explore the political, social and cultural forces that made the twentieth century the bloodiest epoch in world history. Course meets the History requirement for Group II.

HIST 662 - England in the Tudor and Stuart Periods**Credits: 4**

England experienced great upheaval under the Tudor and Stuart dynasties. This course explores many of the key political, religious, social and economic changes that changed the face of England in the 16th and 17th centuries. We will study all of the Tudor and Stuart monarchs, and we will focus particularly on the following topics: Henry VIII, the English Reformation, Elizabeth I, Commons v. Nobility, the English Civil Wars and the execution of Charles I, the Restoration and the Glorious Revolution. Course meets the History requirement for Group II.

HIST 664 - Russia: Modernization through Soviet Empire**Credits: 4**

The challenges of modernization, experience and legacy of Leninist and Stalinist revolutions. Soviet consolidation and decline through the Gorbachev era. Course meets the History requirement for Group II.

HIST 665 - Themes in Women's History**Credits: 4**

In-depth examination of a selected topic in women's history. Topics may include Women and Health, Women in Modern European Political Theory, Comparative History of Women and Revolution. See Time and Room Schedule of history department newsletter for the specific topic. May be repeated for credit with permission of instructor. Course meets the History requirement for Group II.

HIST #669 - Germany from 1918 to Present**Credits: 4**

Begins with the revolution of 1918 and then explores the political, social, and intellectual character of the Weimar Republic, the rise and nature of Nazism, the Holocaust, the foundation of both the German Democratic Republic and Federal Republic and their evolution in the shadow of the Cold War, and concludes with the unification of Germany after the fall of the Berlin Wall in 1989. Course meets the History requirement for Group II.

HIST 675 - Early History of Ancient Greece**Credits: 4**

Greek history from the Minoan and Mycenaean eras through the Persian Wars of the early fifth century. Emphasis on original sources including the Homeric epics, Plutarch, Sappho, and Herodotus. Examination of the distinctive developments of political systems in Sparta and Athens, as well as issues of colonization, diplomacy, religion, and culture. Thorough discussion of types of available evidence and their integration into historical understanding. Course meets the History requirement for Group II.

HIST 676 - Classical and Hellenistic Greek Worlds**Credits: 4**

Greek history from the Persian Wars of the early fifth century through the life of Alexander the Great and the creation of the Hellenistic world. Emphasizes original sources including Herodotus, Thucydides, the Athenian playwrights, and Plato. Examines the transformation from city-state political organization to large Hellenistic kingdoms, as well as discussion of Greek historiography, intellectual life, and social theory. Thorough discussion of types of available evidence and their integration into historical understanding. Course meets the History major requirements for Group II.

HIST 677 - Roman Republic**Credits: 4**

Covers pre-Roman Italy, the Etruscans, and the foundation of the Republic, Rome's expansion through the Punic Wars, relations with the Hellenistic kingdoms, and disintegration and final collapse of the Republic. Includes discussions of Roman art, engineering, and political theory. Emphasis on Latin sources in philosophy, history, and literature. Course meets the History major requirements for Group II.

HIST 678 - Roman Empire**Credits: 4**

Collapse of the Roman Republic and creation of the Augustan principate. History of the principate through the division of the empire, with discussion of the fall of Rome in the west and the eastern empire through Justinian. Discusses Roman art, literature, philosophy, and religious developments such as the proliferation of mystery religions and the rise of Christianity. Course meets the History major requirements for Group II.

HIST #679 - Rights Revolution**Credits: 4**

It is all but impossible to think or talk about contemporary legal and moral controversies without invoking the idea of "rights." Yet few of us can claim a clear understanding of this pivotal concept. Historically, how have particular claims, preferences, and socio-economic interests attained the status of publicly-recognized "rights"? Are there other ways to conceptualize and prioritize rights, other forms of "rights talk," than the ones we currently employ? History 679 takes as its point of departure the enormous expansion in rights claimed by both individuals and groups in recent decades – the "rights revolution." This development has elicited both praise and alarm, and we will examine the philosophical, moral, and political dimensions of each. Course meets the History major requirements for Group I.

HIST #680 - Historical Geography**Credits: 4**

Introduces major themes, important scholars, and commonly used research techniques in historical geography. Course is reading and research oriented. Focus is on North America. Writing intensive. (Also listed as GEOG 680.) Course meets the History major requirements for Group I.

Attributes: Writing Intensive Course

HIST #681 - Society and Culture in 20th-Century China**Credits: 4**

Explores major aspects of social and cultural transformation in China from the beginning of the century, when the Qing dynasty was replaced by a Republic, to the age of globalization. Themes included the rise of citizenship and civic activism, mass culture in print media, commercial culture in advertisement and consumerism, European and Russian influences on cultural and political changes, war of resistance, refugee and social dislocation, rural transformation shaped by socialism and global market. Course meets the History major requirements for Group III.

HIST 684 - History of Southern Africa since 1652**Credits: 4**

Examines the major themes in the history of a troubled sub-region of Africa. In-depth exploration of the nature and impact of socio-cultural formations, the evolution of centralized societies, the initiation and expansion of white settlements, and the Mfecane revolution. Analysis of the dynamics and consequences of European imperialism, economic competition and industrialization, European settler-nationalism, racial conflict, slavery, class and gender politics, Indian and African nationalism, democratization, and development in post-colonial and post-apartheid Southern Africa. Course meets the History major requirements for Group III.

HIST 690 - Seminar: Historical Expl**Credits: 4**

Seminar in one of the fields listed below: A) American History, B) Atlantic History, C) Canadian History, D) Latin American History, E) Medieval History, F) European History, G) History of Islam, H) Ancient History, I) East Asian History, J) African History, K) Middle Eastern History, L) Historiography, M) Russian History, N) World History, O) British History, P) New Hampshire History, Q) Historical Methodology, R) Irish History, S) History of Science, T) Maritime History, U) Museum Studies. May be repeated to a maximum of 8 credits. Course meets the History requirements for Group I, II, or III, depending on the topic.

HIST 691 - Internship**Credits:** 1-4

Supervised internship with a governmental agency, private corporation, philanthropic institution, library, archives, museum, historical society, or other institution seeking individuals interested in historical research. May be repeated up to a maximum of 8 credits. Cr/F.

HIST 695 - Independent Study**Credits:** 1-4

A) Early American History, B) American National History, C) Canada, D) Latin America, E) Medieval History, F) Early Modern Europe, G) Modern European History, H) Ancient History, I) East Asia, J) Near East and Africa, K) European Historiography, L) American Historiography, M) Russia, N) World History, O) English History, P) New Hampshire History, Q) Historical Methodology, R) Irish History, S) History of Science, T) Maritime, U) Museum Studies. For students showing a special aptitude in history who desire to study an area or subject for which no appropriate course is offered. May be repeated up to a maximum of 8 credits. Prereq: permission.

HIST 695W - Independent Study**Credits:** 1-4

A) Early American History, B) American National History, C) Canada, D) Latin America, E) Medieval History, F) Early Modern Europe, G) Modern European History, H) Ancient History, I) Far East and India, J) Near East and Africa, K) European Historiography, L) American Historiography, M) Russia, N) World History, O) English History, P) New Hampshire History, Q) Historical Methodology, R) Irish History, S) History of Science, T) Maritime, U) Museum Studies. For students showing a special aptitude in history who desire to study an area or subject for which no appropriate course is offered. May be repeated up to a maximum of 8 credits. Prereq: permission. Writing intensive.

Attributes: Writing Intensive Course**HIST 698 - Internship in Museum Studies****Credits:** 4

Supervised position with a museum, historical society, archive, or other history related site. Cr/F.

HIST 771 - Museum Studies**Credits:** 4

Introduction to theory, methods, and practice of museum studies. Examination of various museum functions, as well as contemporary historical controversies. May be repeated for up to 8 credits with departmental approval.

HIST 772 - Studies in Regional Material Culture**Credits:** 4

Introduces the theory and methodology of material culture, that is, the study of history through the analysis of buildings, human-created landscapes, and artifacts made and used in the United States, particularly in New England. May be repeated for credit with permission of undergraduate adviser. Course meets the History major requirements for Group I.

HIST 774 - Historiography**Credits:** 4

Analysis of ancient and modern historians. Open to undergraduates with permission. (Not offered every year.)

HIST 775 - Historical Methods**Credits:** 4

Contemporary historical methods. Required of all entering Ph.D. candidates; open to undergraduate with permission. (Not offered every year.)

HIST 780 - Special Topics in Museum Studies/Material Culture**Credits:** 4

Study of a selected topic related to museum studies or material culture. May be repeated for course credit with permission of the undergraduate adviser. Course meets the History major requirements for Group I.

HIST 789 - Seminar in the History of Science**Credits:** 4

In-depth examination of a selected topic in the history of science. Subject varies. Open to undergraduates with permission of the instructor. No special background in science required.

HIST 796 - Research Internship**Credits:** 2-4

Intensive collaborative experience in research for undergraduate majors. Students gain professional skills while assisting a faculty member on a continuing research project. Permission Required.

HIST 797 - Colloquium**Credits:** 4

Selected topics in American, European, and non-Western history. Required of history majors. Students must elect section in the department office at the time of registration. Prereq: HIST 500. Writing intensive. Course meets the History major requirements for Group I, II, or III, depending on the topic.

Attributes: Writing Intensive Course**HIST 799 - Senior Thesis****Credits:** 4

Supervised research leading to the presentation of a major research paper. Open only to history majors. Permission of department chairperson required. May not be used as a substitute for the required senior colloquium.

Homeland Security (HLS)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

HLS 410 - Introduction to Homeland Security**Credits:** 4

The primary focus of HLS 410 is to describe the entirety of the homeland security enterprise in the US and to survey many of the major expressions of it, which can become careers in security. This includes a history of homeland security and emergency management disciplines, and the law and policy underpinnings for homeland security and specific units in emergency management, terrorism, intelligence, law and policy, critical infrastructure and risk analysis, corporate security, environmental/human security and cybersecurity.

HLS 415 - Fundamentals of Corporate Security**Credits:** 4

HLS 415 will introduce the student to the fundamentals of corporate security including the nature, scope, history, and essential elements of organization (or enterprise) security in the workplace, with emphasis on the private sector. Specific areas include the operational aspects of security strategies for identifying and controlling security exposures, risk management strategies, applicable legal issues, personal protection, property protection, role of intelligence, and concepts of disaster planning and management.

HLS 455 - Introduction to Cybersecurity**Credits: 4**

The primary focus of HLS 455 is to provide a survey of the broad field of cybersecurity and information security/assurance. Topics will include a definition of information security, the need for information security and cybersecurity in both the public and private sectors, ethical and legal issues revolving around cybersecurity, risk management and planning, and information/cyber security technology. The role of the U.S. Department of Homeland Security (DHS) in securing the cyberspace and the nation's information-related infrastructures will also be explored.

HLS 480 - Professional Skills in Homeland Security**Credits: 4**

HLS 480 prepares students to effectively enter the workforce via an internship or co-op experience. Students learn to prepare a resume and cover letter, practice interviewing, learn about how their personality matches job descriptions, search for internships, and develop an e-Portfolio that describes themselves, their professional aspirations, skills, etc. Professional ethics, decision making, organizational power, basic leadership and management principles and professionalism are discussed and illustrated.

HLS 510 - Fundamentals of Emergency Management**Credits: 4**

This course includes thorough coverage of the historical background of emergency management (EM) in the United States as well as many of the most significant laws and policies that have defined and shaped the field, including HLSPD 5, HLSPD 8, the National Flood Insurance Act, and the Stafford Act. Topics include detailed coverage of FEMA's all hazards approach, all phases of the EM cycle, including mitigation, preparation, response, and recovery; integrated emergency management systems, the incident command system, the National Incident Management System, emergency support functions, and risk communications. The course culminates with each student writing and formally presenting an integrated emergency management plan. Prereq: HLS 410 and HLS 415 or permission.

HLS 515 - Critical Infrastructure Security and Resilience**Credits: 4**

HLS 515 includes an introduction to critical infrastructure security, resilience, and risk analysis as it is conceptualized, regulated and used in the homeland security enterprise. Topics include the history and evolution of critical infrastructure protection including the composition, characteristics and risks to critical infrastructures. Public-private partnerships and sector-specific plans are examined. Resilience in a global context and risk analysis as a means by which resources and assets are allocated to critical infrastructure(s) is presented. Prereq: HLS 410, HLS 415 and HLS 455 or consent of coordinator.

HLS 520 - Homeland Security Law and Policy**Credits: 4**

This course is an overview of key legal, policy, and ethical issues in the context of Homeland Security policy and practice. Students examine legal concepts regarding constitutional rights of individuals, legal process, access to courts, the law of war, and national security principles as they relate to homeland security legislation and policy initiatives. Legal principles of due process, habeas corpus, search and seizure, compulsory process, and international agreements are explored in greater depth. The law of war will be examined in the context of preemptive war and the current National Security Strategy, the status of combatants and detention, Elements of national security law, intelligence collection and sharing, the Patriot Act, and military-civilian relations, etc. Prereq: HLS 410 or consent of the instructor.

HLS 540 - Prevention and Detection of Fraud**Credits: 4**

Fraud detection and prevention are a perpetual concern for organizations, individuals and society. Course topics include fraud causes and behaviors of fraudsters, the fraud triangle, criminal and civil fraud, red flags, financial statement fraud, procurement fraud, bribery, pyramid schemes, money laundering, corporate governance, fraud risk management and responses. Real-world fraud schemes are explored and discussed. Required course for minor in Forensic Accounting. May not be repeated for credit if taken as BUS 460.

HLS 555 - Comparative Homeland Security Systems**Credits: 4**

This course will encourage students to become cosmopolitan citizens by gaining knowledge and understanding of cultures other than those of the United States. Students will learn to recognize others' values and, ultimately, accept the many ways in which we all are human. For example, using the Irish struggle for independence from Britain and the Troubles as examples, students will examine Anglo and Irish "culture" and how it is influenced by or how it can influence nation-state security, or conversely, the fight for civil liberties and independence. The main systems and structures in both the US and the UK's domestic security enterprises will be discussed as well as the origins, typologies and goals of several terrorist groups, the basics of the intelligence community in both nations, and how intelligence informs the struggle to contain terrorism. In addition, for homeland security majors, this course can satisfy either the terrorism requirement or the intelligence systems requirement (see instructors). Although a major objective of the course is to prepare students to participate successfully in a managed study abroad program (as a separate course: HLS 656, 1 credit), participation in the study abroad trip is a not required component of this course.

Attributes: World Cultures(Discovery)**HLS 580 - Environmental and Human Security****Credits: 4**

Students will learn how environmental issues may give rise to socio-political instability around the world which can become threats to US national/homeland security. This course will explore how U.S. domestic and foreign policy, and ultimately, U.S. national security, can be impacted by emergent threats to nations from environmental health issues, climate change, deforestation, infrastructure vulnerabilities, and natural resource shortages caused by rapid industrialization, population growth, and urbanization in less developed countries. In a seminar format, students and faculty will cover a variety of readings and discuss their conclusions and students will have the opportunity to lead class discussions on assigned readings.

Attributes: Environment,TechSociety(Disc)**HLS 595 - Independent Study in Homeland Security****Credits: 1-4**

HLS 595 is an independent study in homeland security. Its main function will be to allow students to complete a 500 level homeland security course required in the major, but who are not able to take the required course when it is offered. HLS 595 can substitute for the required core course. In addition, students can also take HLS 595 as a sophomore level independent study as a variable credit course for students wanting to more deeply explore an area of interest. Prereq: Senior standing and permission. May be repeated to a maximum of 8 credits. Cr/F.

HLS 610 - Exercise Design and Evaluation in Homeland Security**Credits: 4**

HLS 610 studies the role and structure of exercise design as it is applied in homeland security and emergency management. Students are introduced to the nature and characteristics of discussion and operations-based exercises and the Homeland Security Exercise Evaluation Program. The legislative and policy background of national preparedness is presented. Students complete a project and presentation that demonstrates how exercises are designed, scripted, implemented (conducted) and evaluated. Prereq: HLS 510 and HLS 515 or consent of coordinator.

HLS 615 - Introduction to Fraud Investigation**Credits: 4**

Fraud Investigation is a specific process including acquisition and verification of information that could lead to the confirmation of fraudulent activity and legal consequences. Course topics include various steps in the fraud investigation process, including identification of fraud, planning an investigation, interviewing, gathering of public and non-public evidence, analysis of data, legal considerations, confidentiality, and writing a fraud examination report. Real-world fraud cases are discussed and analyzed. Required course for minor in Forensic Accounting.

HLS 630 - Sports and Large Event Security Management**Credits: 4**

This course will address the nature and scope of sport and large event security issues involved in securing the homeland from domestic and international threats to sports and other large events. Motives, methods, and impact of terrorism activity, natural disasters, and crowd management issues in sport and large event venues will be discussed. This course also includes an examination of the basic legislation and operations of the U.S. Department of Homeland Security; risk assessment; security planning options; emergency response and recovery, training and exercises. Prereq: HLS 410.

HLS 640 - Forensic Accounting for Non-Accountants**Credits: 4**

Forensic accounting procedures uncover fraudulent schemes and misappropriation of assets. Course topics include review of the basics of financial accounting, Sarbanes-Oxley legislation, the forensic accounting profession, occupational fraud, financial analysis techniques, money laundering, investigative and interviewing processes, evidence gathering, inferential analysis, and documentation and presentation of the case. Real-life fraud cases solved by forensic accounting skills are analyzed. Pre-req: BUS 532 or ADMN 502 or equivalent. Required course for minor in Forensic Accounting.

HLS 650 - Intelligence Systems and Structures in Homeland Security**Credits: 4**

Intelligence is a systematic process of collection, analysis, and dissemination of information in support of national, state, and/or local policy or strategy. HLS 650 will explore the varied expressions of the intelligence community as it exists in the US. In addition, students will explore the history and development of the IC in the US, major legislative acts that led to the development of intelligence as a major function of US national security strategy. Prereq: HLS 410 or permission of instructor.

HLS 656 - Comparative Homeland Security Systems Lab**Credits: 1**

The study abroad component of its prerequisite course, HLS 555. Students go on a 3-week managed study abroad program designed and led by UNH faculty. Prereq: HLS 555 or consent instructor.

HLS 665 - Bioterrorism, Biosecurity, and Biodefense**Credits: 4**

This course examines biowarfare, including biological, chemical, and radiological weapons. Historical, plausible, and novel weapons will be studied. Mechanisms of action, biological and societal impacts, detection, treatment and governmental strategies for biodefense will be investigated. Discussions will focus on surveillance and preparedness at the state and federal levels. Relevant aspects of the law will be presented and the bioethical challenges of anti-bioterror research will be explored. Prereq: HLS 410 or BMS 503.

HLS 695 - Independent Study in Homeland Security**Credits: 1-4**

HLS 695 is an independent study in homeland security. Its main function will be to allow students to complete a 600 level homeland security course required in the major, but who are not able to take the required course when it is offered. HLS 695 can substitute for the required core course. In addition, students can also take HLS 695 as a junior level independent study as a variable credit course for students wanting to more deeply explore an area of interest. Prereq: Senior standing and permission. May be repeated to a maximum of 8 credits. Cr/F.

HLS 722 - International White Collar Crime**Credits: 4**

It was Edwin Sutherland, an American sociologist of the early 20th century who first began to appreciate and understand white collar crime and distinguish it from other criminality. He was also the first to define it, calling it "crime committed by a person of respectability and high social status in the course of his occupation". Today, international white collar crime is a global phenomenon which reaches into the highest levels of transnational business and commercial behavior, government, and politics. It includes, but is not limited to, old-fashioned graft and corruption, tax evasion, money laundering, securities and market manipulation, banking and insurance violations and fraud, influence peddling and even election fixing. This course is intended to provide the ICLJ's advanced students with a thorough understanding of what white collar crime is, where it is, how it is executed, what is being done to combat it, and what dangers it presents to established and emerging nations. The course will examine the approaches to these problems used in countries that have a strong interest dealing with white collar criminal issues. In addition, international best practices and standards will be critically assessed.

HLS 724 - International Criminal Law Survey**Credits: 4**

This course is a survey of the field of international criminal law. It asks students to consider foundational questions about what counts as an international crime; when an individual country may have jurisdiction over crimes that occur outside the country's boundaries and when and over what crimes an international body may have jurisdiction. It introduces students to the international criminal court; the special tribunals; domestic and international efforts to combat terrorism and an array of transnational crimes like drug trafficking, cybercrimes, white-collar crimes etc.

HLS 726 - International Criminal Court & The Special Tribunals**Credits: 4**

This course is about a new and exciting area of law, practice and procedure that in many respects is still in its infancy. During the course you will explore how International Criminal Law and the International Criminal Courts and Tribunals evolved. You will examine their jurisprudence, practice and procedure. Specifically, you will discover how the prosecution operates from the investigation of crimes through to their prosecution. You will look at the role of the defense and the common defenses raised in cases before the courts. An understanding of the full ramifications of International Criminal Law can be challenging because it disturbs some of the well-established concepts that you may have become accustomed to, such as sovereignty, military supremacy, and discrimination.

HLS 750 - Emergent Topics in Homeland Security/Homeland Defense**Credits: 4**

HLS 750 will investigate the nature of strategic planning as it relates to homeland security and national security in the United States. In addition, students will explore how strategic planning relates to decision making in more stable environments as well as decision making under uncertainty. Relevant legislation and past decisions (such as the Bay of Pigs and the Cuban Missile Crisis) will be explored. In addition, the basic concepts of the techniques for strategic communication will be explored, developed, and related to decision making along with the characteristics of making high quality strategic decisions. Prereq: HLS 510 and HLS 515 or consent of instructor. Special Fee.

HLS 760 - Strategic Planning and Decision Making**Credits: 4**

HLS 760 investigates the nature of strategic planning as it relates to homeland security and national security in the U.S. Students explore how strategic planning relates to decision making in more stable as well as uncertain environments. Relevant legislation and past decisions (such as the Bay of Pigs and the Cuban Missile Crisis) are explored including concepts and techniques for making high quality decisions. Strategic communication principles and techniques are presented. Prereq: HLS 510 and HLS 515 or consent of coordinator. Writing intensive.

Attributes: Writing Intensive Course

HLS 770 - Internship in Homeland Security**Credits: 4**

HLS 770 represents the professional work experience required in the homeland security major. Students work in a professional setting for a minimum of 180 hours under the supervision of a site supervisor. All internships require students to identify and complete work on a specific project (s) approved by the HLS coordinator. Internships may be taken at any time after students have taken 30 credits of university coursework. Note that students who are academically or otherwise unable to enter into internship must take HLS 799 (thesis in homeland security which requires senior standing and permission from the HLS program coordinator). Prereq: HLS 410, HLS 455 and HLS 480.

HLS 790 - Capstone in Homeland Security**Credits: 4**

HLS 790 allows students to work collaboratively with an organization to identify and solve a homeland security, physical security, safety, cybersecurity or emergency management challenges. Each group performs a risk assessment in order to identify their client's primary security or preparedness challenges. Students then use their skill to identify and apply best practices as countermeasures. Students culminate their projects with presentations to their classmates and to their clients. The expectation of this class is to develop a professional example of the student's thinking and writing to solve real world security problems. Prereq: senior standing, HLS 610 and HLS 760 or consent of coordinator.

Attributes: Writing Intensive Course

HLS 795 - Independent Study in Homeland Security**Credits: 1-4**

HLS 795 is an independent study in homeland security. Its main function will be to allow students to complete a 700 level homeland security course required in the major, but who are not able to take the required course when it is offered. HLS 795 can substitute for the required core course. In addition, students can also take HLS 795 as a senior level independent study as a variable credit course for students wanting to more deeply explore an area of interest. Prereq: Senior standing and permission. May be repeated to a maximum of 8 credits. Cr/F.

HLS 799 - Thesis in Homeland Security**Credits: 4**

HLS 799 is an alternative professional experience required by the homeland security major. It is designed to be a substitute for HLS 770 (internship in HLS). Students function independently (but keep in regular contact with the instructor) as they devise a thesis topic and write a professional research paper in support of their thesis. The thesis is a research paper that uses either mostly secondary data collection methods with the expectation that the project be equivalent to the 180 hours interns are obligated to work. Cr/F.

Horticultural Technology (HT)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

HT 404 - Plant Propagation**Credits: 4**

Reproduction of plants for horticultural purposes by sexual and asexual methods. Seeds, cuttings, separation, division, layering, grafting, budding, and in vitro propagation. Special fee. Prereq: HORT 207 or permission. 2 lec/1 lab.

HT 407 - Plant Structure and Function**Credits: 4**

Morphology, anatomy, and physiology, with emphasis on the higher plants. Horticultural implications. Lab stresses observations and manipulations of the particulars of plant life. Special fee. 2 rec/1 lab.

HT 415 - Soils and Land Use**Credits: 2**

Introduction to soils with emphasis on physical, morphological, chemical, and biological characteristics and their applications in horticultural land use decisions. Includes soil genesis and classification and soil survey use. Special fee. 3 rec/1 lab/7 wks.

HT 416 - Soils and Plant Nutrition**Credits:** 2

Role of nutrition in plant health care. Macro- and micro-nutrient needs, nutrition deficiency symptoms, soil testing, and fertilizer application techniques in both soil and soil-less media. Special fee. 3 rec/1 lab/7 wks.

HT 427 - Greenhouse Operation and Design**Credits:** 2

Designing, using, equipping and managing greenhouses for production and retail with a focus on structure and environment and how these pertain to plant production. Includes lab in our production greenhouse. Special fee.

HT 428 - Plant Production Techniques**Credits:** 2

Managing greenhouse infrastructure and crops for production and retail. This class will focus on irrigation, plant nutrition, pest and disease control and lighting. Labs and experience in our production greenhouse range supplement lectures in this hands-on course.

HT 450 - Flower Show Design and Construction**Credits:** 1

Design, construction, and maintenance of the Thompson School horticultural exhibit at a public flower show. May be repeated. Special fee. 1 rec.

HT 454 - Irrigation Design**Credits:** 3

Design, installation, and operation of irrigation systems in the greenhouse, nursery, field crops, and landscape. Special fee. 1 lec/1 lab.

HT 459 - Winter Identification of Landscape Trees in the Northeast**Credits:** 2

Winter landscape tree morphology and identification. This on-line course begins with introductory lectures on winter landscape tree morphology and Family characteristics. Students then learn how to identify more than 60 common deciduous landscape trees by watching videos which show each plant's winter identification characteristics. Students evaluated through on-line quizzes and a photographed twig collection. Digital camera required. No campus visit, but students need to be geographically located in the Northeast for access to trees. Prereq: FORT 461 or HT 557 or NR 425 or PBI0 566.

HT 460 - Sustainable Plant Management**Credits:** 4

Sustainable practices and principles in selecting, establishing and maintaining woody and herbaceous plants for optimum health. Topics include planting, pruning, fertilization, pest identification, plant culture and communities.

HT 493 - Field Operations**Credits:** 1-3

Seven-week or fourteen-week modules of field experience in selected areas of horticulture under the supervision of an appropriate member of the faculty/staff. A student may enroll in two modules per term. A) Floriculture; B) Floral Design; C) Nursery and Garden; D) Landscape; E) Horticultural Therapy. Special fee. Prereq: permission of instructor and student's adviser.

HT 494 - Field Operations**Credits:** 1-3

Seven-week or fourteen-week modules of field experience in selected areas of horticulture under the supervision of an appropriate member of the faculty/staff. A student may enroll in two modules per term. A) Floriculture; B) Floral Design; C) Nursery and Garden; D) Landscape; E) Horticultural Therapy. Special fee. Prereq: permission of instructor and student's adviser.

HT 529 - Horticultural Facilities Mgmt**Credits:** 2

Layout, systems, construction, management principles, and horticultural techniques used in controlled growth structures, including greenhouses, propagation houses and beds, cold frames, hoop houses, and lath houses. Includes practicum in daily operation of Thompson School horticultural facilities, with second-year focus on scheduling and supervision. 2 lab.

HT 530 - Horticultural Facilities Mgmt**Credits:** 2

Layout, systems, construction, management principles, and horticultural techniques used in controlled growth structures, including greenhouses, propagation houses and beds, cold frames, hoop houses, and lath houses. Includes practicum in daily operation of Thompson School horticultural facilities, with second-year focus on scheduling and supervision. 2 lab.

HT 551 - Introduction to Design Communication**Credits:** 2

Introduction to methods of communicating garden and landscape design. Lab work covers selected 2-D and 3-D tools and techniques, including instrumental drawing, modeling, and computer-aided drafting and design (CADD). Special fee. Prereq: TSAS 205, Computers in the Workplace. 1 lec/1 lab.

HT 553 - "Pond-less" Water Feature Design and Installation**Credits:** 2

A major trend in landscape design is the use of water features that range from simple recirculating pond to major waterfalls and fountains. Class starts with the design principles of "pond-less" features and expands to proper installation techniques. Determining water flow, recirculation rates, appropriate pump requirements and filter techniques are critical to a fully functioning feature. Explore differences between "pond-less" and eco-system ponds. Class culminates in the design and installation of a complete system.

HT 554 - Sustainable Irrigation and Rain Harvesting**Credits:** 3

As identifying water resources becomes ever more critical, students learn how to efficiently irrigate the landscape using low volume irrigation with harvested rainwater as the water source. Course focuses on proper design concepts of low volume irrigation as well as the design of rainwater storage systems. Includes developing site plans, identifying soil types and determining plant material to be irrigated. Learn about flow rates, water pressure and the technical components required for a complete system.

HT 555 - Landscape Lighting Design and Installation**Credits:** 2

Creating outdoor "rooms" is a hot trend in landscaping. Class starts with design elements that are functional, aesthetically pleasing while minimizing light pollution and electrical usage. Learn various lighting options from LED to other low-voltage systems and their unique technical installation requirements plus how to prepare a good cost estimate. Landscape lighting provides exterior security, comfort and adds visually to the landscape canvas for both private and commercial properties.

HT 559 - Plants in the Horticulture Industry: Identification and Culture**Credits:** 4

A comprehensive study of herbaceous and woody plants in the horticulture industry including morphology, classification, identification, and culture of common trees, shrubs, ground cover, perennials, annuals, ferns, ornamental grasses, and bulbs used in the Northeast.

HT 563 - Landscape Construction**Credits:** 4

Materials and methods of landscape construction: grading and drainage, site preparation, transplanting, turf installation, pavements, walls, and retaining walls, wood structures. Introduction to construction drawings, specifications, estimating, and bidding. Special fee. Prereq: HT 405, 215. 4 lec.

HT 565 - Turf Management**Credits:** 4

An introductory look at turf grass management; turf grass culture and physiology; identifying cool-season grasses; identifying and controlling turf grass pests (insect, diseases and weeds); controlling pests using traditional, biological and integrated (IPM) practices; establishing cool-season grasses; seed and sod installation; fertilization practices will be covered.

HT #566 - Garden Design and Culture**Credits:** 2

What makes a garden inviting and sustainable? Explore elements of design then learn how to design and install a variety of gardens that are attractive, integrate with the surrounding environment/ecosystem, and require minimal inputs of time, water, and nutrition. Course emphasizes the selection of native and low maintenance plants. Projects include residential landscape plantings and specialty gardens such as water, rock, rain and themed gardens. Cost estimation and business management considerations also introduced.

Co-requisite: HT 458**HT 572 - Landscape Design Studio****Credits:** 4

Principles of residential and commercial landscape design: site analysis, spatial organization, graphics and drafting, use of landscape fixtures and plant materials, final plans and specifications, cost estimates. Special fee. Prereq: HT 257 and HT 563. 2 lec/4-hr lab.

HT 575 - Hydroponics**Credits:** 2

Production of hydroponic crops in the greenhouse, focusing on systems management, plant nutritional management, crop types and production schedules. Includes lab in Thompson School production greenhouse range. Special fee. Prereq: HT 407 Plant Structure and Functioning or equivalent.

HT 576 - Greenhouse Crop Production**Credits:** 2

All aspects of production of floriculture and food crops in the greenhouse for the spring season. Includes lab in our production greenhouse range. Special fee.

HT 585 - Fruit and Vegetable Production**Credits:** 3

Tree fruits (apple, pears, and peaches) small fruits (strawberries, raspberries, grapes and blueberries) and vegetables grown in New England will be covered. Information will emphasize the growing, maintenance and the marketing of fruits and vegetables from the garden center perspective. Special fee. 2 lec/1 lab.

HT 591 - Studies**Credits:** 1-3

Students who have the ability and adequate preparation to work independently may propose a contract to design a course or research project on a new topic not available through existing course offerings. The purpose of this research is to explore new areas in the student's field of study or to pursue course material in greater depth. Work is supervised by an appropriate faculty/staff member and credit varies depending on the proposed project/research. Areas may include floriculture, floral design, nursery, landscape, and horticultural therapy. Permission required. Course may be repeated up to a maximum of 6 credits.

HT 592 - Studies**Credits:** 1-3

Students who have the ability and adequate preparation to work independently may propose a contract to design a course or research project on a new topic not available through existing course offerings. The purpose of this research is to explore new areas in the student's field of study or to pursue course material in greater depth. Work is supervised by an appropriate faculty/staff member and credit varies depending on the proposed project/research. Areas may include floriculture, floral design, nursery, landscape, and horticultural therapy. Permission required. Course may be repeated up to a maximum of 6 credits.

HT 597 - Horticultural Work Experience**Credits:** 0

A guided work experience in a student-selected area of horticulture, providing both a broad overview and a detailed understanding of work in the field. Contracting with an employer for 480 hours of career-oriented work, the student is assigned a wide variety of duties and responsibilities typical of that business or organization. Students maintain a detailed reflective journal of the experience, a portfolio-based summary report, and thorough self-evaluations. Cr/F.

Hospitality Management (HMGT)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

HMGT 401 - Introduction to the Hospitality Industry**Credits:** 4

Review the broad spectrum of the hospitality industry from an historical perspective, in concert with current history, trends, and challenges presented by notable industry executives. Distinguished guests represent all segments of the hospitality industry plus selected allied support businesses. Industry segments include, but are not limited to, hotels and lodging, restaurant and food service, travel and tourism, conferences and conventions, casinos and gaming, clubs and resorts, health care and senior living, franchising and entrepreneurship, and technology support. Writing intensive.

Attributes: Writing Intensive Course

HMGT 403 - Introduction to Food Management**Credits: 4**

Designed to introduce the student to the fundamental components of food production principles, nutrition and menu development, and to some basic management skills. The subject matter is presented through classroom lectures, interactive electronic instruction, guest lectures, and food production labels.

HMGT 404 - Professional Development I**Credits: 1**

Development and integration of self-assessment, career planning, and academic work. Students design and produce an individual career action plan in preparation of a required summer internship. Through self-assessment instruments they develop an understanding of their personal values, interests, skills, and personality in relation to their vocational options, academic process, and career projections. Cr/F.

HMGT 405 - Introduction to Food and Service Management**Credits: 4**

This course is designed to build knowledge and experience in food and service management. Basic principles of foodservice management and their application to menu development, food safety, procurement, equipment usage and identification, customer service, marketing, leadership, human resources, and finance are covered during this course. Laboratory experience in both front and back of the house will provide hands-on experience in basic understanding of how a kitchen operates and dining room service. Training in Safe Food Handling, and Alcohol Services leads to Certification.

HMGT 504 - Professional Development II**Credits: 2**

Development and integration of self-assessment, career planning, and academic work. Students design and produce an individual career action plan in preparation of a required summer internship. Through self-assessment instruments they develop an understanding of their personal values, interests, skills, and personality in relation to their vocational options, academic process, and career projections.

HMGT 554 - Lodging Operations Management**Credits: 4**

The course is designed to introduce the operational aspects of hotel and resorts as well as discuss current trends of the lodging industry, hotel organization, reservations, registration, guest services and communications, hotel security, front office accounting, housekeeping, night audit, planning for operations, sales techniques, revenue management, and human resources management. To achieve the learning objectives, lectures, labs, e-learning course, guest lectures, and individual assignments are employed. Training in hotel analytics leads to CHIA Certification. Pre- or Co-requisite: HMGT 401.

HMGT 570 - International Food and Culture**Credits: 4**

This course explores multiple world cultures using food, language, religion, geography, communication, politics, among other attributes, and compares/contrasts with our own diverse cultures here in the United States. Learn why we eat what we eat, when, and how. Food is a critical component across the world's many different cultures and this course will investigate how they are viewed by persons of different backgrounds. The course will leave you with an expanded understanding and appreciation of why and how persons from diverse cultures with varying backgrounds approach their food and beverage needs differently. Laboratory experience in cooking international cuisine. Inquiry Attribute, World Culture, Writing intensive.

Attributes: World Cultures(Discovery); Inquiry (Discovery); Writing Intensive Course

HMGT 598 - Happy and Healthy at Work/Promoting Wellness, Diversity and Inclusion**Credits: 4**

Offers improved understanding and ability to effectively manage a diverse and healthy workforce. Addresses key diversity, inclusion, and wellness issues in the workplace of a general, technical, and social nature with an emphasis on disability and health promotion. (Also listed as OT 598).

Attributes: Social Science (Discovery); Inquiry (Discovery)

HMGT 600 - Hospitality Marketing Management**Credits: 4**

Students apply basic marketing principles to the competitive environment of service businesses, such as hotels, restaurants, and other hospitality firms. Strong emphasis on consumer behavior, services management theory, and the hospitality marketing mix as they relate to service firms of all types. Course material is presented through a variety of techniques: case studies, lectures, guest speakers, team projects, and written assignments. Prereq: HMGT 401. Pre- or Coreq:HMGT 554. Writing intensive.

Attributes: Writing Intensive Course

HMGT 604 - Professional Development III**Credits: 2**

Students design and produce an individual career action plan. Emphasis on identifying each individual's marketable skills, locating job possibilities, writing resumes and correspondence, and interviewing for jobs. Career development workshops are used to enhance the learning experience. Pre- or Coreq: HMGT 504.

HMGT 618 - Uniform Systems for the Hospitality Industry**Credits: 4**

Following a review of financial statements and an introduction to the Uniform System of Accounts for Hotels and Restaurants, students learn specific applications of managerial accounting and decision support systems for the hospitality industry. Topics include cash flow analysis, cost management, cost-volume-profit analysis, pricing models, budgeting, and forecasting. Students develop an understanding of computer software and back-and front-office computer systems as they relate specifically to the hospitality industry. Lectures, computer exercises, and papers. Prereq: ADMN 502.

HMG 625 - Hospitality and Employment Law**Credits:** 4

Tort and contract liability in the hospitality industry. Emphasizes a managerial approach to solving or avoiding potential problems including employment law issues that arise in any business environment: wrongful termination, compensation rules, affirmative action, employment discrimination, sexual harassment, and issues involving privacy in the workplace. Looks at numerous State and Federal Agencies with which Hospitality business must work. Examines key forms of ownership in terms of taxes, risks and rewards. Prereq: junior standing.

HMG 635 - Hospitality Human Resource Management**Credits:** 4

Addresses key hospitality resource management issues of a general, technical, and social nature including communication, motivation and leadership, job stress and safety, security, government regulations, discrimination, and substance abuse. Covers technical areas such as recruiting and selecting, placement, employment, training, performance appraisal, disciplining, and termination. Prereq: junior standing. Writing intensive.

Attributes: Writing Intensive Course**HMG 655 - Hospitality Finance and Development****Credits:** 4

Provides the advanced student with a familiarity of the principles and practices of development and acquisition of hotel, restaurant, and other hospitality businesses, and the real estate development process. Emphasizes market and financial evaluation and decision making relative to economic, ethical, legal, and social aspects of the organization's environment. Group projects involving the preparation of a complete economic feasibility study for hotel or restaurant development or acquisition or repositioning are required. Prereq: HMG 618.

HMG 661 - Event Design, Planning, and Management**Credits:** 4

Strategic and logistical considerations in managing the planning, development, marketing, and implementation of meetings, conventions, and events. Prereq: junior standing.

HMG 662 - Convention Sales and Service Management**Credits:** 4

Provides students with an understanding of the sales and service management aspects of the international and domestic convention, exhibition and meeting industries. Analyze the market potential of convention centers, resort hotels, convention hotels and independent venues. Consider the strategic and logistic aspects of the planning, development, coordination and execution of conventions, exhibitions and meetings. Introduction to and certification in numerous aspects of the DELPHI software system.

HMG 667 - Adv Food/Bev Operations Mgt**Credits:** 4

A project management course integrating management principles and techniques in the presentation of large scale gourmet dinners. Examines services operations management: planning and forecasting, marketing and sales, production delivery systems, service encounters, technology, purchasing and inventory management, human resources, scheduling, productivity and quality issues. Prereq:senior standing.

HMG 681 - Contemporary Resort Development and Management**Credits:** 4

Looks at the elements of developing and maintaining Resort properties including Spas, Ski Areas, Waterparks, Time Shares, Beach Resorts and Full service resorts with private home development. Examines the key roles real estate and financing play in all resort development and sustainability. Writing intensive.

Attributes: Writing Intensive Course**HMG 682 - Private Club Management****Credits:** 4

Examines the effective operation and management of private clubs including city clubs, country clubs and yacht clubs. Major topics include: the unique niche that clubs represent in the hospitality industry, organizational structure of clubs, role of the board of directors, membership requirements, differences between tax-exempt clubs and non-exempt clubs, government regulation, preparing for a career in the club field, trends in club management and the future of clubs.

HMG 685 - Study Abroad**Credits:** 1-16

Open to students studying abroad in the discipline as approved by the hospitality management program director. Cr/F.

Attributes: World Cultures(Discovery)**HMG 686 - Study Abroad****Credits:** 1-16

Open to students studying abroad in the discipline as approved by the hospitality management program director. Special fee. Cr/F.

Attributes: World Cultures(Discovery)**HMG 695 - Independent Analysis****Credits:** 2-12

Study and research project for honor students to advance knowledge in lodging and food services fields. Prereq: junior standing and permission.

HMG 695W - Independent Analysis**Credits:** 2-12

Study and research project for honor students to advance knowledge in lodging and food services fields. Prereq: junior standing and permission. Writing intensive.

Attributes: Writing Intensive Course**HMG 696 - Supervised Student Teaching Experience****Credits:** 1-8

Participants are expected to perform such functions as attending classes, leading discussion groups, assisting faculty, presenting information in undergraduate courses that they have successfully completed, holding office hours, grading papers and exams. Enrollment is limited to juniors and seniors who have had above average GPAs. May be repeated to a maximum of 8 credits. Cr/F.

HMG 698 - Topics**Credits:** 1-4

Special topics and developments in lodging, food services, and other hospitality industries. Prereq: junior standing. Course may be repeated when topics change up to a maximum of 8 credits.

HMG 698T - Topics/Study Away**Credits:** 1-4

Topics; Study Away. Special fee.

Co-requisite: INCO 589

HMG 700 - PAUL Assessment of Core Knowledge**Credits:** 0

One of the learning objectives in the Hospitality Management Program is that all students will graduate with an understanding of these core knowledge assembled from various disciplines that contribute courses to the program. We assess this learning as part of our Assurance of Learning Program. This zero credit course provides an administrative mechanism for accomplishing this goal.

Co-requisite: HMG 703**HMG 703 - Strategic Management in the Hospitality Industry****Credits:** 4

Capstone course, interrelating and applying strategic management concepts to hospitality organizations. Cases from hotel companies, restaurant chains, and other hospitality-related businesses, supplemented by economic and other published information from the industry, are used as departure points for class discussion. Prereq: senior standing. Writing intensive.

Co-requisite: HMG 700**Attributes:** Writing Intensive Course**HMG 750 - Advanced Operations Management****Credits:** 4

Students travel to a major Boston hotel weekly to spend a day working in various departments. The course gives students an in-depth look at the operation of the individual departments, as well as learning how departments must function in an integral way for a successful hotel to operate. Students also experience areas not able to be covered in the on-campus curriculum including Receiving, Security, Maintenance and a day with a General Manager. Prereq: HMG major and junior or senior status.

HMG 756 - International Franchising**Credits:** 4

Designed to help the student acquire an understanding of franchising as a system of distribution and business expansion. Franchising is studied from both the perspectives of the franchisee and the franchiser. In addition, economic, financial, and legal issues associated with franchising are covered. By the end of the course, students acquire the skills and sources of information that would permit sound assessment of the business opportunities available in franchising. Prereq: ADMN 585 or HMG 600. (Also offered as MKTG 756.)

HMG 758 - Revenue Management and Pricing**Credits:** 4

This course covers two topics critical to today's hotel industry; the actual techniques of selling, converting inquiries from individuals and conventions into business. Revenue Management is the technique of evaluating a piece of business and determining its profitability over all departments. The course looks intently at past history as well as forecasting in order to determine the price to be charged based on demand and profitability sought.

HMG 771 - International Wine and Beverage**Credits:** 4

Explore the wide world of wine, beer and spirits, through lectures, sensory evaluations, and in-class tasting exercises. Also learn about how to purchase, store, and serve different beverages. Enrolled students must be at least 21 years old.

HMG 777 - Casino Management**Credits:** 4

Examines the history of the gaming industry and the development, organization and management of casinos. Investigates economics, moral and social issues of gaming including problem gambling. Covers gaming regulations, accounting and taxation of casinos, casino marketing, national and international gaming destinations, game probabilities and the interaction of the casino department with other other divisions of mega casino resorts including lodging, food and beverage and meetings and conventions. A central focus will be on current trends and events. A field trip to a casino resort is required for those enrolled students at least 21 years old on the day the trip is scheduled. No credit will be given to students who have taken HMG 777J.

HMG 777J - Casino Management**Credits:** 4

Examines the history of the gaming industry and the development, organization and management of casinos. Investigates economics, moral and social issues of gaming including problem gambling. Covers gaming regulations, accounting and taxation of casinos, casino marketing, national and international gaming destinations, game probabilities and the interaction of the casino department with other other divisions of mega casino resorts including lodging, food and beverage and meetings and conventions. A central focus will be on current trends and events. There is no age, other prerequisite, or field trips required. No credit will be given to students who have taken HMG 777.

HMG 795 - Internship II**Credits:** 1-4

Off-campus work in the hospitality industry for on-the-job skill development. Normally supervision is provided by a qualified individual in the organization with frequent consultation by the faculty sponsor. Initial sponsorship of an Hospitality Management faculty member must be obtained followed by approval of Paul advisor and Dean's Office. Special permission required to earn more than 4 credits in one semester. For Paul College juniors and seniors with 3.0 or better cumulative GPA.

HMG 799 - Honors Thesis/Project**Credits:** 4-8

Supervised research leading to the completion of an honors thesis or project; required for graduation from the honors program in hospitality management. Prereq: permission of director of undergraduate programs and department chair. Writing intensive.

Attributes: Writing Intensive Course

Human Development & Family Studies (HDFS)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

HDFS 444 - We Don't All Play the Violin: Stories and Stereotypes of Asians in America**Credits:** 4

An interdisciplinary course that examines perceptions of difference and foreign culture through and exploration of the process of emigration of Chinese, Japanese, Cambodian, and Vietnamese families from Asia to America and their experiences here. Class considers history, economics, state and national legislation and regulations, politics, art, gender and generational differences, and family relationships, as well as North American American reactions to the presence of Asians, how stereotypes by both Asians and Americans were developed, and their impact on family members. Writing intensive.

Attributes: Historical Perspectives(Disc); Inquiry (Discovery); Writing Intensive Course

HDFS 444A - Children at Risk**Credits:** 4

This course considers child sexual molestation in the Boy Scouts, YMCA's, and churches. Child pornography, prostitution, trafficking, and slavery are also explored. Together we will try to answer the following six questions: Who is at risk of molestation? How are children molested? Where are they molested? Who molests children and why do they molest them? What are the impacts on children and society? What responsibilities do adults and institutions have to protect children? Writing intensive.

Attributes: Social Science (Discovery); Inquiry (Discovery); Writing Intensive Course

HDFS 525 - Human Development**Credits:** 4

Developmental information from conception through death; theoretical perspectives and research methods in human development; emphasis on student's communication and analytical skills.

Attributes: Social Science (Discovery)

HDFS 525H - Honors/Human Development**Credits:** 4

Developmental information from conception through death; theoretical perspectives and research methods in human development; emphasis on student's communication and analytical skills.

Attributes: Social Science (Discovery)

HDFS 545 - Intimate Relationships and Families**Credits:** 4

Theories and research relating to the family and its role in individual development.

Attributes: Social Science (Discovery)

HDFS 553 - Personal and Family Finance for Family Life Professionals**Credits:** 4

Applied financial management emphasizing teaching financial issues to a variety of audiences. Topics include savings, credit, insurance and retirement, and programs and resources available to facilitate financial education.

HDFS 565 - Introduction to Child Life**Credits:** 4

When facing acute, chronic, or life-threatening illness and traumatic injuries, children and families have unique needs within the medical system. The purpose of this course is to provide an introduction to the theory and practice of the child life profession and family centered care. Topics include children's emotional reactions to hospitalization, use of play, preparation, and family support, designing healing environments, and specializations within the field. (Also listed as RMP 565).

HDFS 586 - Families at Risk**Credits:** 4

This course is designed to look at the biological, cultural and situational factors that affect parenting in the twenty-first century. Concerns such as terrorism, disease, and media influences are discussed. Paradigms for positive parenting in a negative world are developed. The current problems of global warming, war, gangs, alcohol and drug abuse, and a depressed economy have an effect on daily life and how families cope. Possible remedies, solutions, and support networks that help families are discussed. Prereq: HDFS 545 or permission.

HDFS 605 - Child Study and Development Center Field Experience**Credits:** 2 or 6

Supervised experience in the UNH Child Study and Development Center with children infancy-kindergarten, intended for students interested in early education and development. Weekly 3 hours per credit on site engaged in classroom activities as contracted with supervisor. Regular journaling and a final integrative paper on a classroom topic of interest are required. Prereq: a minimum of 12 credits in child development and education (3 credits may be taken concurrently with HDFS 605), and permission. Materials fee. May be repeated up to a total of 8 credits. Cr/F.

HDFS 623 - Developmental Perspectives on Infancy and Early Childhood**Credits:** 4

Integrative view of the developing child from conception through childhood within the family context. Prereq: HDFS 525.

HDFS 624 - Developmental Perspectives on Adolescence and Early Adulthood**Credits:** 4

Developmental information from pubescence through early adulthood; the concept of identity and influences on identity formation.

HDFS 625 - Adult Development and Aging**Credits:** 4

Covers the general biological, psychological, and sociological theories and issues related to adult development and aging. Focuses on diversity in the process of aging and the influence of various contexts on that process. Course is helpful for students who plan to work in adult and gerontological research or in social services settings with adults, and/or those who wish to become more knowledgeable on issues related to successful adult development and aging.

HDFS 635 - Teaching and Learning in Early Childhood Settings**Credits:** 4

Current theoretical approaches to communicating with children and influencing their behavior. Weekly four-hour laboratory experience working with preschool children is required at UNH Child and Family Center. Weekly three-hour seminar. Prereq: HDFS 525, HDFS 623; permission. Special fee.

HDFS 641 - Parenting Across the Life Span**Credits:** 4

Examination of parent-child relations across a range of developmental time periods and situations. Explores issues affecting parent-child relationships. Prereq: HDFS 525, HDFS 545.

HDFS 653 - Family Economics**Credits:** 4

Exploration of family economics and well being; public policy and family structure influences on the economic well being of families. Prereq:

HDFS 545. Writing intensive.

Attributes: Writing Intensive Course

HDFS 695 - Independent Study**Credits:** 1-6

Scholarly project in the area of child, family, and consumer studies.

Regular conferences with supervising faculty required. Prereq: approval of departmental faculty.

HDFS 697 - Special Topics**Credits:** 1-6

Focused examination of a particular theoretical, methodological, or policy issue. May be repeated to a maximum of 8 credits. Prereq: permission.

HDFS 697W - Special Topics**Credits:** 1-6

Focused examination of a particular theoretical, methodological, or policy issue. May be repeated to a maximum of 8 credits. Prereq: permission.

Writing intensive.

Attributes: Writing Intensive Course

HDFS 707 - Practicum**Credits:** 1-6

Supervised in-depth experience in teaching, research, or advocacy in a professional setting to increase the student's understanding of children, families. 01) Child, 02) Family. Prereq: HDFS major; permission. Special fee. Cr/F.

HDFS 709 - Child Development Internship**Credits:** 4

Supervised teaching internship at the UNH Child Study and Development Center with children 6 wks-6 years old age for 9 hours each week.

Internship experiences include teaching, documentation, and assessment. In addition students attend a weekly one-hour seminar for an in-depth reflection and analysis of the internship experience. Prereq: HDFS 525; HDFS 623; HDFS 635; and permission. Materials fees. May be repeated up to a total of 8 credits. Special fee.

HDFS 710 - Community Internship**Credits:** 1-12

Supervised position in community early childhood settings. 1) Infant-toddler assistant; 2) Preschool-child care assistant; 3) Kindergarten assistant; 4) Child Life. May be repeated up to a total of 12 credits.

Section 4 requires a minimum of 8 cr. Prereq: permission. Cr/F.

HDFS 712 - Child Advocacy and Family Policy Internship**Credits:** 4-8

Supervised experience working in state, federal, international, or state-wide advocacy organization or agency that advocates for children and/or families. Students spend a required number of hours per week in their selected program, based on the number of credit hours. (Spring semester, possibly Summer). Prereq: HDFS major; senior status; HDFS 525; HDFS 545; 28 credit hours of human development and family studies coursework; permission. May be taken for 4 to 8 credits. Cr/F.

Co-requisite: HDFS 714

HDFS 714 - Seminar for Child Advocacy and Family Policy Interns**Credits:** 2

This biweekly seminar focuses on issues of concern to child advocacy and family policy internship students, and develops students' professional skills. Prereq: HDFS major, senior status; permission. (Spring semester, possibly Summer).

Co-requisite: HDFS 712

HDFS 733 - Supervising Programs for Young Children**Credits:** 4

Philosophical bases and theoretical rationales of various programs for young children; program alternatives and resources; issues in administration including supervision, finances, and regulations. Prereq: permission. (Fall semester only.) Writing intensive.

Attributes: Writing Intensive Course

HDFS 734 - Curriculum for Young Children**Credits:** 4

Designing and implementing developmentally appropriate activities for young children; assessing the effectiveness of activities; evaluating materials and equipment. Prereq: HDFS 525; HDFS 623; HDFS 635. (Spring semester only.) Only open to Human Development and Family Studies and HDFS: Child and Family Studies majors. Writing intensive.

Attributes: Writing Intensive Course

HDFS 743 - Families, Schools, and Community**Credits:** 4

Emphasizes the critical value of effective family-school-community partnerships in enhancing the education of young children. The literature assessing the interactive nature of parent and school resources with cultural influences is examined. Current models of family-school-community partnerships are explored. Students participate in parent/school/community activities within early childhood education centers and schools. Prereq: permission. Writing intensive.

Attributes: Writing Intensive Course

HDFS 746 - Human Sexuality**Credits:** 4

Investigation of physiological, psychological, and sociological aspects of human sexuality. Particular attention to various social practices, policies, and programs that affect sexual attitudes and behaviors.

HDFS 757 - Race, Class, Gender, and Families**Credits:** 4

Explores the intersection of race, class, and gender in family life in the U.S. Theory, research, and other relevant literature is used to examine the variety of family configurations in our society today and the diverse experiences that families have as a result of existing social, political, and economic institutions. The strengths of various family types are considered, as well as the particular challenges these families may encounter in contemporary society. Prereq: seniors or graduate students only. Writing intensive.

Attributes: Writing Intensive Course

HDFS 760 - Family Programs and Policies**Credits:** 4

Analyzes the connection between family support programs and family policy. Stresses program planning, implementation, and evaluation. Examines the research, theory, history, and current status of model family programs. Prereq: HDFS 545. Writing intensive.

Attributes: Writing Intensive Course

HDFS 771 - Observation and Assessment of Young Children**Credits:** 4

Comprehensive view of various observation techniques for determining children's strengths and emerging skills. Exploration of issues regarding the use of formal assessments and testing with young children, retention and transitional placements, and the parent's role in testing. Prereq: HDFS 525; HDFS 623; HDFS 635. (Fall semester only.)

HDFS 772 - International Approaches to Child Advocacy**Credits:** 4

An investigation into the rationales for advocacy, types of advocacy, advocacy techniques and strategies, and current domestic and international advocacy issues and approaches. Prereq: seniors only. Writing intensive.

HDFS 773 - International Perspectives on Children and Families**Credits:** 4

An investigation of historical and modern conceptions of children and families in selected African, Asian, European, and Latin countries. Emphasis is placed on the contribution of these populations to the changing ethnic portrait of America. Prereq: seniors only.

HDFS #773W - International Perspectives on Children and Families**Credits:** 4

An investigation of historical and modern conceptions of children and families in selected African, Asian, European, and Latin countries. Emphasis is placed on the contribution of these populations to the changing ethnic portrait of America. Prereq: seniors only. Writing intensive.

Attributes: Writing Intensive Course**HDFS 776 - Children, Adolescents and the Law****Credits:** 4

This course is designed to familiarize students with the specialized laws and adjudicative systems that govern children, adolescents and families and reflect society's effort to balance competing interests and goals. It provides the chance to explore laws and processes that affect children and adolescents as they interact with their caregivers, families and society at large. Prereq: HDFS 525, HDFS 545 and HDFS 623 or HDFS 624. Open to HDFS and Justice Studies majors only. Writing intensive.

Attributes: Writing Intensive Course**HDFS 782 - Family Internship****Credits:** 6

Supervised experience working in social, legal, and marketplace settings that offer services to families. Students spend a minimum of 15 hours per week in a selected community program. Admission by application only. Applications due prior to registration spring semester of the junior year. A senior-level course with 6 credits being taken each semester. Prereq: HDFS major; senior status; HDFS 525; HDFS 545; 20 credit hours of family studies course work; permission. Pre- or Coreq: HDFS 760. IA (continuous grading). Cr/F.

Co-requisite: HDFS 792**HDFS 785 - Seminar for Student Teachers****Credits:** 2

Supplements the student teaching experience and effects a transition to the profession of teaching for those students admitted to the early childhood certification option.

HDFS 786 - Seminar for Student Teachers**Credits:** 2

Supplements the student teaching experience and effects a transition to the profession of teaching for those students admitted to the early childhood certification option.

HDFS 788 - Student Teaching Young Children**Credits:** 8

Supervised teaching experience. Students spend a minimum of 20 hours per week in a selected program for young children working with a cooperating teacher. Students must apply during the fall semester of their junior year. Coreq: HDFS 785 and HDFS 786. (Spring semester only). Special fee. Cr/F.

HDFS 792 - Family Internship Seminar**Credits:** 2

This biweekly seminar focuses on issues of concern to family internship students, provides advanced training in educational strategies for working with families, and develops students' professional skills. This is a two-semester course with 2 credits being taken each semester. Prereq: HDFS major; admission to family internship program; permission. (Fall and spring semester.) IA (continuous grading).

Co-requisite: HDFS 782**HDFS 792W - Family Internship Seminar****Credits:** 2

This biweekly seminar focuses on issues of concern to family internship students, provides advanced training in educational strategies for working with families, and develops students' professional skills. This is a two-semester course with 2 credits being taken each semester. Prereq: HDFS major; admission to family internship program; permission. (Fall and spring semester.) IA (continuous grading). Writing intensive.

Co-requisite: HDFS 782**Attributes:** Writing Intensive Course**HDFS 794 - Families and the Law****Credits:** 4

Exploration of laws effecting families and the interaction of family members with each other and with society. Prereq: HDFS 545. Writing intensive.

Attributes: Writing Intensive Course**HDFS 795 - Advanced Independent Study****Credits:** 1-6

Students in the major may undertake advanced study in child development, lifespan development or family support in consultation with a HDFS faculty member. The result of the study is to be a significant written product of a quality comparable to a 700 level course. A learner/sponsor contract will be required. Prereq: permission.

HDFS 797 - Advanced Special Topics**Credits:** 1-6

Highly focused examination of a particular theoretical, methodological, or policy issue.

HDFS 799 - Honors Senior Thesis**Credits:** 2-4

Under direction of a faculty sponsor, students plan and carry out an independent investigative effort in an area of family, child, and/or consumer studies, resulting in a written thesis and an oral presentation before students and faculty. Prereq: majors only; senior standing; permission. Two-semester sequence as continuing course.

Humanities (HUMA)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

HUMA 401 - Introduction to the Humanities

Credits: 4

Introduction to the interdisciplinary study of the humanities. Taking as its entry point a significant work, the course is organized by topics related to that work, selected and arranged to invoke lively intellectual debate among faculty and students alike. Group lectures by the four core humanities faculty members. The instructors teaching the course will provide material for smaller weekly discussion sections led by each of those faculty members. Requirements include lively discussions, papers, and examinations. Not repeatable.

Attributes: Humanities(Disc)

HUMA 401W - Introduction to Humanities

Credits: 4

Introduction to the interdisciplinary study of the humanities. Taking as its entry point a significant work, the course is organized by topics related to that work, selected and arranged to invoke lively intellectual debate among faculty and students alike. Group lectures by the three core humanities faculty members. The instructors teaching the course will provide material for smaller weekly discussion sections led by each of those faculty members. Requirements include lively discussions, papers, and examinations. Writing intensive. Not repeatable.

Attributes: Humanities(Disc); Writing Intensive Course

HUMA 411 - Humanities I

Credits: 4

Introduction to the humanities and Western culture through literature, history, philosophy, music, art, and architecture. Examination of selected historical periods from classical Greece through the Renaissance through readings, films, slides, and field trips. Special fee. Writing intensive.

Attributes: Humanities(Disc); Inquiry (Discovery); Writing Intensive Course

HUMA 412 - Humanities II

Credits: 4

Introduction to the humanities and Western culture through literature, history, philosophy, music, art, and architecture. Examination of selected historical periods from the Enlightenment to the present through the use of readings, films, slides, and field trips. Writing intensive.

Attributes: Humanities(Disc); Inquiry (Discovery); Writing Intensive Course

HUMA 413 - Dramatic Art and Social Reality: The Many Meanings of Performance

Credits: 4

This course illuminates connections between the performed stories of drama and real aspects of our lives. It considers performances on stages, screen, and in everyday life—like social rituals, “scripted” because performers are expected to follow certain social roles. It examines those rituals, investigating how they were authored and whether participants have been appropriately cast. No credit if student has taken HUMA 412: Humanities II: Dramatic Art & Social Reality: The Many Meanings of Performance. Writing intensive.

Attributes: FinePerformingArts(Discovery); Inquiry (Discovery); Writing Intensive Course

HUMA 440A - Honors/Hooked: Narratives of Addiction, Recovery, and Redemption

Credits: 4

This course explores literature about addiction through both literary and psychological lenses. It focuses on the redemption narrative that structures the understanding of addiction for writers and readers alike. Readings include stories of religious redemption, short fiction, memoirs, self-help texts, and narrative and psychological theory. This course is part of the Honors Symposium “Engaging Addiction”. The courses in the Symposium join several times during the semester for common meetings where perspectives can be compared and explored.

Attributes: Humanities(Disc)

HUMA 440B - Honors/That Belongs in a Museum! Museums and the Ownership of Antiquities

Credits: 4

Suppose you stumbled upon an artifact from an Indigenous Native American people in your backyard. Do you own it? Or do the heirs of those who produced it? Or does it belong in a museum for all to see? In a series of controversial case studies we will examine what it means to “own” the past, how it should be protected and preserved, and what role museums have had—and should have—in safeguarding that past.

Attributes: Humanities(Disc)

HUMA #444 - Idea of University

Credits: 4

An inquiry course that introduces first-year students to the history of the university and to the philosophical, artistic, and political crises it has undergone and continues to undergo today. HUMA #444 is an interdisciplinary course, team-taught by three professors from different fields. Writing intensive.

Attributes: Humanities(Disc); Inquiry (Discovery); Writing Intensive Course

HUMA #444C - Mozart and the Enlightenment: Social Norms and Sexual Behavior in the Age of Reason

Credits: 4

An interdisciplinary introduction to the European Enlightenment (approximately 1690-1790) as a cultural phenomenon, arising from developments in the natural sciences, that infused all areas of human endeavor with new ways of thinking and behaving, including social norms and sexual behavior, and how it was communicated and disseminated, not only through the written word but also through theater and music, especially in works of Mozart exploring the use and abuse of Human Reason in daily life. Writing intensive.

Attributes: Humanities(Disc); Inquiry (Discovery); Writing Intensive Course

HUMA 444D - Plague/Literary Histories of Epidemics

Credits: 4

Explores the meanings of epidemics as represented in literature. Topics include mysterious ancient disasters, the Black Death, AIDS, and hypothetical diseases used as thought experiments, as well as current controversies about the spread and prevention of disease. How do disease and its control shape state and social structures? How have the meanings of disease, health, medicine, and the body changed over time? What kind of art does disease give rise to?

Attributes: Humanities(Disc); Inquiry (Discovery); Writing Intensive Course

HUMA 444E - What is a Criminal?**Credits:** 4

Criminals are people who break the law – In theory. How do people become criminals (with regard to biological, cultural, and economic influences)? What happens to them in the criminal justice system, and how does the system shape the definition of "criminal"? We will also discuss "criminals of conscience" from Thoreau and Gandhi to Edward Snowden. The course will emphasize reading but will also engage with other media, including films, podcasts, and visual art.

Attributes: Humanities(Disc); Inquiry (Discovery); Writing Intensive Course**HUMA 444F - Travelers in the Premodern World****Credits:** 4

Travel is a fundamental aspect of the human experience. This course explores the human experience of travel using materials originating from across premodern world. Students investigate materials ranging from maps and pilgrimage accounts, to poetry and stories to understand what has compelled people to undertake the often perilous road. In the process, they consider the role of travel in cultural contact, communication, exchange, and the generation and spread of knowledge. Writing intensive.

Attributes: World Cultures(Discovery); Inquiry (Discovery); Writing Intensive Course**HUMA #450 - The Pre-Modern Economy and the Origins of Capitalism****Credits:** 4

This course provides a historical introduction to the development of the pre-modern economy from the earliest traces of capitalism in Ancient Greece to the Industrial Revolution. Special attention will be paid to commerce and finance in the Greco-Roman economy, the Commercial Revolution and invention of the firm in Renaissance Italy, early-modern Europe to the Industrial Revolution, and such fundamental thinkers as Karl Marx and Karl Polanyi.

Attributes: Historical Perspectives(Disc)**HUMA 500 - Critical Methods in the Humanities****Credits:** 4

Critical analysis of works in the humanities. Focuses on major texts, evaluation of secondary literature, research writing, criticism. Required of all HUMA majors. Writing intensive.

Attributes: Humanities(Disc); Inquiry (Discovery); Writing Intensive Course**HUMA 510A - Ancient World: An Interdisciplinary Introduction****Credits:** 4

What is a human being? How should we explain or understand what happens to us? How ought we to live? This team-taught course examines these important questions by focusing on the literature, art, philosophy, and science of ancient Greece and Rome. Writing intensive.

Attributes: FinePerformingArts(Discovery); Writing Intensive Course**HUMA 510B - Ancient World: An Interdisciplinary Introduction****Credits:** 4

What is a human being? How should we explain or understand what happens to us? How ought we to live? This team-taught course examines these important questions by focusing on the literature, art, philosophy, and science of ancient Greece and Rome. Writing intensive.

Attributes: World Cultures(Discovery); Writing Intensive Course**HUMA 510C - Ancient World: An Interdisciplinary Introduction****Credits:** 4

What is a human being? How should we explain or understand what happens to us? How ought we to live? This team-taught course examines these important questions by focusing on the literature, art, philosophy, and science of ancient Greece and Rome. Writing intensive.

Attributes: Historical Perspectives(Disc); Writing Intensive Course**HUMA 510D - Ancient World: An Interdisciplinary Introduction****Credits:** 4

What is a human being? How should we explain or understand what happens to us? How ought we to live? This team-taught course examines these important questions by focusing on the literature, art, philosophy, and science of ancient Greece and Rome. Writing intensive.

Attributes: Humanities(Disc); Writing Intensive Course**HUMA 511A - Medieval World: An Interdisciplinary Introduction****Credits:** 4

What is the soul and how is its health related to temptation and also to specifically Christian virtues? How closely does the medieval definition of an eternal God determine good and evil in daily life? To what extent does the hope of immortality affect the practice of writing literature, making art, studying philosophy, and investigating science? This team-taught course examines these important questions by focusing on the literature, art, philosophy, and science from the collapse of the classical world to the rise of capitalism. Writing intensive.

Attributes: FinePerformingArts(Discovery); Writing Intensive Course**HUMA 511B - Medieval World: An Interdisciplinary Introduction****Credits:** 4

What is the soul and how is its health related to temptation and also to specifically Christian virtues? How closely does the medieval definition of an eternal God determine good and evil in daily life? To what extent does the hope of immortality affect the practice of writing literature, making art, studying philosophy, and investigating science? This team-taught course examines these important questions by focusing on the literature, art, philosophy, and science from the collapse of the classical world to the rise of capitalism. Writing intensive.

Attributes: World Cultures(Discovery); Writing Intensive Course**HUMA 511C - Medieval World: An Interdisciplinary Introduction****Credits:** 4

What is the soul and how is its health related to temptation and also to specifically Christian virtues? How closely does the medieval definition of an eternal God determine good and evil in daily life? To what extent does the hope of immortality affect the practice of writing literature, making art, studying philosophy, and investigating science? This team-taught course examines these important questions by focusing on the literature, art, philosophy, and science from the collapse of the classical world to the rise of capitalism. Writing intensive.

Attributes: Historical Perspectives(Disc); Writing Intensive Course

HUMA 511D - Medieval World: An Interdisciplinary Introduction**Credits: 4**

What is the soul and how is its health related to temptation and also to specifically Christian virtues? How closely does the medieval definition of an eternal God determine good and evil in daily life? To what extent does the hope of immortality affect the practice of writing literature, making art, studying philosophy, and investigating science? This team-taught course examines these important questions by focusing on the literature, art, philosophy, and science from the collapse of the classical world to the rise of capitalism. Writing intensive.

Attributes: Humanities(Disc); Writing Intensive Course**HUMA 512A - Renaissance and Early Modern: An Interdisciplinary Introduction****Credits: 4**

Explores the interrelationship of art, literature, philosophy, and science from the High Renaissance into the 18th century. Study of the works and ideas of such influential figures as Shakespeare and Milton, Raphael and Rembrandt, Galileo, Descartes, Newton, and Hume. Writing intensive.

Attributes: FinePerformingArts(Discovery); Writing Intensive Course**HUMA 512B - Renaissance and Early Modern: An Interdisciplinary Introduction****Credits: 4**

Explores the interrelationship of art, literature, philosophy, and science from the High Renaissance into the 18th century. Study of the works and ideas of such influential figures as Shakespeare and Milton, Raphael and Rembrandt, Galileo, Descartes, Newton, and Hume. Writing intensive.

Attributes: World Cultures(Discovery); Writing Intensive Course**HUMA 512C - Renaissance and Early Modern: An Interdisciplinary Introduction****Credits: 4**

Explores the interrelationship of art, literature, philosophy, and science from the High Renaissance into the 18th century. Study of the works and ideas of such influential figures as Shakespeare and Milton, Raphael and Rembrandt, Galileo, Descartes, Newton, and Hume. Writing intensive.

Attributes: Historical Perspectives(Disc); Writing Intensive Course**HUMA 512D - Renaissance and Early Modern: An Interdisciplinary Introduction****Credits: 4**

Explores the interrelationship of art, literature, philosophy, and science from the High Renaissance into the 18th century. Study of the works and ideas of such influential figures as Shakespeare and Milton, Raphael and Rembrandt, Galileo, Descartes, Newton, and Hume. Writing intensive.

Attributes: Humanities(Disc); Writing Intensive Course**HUMA 513A - Modern World: An Interdisciplinary Introduction****Credits: 4**

Explores the central paradoxes of our culture in the modern age. Is there such a thing as "progress" and if so what is its nature? What is the relation of conscious and unconscious? Is the contemporary world devoid of meaning? Questions such as these are examined in relation to works since the 18th century in the fields of literature, history of science, philosophy, and art. Writing intensive.

Attributes: FinePerformingArts(Discovery); Writing Intensive Course**HUMA 513B - Modern World: An Interdisciplinary Introduction****Credits: 4**

Explores the central paradoxes of our culture in the modern age. Is there such a thing as "progress" and if so what is its nature? What is the relation of conscious and unconscious? Is the contemporary world devoid of meaning? Questions such as these are examined in relation to works since the 18th century in the fields of literature, history of science, philosophy, and art. Writing intensive.

Attributes: World Cultures(Discovery); Writing Intensive Course**HUMA 513C - Modern World: An Interdisciplinary Introduction****Credits: 4**

Explores the central paradoxes of our culture in the modern age. Is there such a thing as "progress" and if so what is its nature? What is the relation of conscious and unconscious? Is the contemporary world devoid of meaning? Questions such as these are examined in relation to works since the 18th century in the fields of literature, history of science, philosophy, and art. Writing intensive.

Attributes: Historical Perspectives(Disc); Writing Intensive Course**HUMA 513D - Modern World: An Interdisciplinary Introduction****Credits: 4**

Explores the central paradoxes of our culture in the modern age. Is there such a thing as "progress" and if so what is its nature? What is the relation of conscious and unconscious? Is the contemporary world devoid of meaning? Questions such as these are examined in relation to works since the 18th century in the fields of literature, history of science, philosophy, and art. Writing intensive.

Attributes: Humanities(Disc); Writing Intensive Course**HUMA #514A - 20th Century, 1900-1945: An Interdisciplinary Introduction****Credits: 4**

This course examines the relationships of literature, art, philosophy, and science in the first half of the twentieth century. Topics include the rise of modernism in literature and the arts, the distinctive themes of 20th century philosophy, and crucial innovations in the sciences. Students study the works of such figures as Picasso, Woolf, Einstein, Freud, and Wittgenstein. Writing intensive.

Attributes: FinePerformingArts(Discovery); Writing Intensive Course**HUMA #514B - 20th Century, 1900-1945: An Interdisciplinary Introduction****Credits: 4**

This course examines the relationships of literature, art, philosophy, and science in the first half of the twentieth century. Topics include the rise of modernism in literature and the arts, the distinctive themes of 20th century philosophy, and crucial innovations in the sciences. Students study the works of such figures as Picasso, Woolf, Einstein, Freud, and Wittgenstein. Writing intensive.

Attributes: World Cultures(Discovery); Writing Intensive Course**HUMA #514C - 20th Century, 1900-1945: An Interdisciplinary Introduction****Credits: 4**

This course examines the relationships of literature, art, philosophy, and science in the first half of the twentieth century. Topics include the rise of modernism in literature and the arts, the distinctive themes of 20th century philosophy, and crucial innovations in the sciences. Students study the works of such figures as Picasso, Woolf, Einstein, Freud, and Wittgenstein. Writing intensive.

Attributes: Historical Perspectives(Disc); Writing Intensive Course

HUMA 514D - 20th Century, 1900-1945: An Interdisciplinary Introduction
Credits: 4

This course examines the relationships of literature, art, philosophy, and science in the first half of the twentieth century. Topics include the rise of modernism in literature and the arts, the distinctive themes of 20th century philosophy, and crucial innovations in the sciences. Students study the works of such figures as Picasso, Woolf, Einstein, Freud, and Wittgenstein. Writing intensive.

Attributes: Humanities(Disc); Writing Intensive Course

HUMA #515A - 20th Century, 1945-1999: An Interdisciplinary Introduction
Credits: 4

Examines the relationships of literature, art, philosophy, and science since the middle of the twentieth century. Topics include the philosophical and literary implications of the Holocaust and nuclear weapons, movements in the arts and literature since World War II, the rise of the sciences of life and information, and postmodernism. Students study the works of such figures as Arendt, Turing, Beckett, and Pollock. Writing intensive.

Attributes: FinePerformingArts(Discovery); Writing Intensive Course

HUMA #515B - 20th Century, 1945-1999: An Interdisciplinary Introduction
Credits: 4

Examines the relationships of literature, art, philosophy, and science since the middle of the twentieth century. Topics include the philosophical and literary implications of the Holocaust and nuclear weapons, movements in the arts and literature since World War II, the rise of the sciences of life and information, and postmodernism. Students study the works of such figures as Arendt, Turing, Beckett, and Pollock. Writing intensive.

Attributes: World Cultures(Discovery); Writing Intensive Course

HUMA #515C - 20th Century, 1945-1999: An Interdisciplinary Introduction
Credits: 4

Examines the relationships of literature, art, philosophy, and science since the middle of the twentieth century. Topics include the philosophical and literary implications of the Holocaust and nuclear weapons, movements in the arts and literature since World War II, the rise of the sciences of life and information, and postmodernism. Students study the works of such figures as Arendt, Turing, Beckett, and Pollock. Writing intensive.

Attributes: Historical Perspectives(Disc); Writing Intensive Course

HUMA #515D - 20th Century, 1945-1999: An Interdisciplinary Introduction
Credits: 4

Examines the relationships of literature, art, philosophy, and science since the middle of the twentieth century. Topics include the philosophical and literary implications of the Holocaust and nuclear weapons, movements in the arts and literature since World War II, the rise of the sciences of life and information, and postmodernism. Students study the works of such figures as Arendt, Turing, Beckett, and Pollock. Writing intensive.

Attributes: Humanities(Disc); Writing Intensive Course

HUMA 519 - Classical Greece
Credits: 4

Examination of the culture of classical Greece through the history, drama, philosophy, and art of the period. Open to all students. Recommended for students in the humanities major. Special fee.

Attributes: Humanities(Disc)

HUMA 525 - Humanities and the Law
Credits: 4

This multidisciplinary course examines the nature of justice, legal systems and law in various historical contexts, including how these have been conceived, how they originated and the role of the professional judiciary, as well as the relationship between law and ethics. Consideration of how legal ideas have changed over time and built upon each other. May be repeated once if specific topic is different.

Attributes: Historical Perspectives(Disc); Writing Intensive Course

HUMA 526 - Humanities and Science
Credits: 4

In this interdisciplinary course, students examine the ways in which scientific and technological understanding affects the development of cultural expression. Scientific, technological and environmental factors are sometimes discussed as if they are separate from human beings, but in this course we will consider the myriad direct, complex, and surprising ways that they drive cultural shifts and are then understood in evolving ways by cultures. Topics vary with instructor. May be repeated once if topics is different. Writing intensive.

Attributes: Writing Intensive Course

HUMA 550 - Budapest Spring Semester: Special Studies in Comparative Ideas
Credits: 4

This course involves periodic offerings in literature, art, history, philosophy and political science designed to stimulate reflection on ideas and issues in Hungarian and Central European history and culture in a larger global context. Topics vary depending upon the expertise of the resident faculty. Special fee.

Co-requisite: INCO 588

HUMA 551 - Budapest Spring Semester: Field Studies in Art and Culture
Credits: 6

This course is designed to provide students with first-hand experience of art, history, culture, folklore, and traditions of Hungary and Central Europe. The course combines preparatory readings with guided field trips to museums, historical sites, and culturally significant events and locations. Students maintain a weekly blog reflecting on field trip experiences.

Co-requisite: INCO 588

Attributes: FinePerformingArts(Discovery)

HUMA 592 - Special Topics in the Humanities
Credits: 2-8

Special topics; offered occasionally. May be repeated up to a maximum of 12 credits.

HUMA 592W - Special Topics
Credits: 2-8

Special topics; offered occasionally. May be repeated up to a maximum of 12 credits. Topic/Where Did They Come From? The Emergence of Judaism, Christianity, and Islam is Writing intensive.

Attributes: Writing Intensive Course

HUMA 622 - Studies of Freedom and Liberty
Credits: 4

Principles of freedom and liberty that helped to form Western culture from the Renaissance to the present. Topics include concepts of human nature, theories of government and society. Readings include Machiavelli, Locke, Paine, Mill, Marx, Freud, Sartre, and Marcuse.

HUMA #640 - Birth of Rock and Roll**Credits:** 4

An interdisciplinary study of the cultural forces that brought the birth of rock and roll in the 1950's. This study of pre-rock music and culture will be further enriched by art, literature, and photography which focuses on the roots of rock and roll. Writing intensive.

Attributes: Writing Intensive Course**HUMA 698 - Independent Study****Credits:** 4

Independent study open only to highly qualified juniors and seniors who have completed at least four humanities courses above the 400 level. Requires original research and substantial writing projects under the direction of a member of the core faculty of the humanities. Prereq: HUMA junior or senior majors; four HUMA courses above the 400 level.

HUMA 700 - Seminar**Credits:** 4

Provides an opportunity for in-depth reading, viewing, and/or listening to texts and artifacts. Emphasis on the multiple perspectives and methodologies that can be brought to bear upon these works from several humanistic disciplines. May be repeated for credit. Writing intensive.

Attributes: Writing Intensive Course**HUMA 730 - Special Studies****Credits:** 4

Selected topics not covered by existing courses, with subjects to vary. May be repeated for credit. Prereq: one 400- or 500-level HUMA course or junior standing. Writing intensive.

Attributes: Writing Intensive Course**HUMA 795 - Study of Creativity****Credits:** 4

A study of human creativity through representative lives and works of such figures as daVinci, Einstein, Kathe Kollwitz, Bach, Dickens, and Freud. Lectures, class discussions, films, and slides supplemented by gallery tours plays, and concerts. Open to students with a background in humanities or by permission of the instructor. Special fee. (Normally offered every other year.) Writing intensive.

Attributes: Writing Intensive Course**HUMA 796 - Study of Contemporary Issues****Credits:** 4

Current social and political issues with focus on recent developments in public policy, science, and business, and their impact of social values. Prereq: junior status or permission. (Normally offered every other year.) Writing intensive.

Attributes: Writing Intensive Course**HUMA 798 - Research Seminar****Credits:** 1-2

Provides a context within which students may discuss and receive direction in the course of completing a major research paper. At the end of the seminar, students present their research to the faculty and their fellow students. Prereq: HUMA 500; senior standing; permission. HUMA majors only. Writing intensive.

Attributes: Writing Intensive Course**HUMA 799 - Research Seminar****Credits:** 3-4

Provides a context within which students may discuss and receive direction in the course of completing a major research paper. At the end of the seminar, students present their research to the faculty and their fellow students. Restricted to majors. Prereq: HUMA 500; HUMA 798; senior standing; permission. Writing intensive.

Attributes: Writing Intensive Course

Information Technology (IT)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

IT 403 - Introduction to Internet Technologies**Credits:** 4

Introductory course exploring the fundamentals of Internet communications with an emphasis on the World Wide Web. Students develop an understanding of the Internet's underlying technologies and learn how to utilize them as contributing members of the Web community. Students become proficient with creating and publishing Web pages using HTML and CSS. No prior knowledge or experience is assumed. No credit if credit earned for CIS 405. (Note CIS 405 is offered at UNH Manchester, and is not related to CS 405 at UNH Durham.)

IT 502 - Intermediate Web Design**Credits:** 4

An intermediate level exploration of the theory and practice of Web design. Students learn the fundamentals of design theory applicable to the World Wide Web and examine tools and techniques for applying that knowledge to their projects. Additional topics include information architecture, usability, accessibility, optimization, typography, and market visibility. Working knowledge of XHTML and CSS required. Prereq: CS 403.

IT 505 - Database Programming**Credits:** 4

Introduces database programming in the microcomputer environment. Students use a procedural programming language such as Visual Basic to manipulate data managed by a database management system. Emphasis is on the relational database model. Topics include connections, queries (including use of SQL), relations, constraints, transaction processing, concurrency issues, exception handling, and report generation. Prereq: a programming course. Computer Science majors not allowed.

IT 520 - Computer Architecture**Credits:** 4

Fundamentals of computer organization, including binary systems, data representation (and compression), machine language, program execution, memory and process issues. Operating systems and networking basics. Not open to CS majors. Prereq: a programming course.

IT 600 - Internship**Credits:** 1

Provides opportunity to apply academic experience in settings associated with future professional employment. A written proposal for the internship must be approved by the instructor. The proposal must specify what the student will learn from the internship, why the student is properly prepared for the internship, and what supervision will be available during the internship. A mid-semester report and a final report are required. Prereq: permission; majors only. May be repeated up to a maximum of 4 credits. Cr/F.

IT 604 - Server-side Web Development**Credits:** 4

An intermediate-level examination of the theory and practice of developing server-side applications for the World Wide Web. Students will learn practical techniques for designing and implementing data-driven Web sites through the use of server-side processing. Working knowledge of HTML, CSS, and some programming language is required. Prereq: IT 403 and a programming course.

IT 605 - Client-side Web Development**Credits:** 4

An intermediate-level examination of the theory and practice of developing client-side applications for the World Wide Web. Students will learn practical techniques for designing and implementing dynamic Web sites through the use of client-side processing. Working knowledge of HTML, CSS, and some programming language is required. Prereq: IT 403 and a programming course.

IT 609 - Network/Systems Administration**Credits:** 4

Introduces the central issues in administration of a networked computer system. Topics include the client-server model (including support of mail, FTP, Telnet, the Web), disk and file systems, backup and recovery, and security. Privacy and other legal/social issues will be discussed. Prereq: IT 520 and a programming course, or permission of the instructor.

IT 612 - Scripting Languages**Credits:** 4

This course is a study of the class of programming languages and tools known as scripting languages. Topics include: a general discussion of language design and its relationship to the intended computing environment, introduction to the command-line environment, the role of scripts in controlling and connecting other programs and components, basic functionality of at least two scripting languages, and the syntax use of regular expressions. Programming projects in multiple languages will be required. Prereq: IT 505 or CS 515.

IT 630 - Data Science and Analytics**Credits:** 4

An introduction to various disciplines that contribute to what is commonly known as Data Science. Students will learn how to gather, analyze, classify data utilizing various techniques. Study of tools and programming techniques to analyze data. Pre-requisite: CS 416 or CS 417 or Permission of Instructor. No credit if currently registered for or credit already received for MATH 738 or CS 750.

IT 666 - Computer Security**Credits:** 4

Provides students with the skills required to recognize and diagnose potential security issues in computer and network systems. Through readings, case studies, exercises, research papers, exams and personal experience, students will discuss and debate security policies and legislation, system procedures, security tools and techniques and the patterns that attackers use to foil security systems. Other topics include types of attacks, viruses, intrusion detection and tracking, firewalls, trust relationships and authentication, secure connections, and cryptography. At the conclusion of the course, student will have a heightened sense of security in the actions they take when using and maintaining computer systems. Prereq: IT 520 or permission of the instructor. No credit if credit earned for CIS 615.

IT 696 - Independent Study**Credits:** 1-6

Individual projects developed and conducted under the supervision of a faculty member. Prereq: permission of faculty supervisor and department chairperson. May be repeated. Only open to Information Technology majors.

IT 699 - Internship**Credits:** 1

Provides the opportunity to apply academic experience in settings associated with future professional employment. A written proposal for the internship must be approved by the instructor. The proposal must specify what the student will learn from the internship, why the student is properly prepared for the internship and what supervision is available during the internship. A mid-semester report and final report are required. Students may receive compensation for their internship work. Prereq: permission. May be repeated for a maximum of 4 credits. Information Technology majors only. Cr/F.

IT 704 - Advanced Web Development**Credits:** 4

An advanced exploration of various topics in Web development. Topics covered each semester will be chosen to reflect the current state of stable and accepted Web technologies, with a decided emphasis on open-source solutions. Both client-side and server-side technologies are likely to be included, with particular attention given to concepts and techniques used to facilitate efficient Web development. Prereq: IT 604.

IT 705 - Project Management for Information Technology**Credits:** 4

This course focuses on a core set of project management essentials that can affect the bottom line of project technical and business performance. These are termed "best practices," and those addressed are: formal risk management, agreement on interfaces, metrics based scheduling/tracking, frequent binary completion milestones, incremental development, people aware management style, and change management. The emphasis is on information technology projects; however, the basic principles are pertinent to a wider class of project domains. Prereq: Senior standing in IT or permission. Writing intensive.

Attributes: Writing Intensive Course**IT 710 - Senior Project****Credits:** 4

Students are organized into teams and work on a specific IT project. Utilizing the skills and concepts learned in IT 705 (as well as other previous academic and field experience), each team works with one or more stakeholders to provide all necessary project elements - from initial specification through design and development to delivery. Teams are expected to provide both interim and final written and/or oral reports for the project. Prereq: IT 705; Information Technology majors only.

IT 725 - Network Technology**Credits:** 4

Introduction to fundamental concepts of computer networks and exploration of widely-used networking technologies. Topics include principles of congestion and error control; network routing; local, wireless and access networks; application protocol design; and network programming. In-depth discussion of the Internet suite of protocols. Prereq: IT 520.

IT 775 - Database Technology**Credits: 4**

Topics include database architecture, schema design and definition, entity-relationship diagrams, data retrieval and update, and indexing performance. Architectures for single-user, multi-user, client-server, and web access are introduced. The relational data model is emphasized but alternative database models, such as semi-structured and object models, are introduced. Database administration topics include examination of metadata information, data integrity, and management of users and privileges, performance tuning, transactions, isolation levels, and security. Ethics of data protection are introduced. Students develop skill in SQL. Not open to CS majors. No credit if credit earned for CS 775. Prereq: IT 505.

IT 780 - Topics in Information Technology**Credits: 4**

Material not normally covered in course offerings. May be repeated for credit.

Integrated Agriculture Management (IAG)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

IAG 408 - Foundations for Living Sustainably in New England**Credits: 4**

An introduction to the principles and practices of sustainable living in New England. Within the framework of human culture as an integral part of our ecosystem and focusing on the integration of site-scale applications, topics touched upon include ecology, site inventory and mapping, horticulture, forestry, animal science, architecture, food, regulatory issues, business concepts, and community integration. Special fee.

IAG 490 - Integrated Agriculture Management Capstone**Credits: 2**

The capstone experience includes formal lectures and coursework. In addition there is a required pre-approved and mentored project, or other special project-based student activity accepted by the IAG program advisors. The students will be expected to present the project to freshman students in the Integrated Agriculture program and also in a public venue. The course occurs in the student's final year at the Thompson School of Applied Sciences. Permission required.

IAG 597 - Integrated Agriculture Management Work Experience**Credits: 0**

Career related employment for 400 hours, generally in the summer following the freshmen year. This is in an agricultural, forestry, or food related firm, farm or related business, department approval required. Student submits a monthly report, and a final report from employer required. Students are eligible to register for IAG 297 after completing at least one semester as an IAMT student.

Integrated Applied Mathematics (IAM)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

IAM 550 - Introduction to Engineering Computing**Credits: 4**

An application driven introduction to computer-aided problem solving leveraging foundational knowledge in engineering and the physical sciences. Engineering applications are used to motivate the computational methods needed in scientific and engineering disciplines. Numerical methods, including the basic LU algorithm, one-dimensional root finding methods, and numerical differentiation and integration, are introduced as useful computational tools for tackling a broad range of engineering and scientific and engineering disciplines. Numerical methods, including the basic LU algorithm, one-dimensional root finding methods, the numerical differentiation and integration, are introduced as useful computational tools for tackling a broad range of engineering and scientific applications and to provide concrete and contextual programming experiences. MATLAB is used, with topics including scripts, functions, logical expressions, conditional statements, looping, data visualization, plotting, and recursion presented within the framework provided by both the numerical methods and the scientific or engineering problems. Laboratory included. Pre- or Coreq: MATH 426. No credit earned if credit received for MATH 445.

IAM 751 - Introduction to High-Performance Computing**Credits: 4**

Course gives an introduction to select areas of high-performance computing, providing a basis for writing and working with high-performance simulation codes. The three main topics are: 1) basic software engineering, 2) high-performance and parallel programming, and 3) performance analysis and modeling. Additional topics may include heterogeneous architectures like GPUs and data analysis/visualization. Prereq: MATH 753 and working knowledge of a programming language (C or Fortran), or by permission of instructor.

Intercollege (INCO)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

INCO 400 - Graduate Preparation Seminar**Credits: 1**

A survey seminar that explores issues related to graduate school preparation. Topics include graduate school culture, academic research, the role of multicultural scholars, faculty relations, the graduate record exam, resume/vita development, and financing graduate education. Prereq: Enrollment in McNair Scholars Program. May be repeated for credit. Cr/F.

INCO 403 - Healthcare Professions Seminar**Credits: 2**

This seminar is designed for students (primarily for sophomores; juniors and seniors may also take the course) who are in the initial phase of preparation to a career in allopathic or osteopathic medicine, dentistry, podiatry, optometry, physicians assistant, chiropractics, physical therapy, pharmacy, or naturopathic medicine. Through readings and discussion students will become informed about current topics in healthcare, and specifically about these professions, requirements for admission to degree programs, and about how to become a competitive applicant. Cr/F.

INCO 405 - Introduction to Marine Mammal Science and Policy**Credits:** 3

This course embarks on the scientific discovery of marine mammals through the intersection of marine policy, physics, biology, and societal value of the ocean. Marine mammal and human interactions will be related to specific marine laws protective of the major taxonomic groups. Students will receive an introduction to marine mammal evolution, morphological and physiological adaptations, ecology, and behavior. These foundational concepts will convey to students the intent of marine policy protective of marine mammals.

INCO 410 - Introduction to College Teaching**Credits:** 2

Evolving role and function of colleges and universities in American higher education. Issues involving the professorate including teaching, scholarship and service as the framework for an academic career.

INCO 430 - Interdisciplinary Science**Credits:** 4

Advanced topics in selected areas of science through interdisciplinary lectures, demonstrations, hands-on laboratory experience, and field trips; the use of mathematical and computer skills in science; social, economic, environmental, and ethical applications and implications of recent advances in the selected area of science; the process of research. Restricted to high school juniors and seniors by permission only.

INCO 440A - Asking for It: The History and Law of Sexual Violence in the United States**Credits:** 4

Sexual violence has been perpetrated since ancient times. The #MeToo movement is just one example of the multi-layered and complex prevalence of sexual assault in today's culture. This course addresses sexual assault, its history, and the laws that criminalize it. Through readings, small group discussion, practical applications including a mock trial, and speakers, students will gain insight into how the law shapes rape culture and how, in turn, rape culture affects law.

Attributes: Social Science (Discovery)**INCO #450 - Introduction to Race, Culture and Power****Credits:** 4

Explores the ways in which the concept of "race" serves to justify global relationships of domination and inequality and is embedded in U.S. society. Examines how dominant powers use "culture" to maintain subordination and how subordinated peoples use "culture" to resist exploitation. (Also listed as ANTH 450.)

INCO 460 - Deflategate**Credits:** 4

This course is not about deflated footballs. Instead, it is about the interplay between those footballs – along with numerous other sports things – and the legal, regulatory and journalistic systems governing sports. Students in Deflategate learn about crucial areas of law that relate to sports and the methodologies used to practice in relevant fields. Students also gain valuable instruction on core journalism methods and their applications to a sports story attracting national headlines. The course concludes with an application of methodologies in law and journalism to Deflategate.

Attributes: Social Science (Discovery)**INCO 490 - Introduction to the Research Process in the Biological Sciences****Credits:** 2

This course introduces students to the process of research in the biological sciences - identifying a topic, narrowing that topic to a question, conducting literature searches - ultimately leading to writing a research proposal in the style of a Summer Undergraduate Research Fellowship. It is an ideal course for students hoping to conduct a summer research project, preparing for an independent or capstone research experience, or planning to complete a Senior or Honors Thesis. No seniors allowed.

INCO 505A - Semester in the City Becoming a Problem Solver**Credits:** 4

This course will expose students to the concepts and practices associated with social innovation and social entrepreneurship – i.e., the development and growth of new, sustainable, and scalable approaches to the major social, economic, and environmental challenges facing society. Students will learn a variety of tools and methods used for the development, implementation, management, and assessment of social solutions that they will be able to use over the course of their careers. Taken concurrently with: INCO 505B and INCO 505I, for a total of 16 UNH credits.

Co-requisite: INCO 505B, INCO 505I**INCO 505B - Social Innovator's Toolbox****Credits:** 4

This course will expose students to the concepts and practices associated with social innovation and social entrepreneurship – i.e., the development and growth of new, sustainable, and scalable approaches to the major social, economic, and environmental challenges facing society. Students will learn a variety of tools and methods used for the development, implementation, management, and assessment of social solutions that they will be able to use over the course of their careers. Taken with INCO 505A & INCO 505I.

Co-requisite: INCO 505A, INCO 505I**Attributes:** Social Science (Discovery)**INCO 505I - Semester in the City Internship****Credits:** 8

All Social Innovation Fellows will spend approximately 30 hours per week (Mon, Tues, Thurs, 9-5 and Wed 9-3 or similar) for 14 weeks at a nonprofit, a government agency or a social mission for-profit business. Fellows and host organizations are matched based on applications and interviews, with prioritization of issue alignment, skill/knowledge alignment or both. Additionally, the Semester in the City program is designed such that the internship experience is intimately intertwined with students' other coursework and reflection. Taken concurrently with: INCO 505A and INCO 505B, for a total of 16 UNH credits.

Co-requisite: INCO 505A, INCO 505B**INCO 510 - McNair Introduction Seminar****Credits:** 1-2

Course assists newly inducted student scholars in understanding the requirements of participation. Substantive reading and writing on the life of Dr. Ron McNair as the starting point from which to understand program expectations and begin sketching research and graduate school goals. Prereq: Enrollment in McNair Scholars Program and permission. Cr/F.

INCO 529 - Writing Consultation**Credits:** 2

Includes instruction in philosophy and techniques of tutoring, theoretical and practical issues in collaborative learning and complex-skill formation, and cross disciplinary conventions of writing. In addition to the classroom portion of course, each student undertakes a supervised practicum experience in the University Writing Center. Permission required. Cr/F.

INCO 530 - Writing Consultation Across the Curriculum**Credits:** 2

This course provides the fundamental background for peer writing consultation serving as Writing Fellows in courses across the curriculum. Emphasis is on the application of theoretical assumptions about writing, tutoring, and discipline-specific discourse. Restricted to members of the Writing Fellows Program. Faculty recommendation required. May be repeated for credit. Prereq: ENGL 401, one other Writing intensive course.

INCO 555 - Peer Education**Credits:** 1-3

Students serve as co-instructors for a section of INCO 444, First Year Seminar. Under the supervision of the course coordinator and their co-instructor (a University faculty member or Student Affairs professional), they prepare and present materials and exercises for their section. With their co-instructor, they also grade written and other exercises. Students attend weekly meetings with their section co-instructor and biweekly meetings of all section instructors. They also attend a two day workshop on teaching and course facilitation prior to the semester and a one day workshop at the end of the semester. Prereq: permission. May be repeated up to a maximum of 3 credits. Cr/F.

INCO 585 - Foreign Exchange**Credits:** 16

Undergraduates who meet UNH Study Away Eligibility Requirements and the requirements set by the host institution, may participate in an international exchange program at one of UNH's partner institutions for a semester or academic year. Students must achieve the equivalent of a 'C' or above to receive international transfer credit. For more information contact the Coordinator of Student Programs at the Center for International Education. Special fee.

Attributes: World Cultures(Discovery)**INCO 586 - Foreign Exchange****Credits:** 16

Undergraduates who meet UNH Study Away Eligibility Requirements and the requirements set by the host institution, may participate in an international exchange program at one of UNH's partner institutions for a semester or academic year. Students must achieve the equivalent of a 'C' or above to receive international transfer credit. For more information contact the Coordinator of Student Programs at the Center for International Education. Special fee. Cr/F.

Attributes: World Cultures(Discovery)**INCO 587 - International Exchange****Credits:** 9

Undergraduates who meet UNH Study Away Eligibility Requirements and the requirements set by the host institution, may participate in an international exchange program at either Saitama University, Japan or Pusan National University, South Korea. Students must achieve the equivalent of a 'C' or above to receive international transfer credit. For more information contact the International Exchange Program Manager.

INCO 588 - Study Abroad Experience - Semester**Credits:** 0

A Study Abroad Program co-requisite to enroll students in travel insurance and capture the mandatory study abroad fee.

INCO 589 - Study Abroad Experience Short**Credits:** 0

For students enrolling in short term study abroad experiences in Fall and Spring semesters. Also for students enrolling in January term and Summer Session study abroad experiences.

INCO 590 - Student Research Experience**Credits:** 1-4

Provides hands-on research experience to develop critical thinking, problem solving, and analytical skills. An entry-level research experience that introduces students to research theories, tools, and ethical issues. Each student completes a contract with a faculty mentor identifying the research activities the student will undertake. May be repeated up to a maximum of 8 credits.

INCO 595 - Winterim Topics**Credits:** 1-4

Concentrated interdisciplinary exposure to a particular culture or locale off campus during the winter term. Includes anthropological, artistic, biological, cultural, environmental, or geographical, historical, political, sociological, and other aspects of a culture, country or locale. May be repeated to a maximum of 8 credits.

INCO 595W - Winterim Topics**Credits:** 1-4

Concentrated interdisciplinary exposure to a particular culture or locale off campus during the winter term. Includes anthropological, artistic, biological, cultural, environmental, or geographical, historical, political, sociological, and other aspects of a culture, country or locale. May be repeated to a maximum of 8 credits. Writing intensive.

Attributes: Writing Intensive Course**INCO 596 - Summer Topics****Credits:** 1-4

Provides a concentrated interdisciplinary exposure to a particular culture or locale off campus during the summer session. Includes anthropological, artistic, biological, cultural, environmental, geographical, historical, political, sociological, and other aspects of a culture, country or locale. May be repeated to 8 credits.

INCO 604H - Honors Senior Thesis**Credits:** 4 or 8

Final requirement for graduation with University Honors. Intended for honors students in majors that do not offer honors work. Open by special permission to other honors students. May be repeated for a maximum of 8 credits. IA (continuous grading). Writing intensive.

Attributes: Writing Intensive Course**INCO 610 - Research Inquiry Seminar****Credits:** 2-6

With the notion of understanding self as the basis for investigating the world, this seminar focuses on exploring elementary concepts of academic research. Students are engaged in identifying strengths, discovering their passions, discerning the joys and frustrations of research, and developing a sketch of a research project. Prereq: Enrollment in McNair Scholars Program and permission. Cr/F.

INCO 620 - Talk to Action: Facilitating Deliberative Democracy**Credits:** 2-4

A theory-to-practice seminar that explores democratic theory from a deliberative perspective, dialogue and small group facilitation, civic engagement and social justice. Topics include moral disagreement, skills in public engagement and facilitation, creating social change, and moving from talk to action in the public sphere. May be repeated for credit. Cr/F.

INCO 650 - Study Abroad Seminar: Encountering Oneself/Encountering the World**Credits:** 1

This seminar, which meets during the second half of each semester, seeks to prepare outgoing students for the Study Abroad experience. The course specifically engages the ways in which the international experience affects personal, academic, and career perspectives. Readings, discussions, and short written assignments will focus on cultural adaptation, cross-cultural communication, practical skills for international living, and especially the implications of global perspectives on a student's major field(s) of study. Students are strongly encouraged to take INCO 651: Studying Abroad/Returning Home in the first half of the semester in which they return to UNH. Permission required. May be repeated up to a maximum of 3 credits. Cr/F.

INCO 650H - Honors/Encountering Oneself/Encountering the World**Credits:** 1

This seminar, which meets during the second half of each semester, seeks to prepare outgoing students for the Study Abroad experience. The course specifically engages the ways in which the international experience affects personal, academic, and career perspectives. Readings, discussions, and short written assignments will focus on cultural adaptation, cross-cultural communication, practical skills for international living, and especially the implications of global perspectives on a student's major field(s) of study. Students are strongly encouraged to take INCO 651: Studying Abroad/Returning Home in the first half of the semester in which they return to UNH. Permission required. May be repeated up to a maximum of 3 credits. Cr/F.

INCO 651 - Study Abroad Seminar: Returning Home**Credits:** 1

This seminar, which meets during the first half of each semester, offers returning students an opportunity to reflect on their Study Abroad experience. The course specifically engages the ways in which the international experience affects personal, academic, and career perspectives. Readings, discussions, and short written assignments will focus on the experience of re-entry: cultural (re)adaptation, cross-cultural communication, and especially the implications of global perspectives on a student's major field(s) of study. Students should expect to have taken INCO 650: Encountering Oneself/Encountering the World in the second half of the semester before they left UNH. Permission required. May be repeated up to a maximum of 3 credits. Cr/F.

INCO 651H - Honors/Study Abroad Seminar/Returning Home**Credits:** 1

This seminar, which meets during the first half of each semester, offers returning students an opportunity to reflect on their Study Abroad experience. The course specifically engages the ways in which the international experience affects personal, academic, and career perspectives. Readings, discussions, and short written assignments will focus on the experience of re-entry: cultural (re)adaptation, cross-cultural communication, and especially the implications of global perspectives on a student's major field(s) of study. Students should expect to have taken INCO 650: Encountering Oneself/Encountering the World in the second half of the semester before they left UNH. Permission required. May be repeated up to a maximum of 3 credits. Cr/F.

INCO 682 - Washington Internship**Credits:** 12

Internship placements in Washington, D.C., through the Washington Center. Individual internships arranged with legislative and judicial offices, law firms, public interest organizations; in the arts, the media, labor, international affairs, business, consumer affairs. Supervision by agency personnel and faculty sponsor. Students should have above-average academic records before applying. Open to all majors. Applications available in the National Student Exchange Office, Hood House. Prereq: junior or senior. Student must also register for a graded, 4-credit independent study in the student's major. credit variable to 12 credits. Special fee. Cr/F.

INCO 685 - Study Abroad**Credits:** 16

Enables students to pursue a semester, summer, or an academic year of foreign study in programs other than those offered by UNH. Students must provide the University Committee on Study Abroad with detailed information about the curriculum and must receive approval from that committee before registration. Credit awarded only upon successful completion of the course of study and after receipt by the committee of an official transcript. Interested students should consult the Center for International Education. Prereq: permission. Special fee. (Financial aid requires a minimum of 6 credits.) Cr/F.

Attributes: World Cultures(Discovery)**INCO 686 - Study Abroad****Credits:** 16

Enables students to pursue a semester, summer, or an academic year of foreign study in programs other than those offered by UNH. Students must provide the University Committee on Study Abroad with detailed information about the curriculum and must receive approval from that committee before registration. Credit awarded only upon successful completion of the course of study and after receipt by the committee of an official transcript. Interested students should consult the Center for International Education. Prereq: permission. Special fee. (Financial aid requires a minimum of 6 credits.) Cr/F.

Attributes: World Cultures(Discovery)**INCO 687 - Study Abroad Experience****Credits:** 16

Enables students to pursue a term of foreign study in programs other than those offered by UNH. Students must meet all university requirements and complete required forms. Credit awarded only upon successful completion of the course of study abroad and after receipt and processing of an official transcript. Interested students should consult the Center for International Education. Prereq: permission. Special fee. (Financial aid requires a minimum of 6 credits.) Cr/F.

INCO 688 - Study Abroad Insurance Program**Credits:** 0**INCO 689 - Study Abroad Insurance - Short****Credits:** 0**INCO 698 - Summer Research Project****Credits:** 8

Guided independent research or student/faculty collaborative research. Open to recipients of summer undergraduate research fellowships or by permission of the Undergraduate Research Opportunities Program. (Summer only.) Cr/F.

INCO 699 - McNair Summer Internship**Credits:** 0

McNair Fellows; not graded; Summer only.

INCO 705 - Introduction to Marine Policy: Understanding US Ocean Coastal & Great Lakes Policy**Credits:** 3

Effective management of human activities in ocean, coastal and Great Lakes areas is critical to our future. This course provides a foundation for students from a various backgrounds to understand U.S. marine policy and how it relates to their future careers in research, policy, law, or management. While focused on U.S. marine policy, the course also provides international context, including the UN Law of the Sea and other related conventions on pollution, fisheries, and resource protection.

INCO 710 - Introduction to McNair Research**Credits:** 2-4

An Introduction to methods and techniques of research design within the social sciences, mathematics and natural sciences, and the humanities. Concepts are tailored to students' research thesis. Students design and construct a research project (execution of project may be allowed for additional credit). A comprehensive written proposal is required. Prereq: Enrollment in McNair Scholars Program. May be repeated up to a maximum of 8 credits. Special fee on Study Abroad sections.

INCO 720 - McNair Research Experience**Credits:** 4

This independent study course allows students to work one-on-one with a faculty scholar to execute the research project. The course also provides a forum for faculty mentors and research supervisors to troubleshoot challenges and assist in the completion of the project. Prereq: Enrollment in McNair Scholars Program. Permission required.

INCO 730 - Writing Consultation Across the Curriculum**Credits:** 2

This course provides the fundamental background for peer serving as Writing Fellows in courses across the curriculum. Emphasis is on the application of theoretical assumptions about writing, tutoring, and discipline-specific discourse. Restricted to members of the Writing Fellows Program. Faculty recommendation required. May be repeated for credit. Students will be asked to evaluate their discipline-specific writing experience and apply it to their Writing Fellows' work. Prereq: ENGL 401, one other Writing intensive course.

INCO 740 - McNair Research Abroad**Credits:** 1-6

This course focuses on the execution of a comprehensive undergraduate research project in a country other than the U.S. Students learn about the cultural elements entailed in conducting research in a foreign country, They grapple with ethical dilemmas, as well as with the joys and frustration of performing research. In addition, students are asked to identify and examine a particular aspect of the host nation's customs and traditions. Special fee.

INCO 790 - Advanced Research Experience**Credits:** 1-4

Advanced research, scholarly or creative projects developed and conducted under the supervision of a faculty member. Provides students with the opportunity to apply advanced knowledge and techniques of their major to a specific problem or question. Prereq: INCO 590, significant preparatory course work for research, or other research experience approved by the INCO 790 faculty mentor. INCO 790 may be repeated alone or in combination with INCO 590 for a maximum of 8 credits. Graded.

INCO 795 - Washington Center Course**Credits:** 4

Four-credit independent study in conjunction with The Washington Center program in Washington DC. For more information, Hood House room 106, <http://www.unh.edu/washington> or email washington.internship@unh.edu. Special fee.

INCO #796 - Touching the Limits of Knowledge: Cosmology and Our View of the World**Credits:** 1

A seminar analyzing the paradoxes and limits of scientific knowledge and religious understanding, their compatibility or lack of it with respect to contemporary cosmology.

International Affairs (IA)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

IA 401 - International Perspectives**Credits:** 4

Provides students with a broad, interdisciplinary overview of international affairs in a dynamic and interconnected world. The course is team-taught in two modules, each of which highlights perspectives from anthropology, geography, political science, or a related discipline. These modules address global issues such as poverty, conflict, human rights, development, environment, migration, and health. Required for the IA dual major and minor. Must complete IA 401 before the international experience, preferably during the 1st or 2nd year.

IA 501 - Global Issues in International Affairs**Credits:** 4

Students analyze the theory and practice of international affairs and acquire practice in designing an independent research project. Topics vary with faculty expertise, and have included war and political violence; global environmental issues, social mobilization and protest, and development, race, and gender. IA 501 further prepares students for their international experience and helps them design individualized research topics for their capstone project in IA 701. This course must be taken before IA 701 and in most cases, before the student undertakes an international experience. Prereq: IA 401. Writing intensive.

Attributes: Writing Intensive Course**IA 695 - Independent Study in IA****Credits:** 2-4

Faculty supervised independent Study in International Affairs. Prereq: permission from the IA Program Chair. May be repeated up to 8 credit hours. Cr/F.

IA 699 - Topics**Credits:** 4

Special topics course with varying subject matter and format. Study of areas and subjects not covered by existing courses. Recommended as a dual major elective.

IA 701 - Seminar**Credits:** 4

Capstone of the dual major in international affairs. Emphasizes research and analysis, use of second language skills as appropriate, writing, and critical thinking. Students write their senior capstone papers and present their findings at the spring Undergraduate Research Conference. Prereq: IA 401, IA 501, International experience, IA Dual major. Writing intensive.

Attributes: Writing Intensive Course

Italian (ITAL)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

ITAL 401 - Elementary Italian I

Credits: 4

For students without previous training in Italian. Aural comprehension, speaking, writing, reading. Labs. (No credit for students who have had two or more years of Italian in secondary school; however, any such students whose studies of Italian have been interrupted for seven years should consult the section coordinator about possibly receiving credit.) Special fee.

ITAL 402 - Elementary Italian II

Credits: 4

For students who have completed ITAL 401 or equivalent. Aural comprehension, speaking, writing, reading. Labs. (No credit for students who have had two or more years of Italian in secondary school; however, any such students whose studies of Italian have been interrupted for seven years should consult the section coordinator about possibly receiving credit.) Special fee.

Attributes: Foreign Language Requirement

ITAL 425 - Introduction to Italian Studies

Credits: 4

The double aim of this course is to provide a working knowledge of Italian cultural and political history and to examine, from a more general and theoretical standpoint, the role of Italian art, literature and history via readings, slides, films, opera and lectures; along the way, they will be encouraged to analyze the interaction between culture and political thought in other countries, including their own.

Attributes: World Cultures(Discovery)

ITAL 425H - Honors/Introduction to Italian Studies

Credits: 4

Designed for honors students interested in exploring Italian language and culture. Culture learning by means of guest speakers and visuals. Prepares for ITAL 401 and ITAL 402. Taught in English. Does not satisfy foreign language proficiency requirement. Special fee. (Offered summers only, Not offered every summer.) Writing intensive.

Attributes: World Cultures(Discovery); Writing Intensive Course

ITAL 444A - Italians Come to America: Representing Emigration and Immigration on Both Sides of the Atlantic

Credits: 4

Course is designed around the phenomenon of emigration from Italy to the United States over the last century or so, with particular attention to the time period between the end of the nineteenth century and the mid-twentieth century. While core media under examination are literature and film, we also draw on historical, anthropological, political and sociological readings to help us consider the many issues involved. Writing intensive.

Attributes: Humanities(Disc); Inquiry (Discovery); Writing Intensive Course

ITAL 444B - Mamma Mia! Italian Motherhood from the Virgin Mary to Carmela Soprano

Credits: 4

This course examines motherhood and the special role of the Italian mother - la mamma italiana - in past and present Italian society. Through readings from a wide variety of disciplines - theology, history, medicine, and literature - as well as an examination of art and film, we will analyze the origins and conflicted nature of Italian attitudes toward motherhood. Topics include: maternal love and self-sacrifice, beliefs about generation and their influence on maternal and paternal roles, Italian family structure. Mussolini's promotion of motherhood, the phenomenon of *mammismo* or "Mama's boys", and Italian-American mothers, including Carmela Soprano. Writing intensive.

Attributes: Humanities(Disc); Inquiry (Discovery); Writing Intensive Course

ITAL 500 - Selected Topics in World Literature

Credits: 4

Topics will be chosen which introduce students to major themes and genres. (Also offered as CLAS 500, FREN 500, GERM 500, PORT 500, RUSS 500, SPAN 500.) May be repeated for credit. Special fee. Writing intensive. Cr/F.

Attributes: Writing Intensive Course

ITAL 503 - Intermediate Italian I

Credits: 4

A complete review of the fundamentals of grammar and syntax. Selected readings as a general introduction to Italian civilization and culture. Labs and films. Special fee. Writing intensive.

Attributes: World Cultures(Discovery); Writing Intensive Course

ITAL 504 - Intermediate Italian II

Credits: 4

For students who have completed ITAL 503 or an equivalent. A complete review of the fundamentals of grammar and syntax. Selected readings as a general introduction to Italian civilization and culture. Labs and films. Special fee. Writing intensive.

Attributes: World Cultures(Discovery); Writing Intensive Course

ITAL 510J - Rome: The Eternal City in Italian Culture

Credits: 4

This course offers an interdisciplinary introduction to the Eternal City and its role in Italian culture from the Middle Ages to the present. Together, the online and on-site components of the course allow students to compare their theoretical historical, social and artistic knowledge of Italian culture (acquired through readings, films and online lectures) with experiential knowledge gained through first-hand exposure to contemporary Rome. All readings in English. Fulfills the World Cultures Discovery requirement. Special fee.

Attributes: World Cultures(Discovery)

ITAL 521 - Medieval and Renaissance Italian Culture

Credits: 4

Major works of fiction and nonfiction, reflecting ideas and taste during the first three centuries of Italian history. Readings, discussions, papers in English. No more than one course in English may be counted toward the minor. Special fee. (Not offered every year.) Writing intensive.

Attributes: Humanities(Disc); Inquiry (Discovery); Writing Intensive Course

ITAL 522 - Modern and Contemporary Italian Culture**Credits:** 4

Major trends in post-Renaissance thought and culture in Italy. Readings, discussions, papers in English. No more one course in English may be counted toward the minor. Special fee. (Not offered every year.) Writing intensive.

Attributes: Humanities(Disc); Inquiry (Discovery); Writing Intensive Course

ITAL 525 - Italian Cinema**Credits:** 4

Acquaints students with major Italian film texts. Through cinema the course explores the culture, society, history, and politics of Italy. Students examine filmmakers, genres, periods, and movements. The course is conducted in English. Special fee.

Attributes: FinePerformingArts(Discovery)

ITAL 595 - Practicum**Credits:** 2

Practical use of Italian language and culture through special projects outside the classroom. May be repeated for a maximum of 4 credits.

Prereq: permission. Special fee. Cr/F.

ITAL 595A - Practicum**Credits:** 2 or 4

Practical use of Italian language and culture through special projects outside of the classroom. The Practicum consists of unpaid placement in an approved business, social service, or educational organization in an Italian-speaking context with on-site supervision. The course also includes a classroom component that incorporates readings and assignments pertinent to the Practicum experience. May be repeated for a maximum of 4 credits. permission. Letter Grade.

ITAL 631 - Advanced Conversation and Composition I**Credits:** 4

Rapid review of basic grammatical structures and in-depth study of more complex linguistic patterns. Vocabulary building. Frequent written compositions and oral presentations using materials on contemporary culture taken from the various media. Phonetics and oral/aural skills development in lab and class. Prereq: C or better in ITAL 504 or permission. Special fee. Writing intensive.

Attributes: World Cultures(Discovery); Writing Intensive Course

ITAL 632 - Advanced Conversation and Composition II**Credits:** 4

Advanced spoken and written Italian to attain aural-oral fluency. Advanced reading and composition. Prereq: C or better in ITAL 631 or permission. Special fee. Writing intensive.

Attributes: World Cultures(Discovery); Writing Intensive Course

ITAL 635 - Food Aesthetics in Italy**Credits:** 4

Food Aesthetics in Italy acquaints students with the principal of aesthetics as they pertain to our understanding of and relationship to food. It is offered by the UNH-in-Italy Program in Ascoli Piceno. The philosophical aspects of the course are complemented by the experiential components that emphasize the particularity of the Italian environment.

Attributes: Humanities(Disc)

ITAL 645 - Food Technology in Italy**Credits:** 4

Food Technology in Italy introduces students to modern and traditional technologies employed in the Marche region in the industrial processing of foods. The course examines the environmental impact as well as sustainability in terms of the production of healthful quality food products. It is offered through UNH-in-Italy Program in Ascoli Piceno.

ITAL 651 - Introduction to Italian Culture and Civilization I: Middle Ages, Renaissance, Baroque**Credits:** 4

Survey of major representative writers and artists, studied against the backdrop of social and cultural history. Dante, Petrarch, Boccaccio, Machiavelli, Marino. Pre- or Coreq: ITAL 631 or permission. Special fee. (Not offered every year.) Writing intensive.

Attributes: Writing Intensive Course

ITAL 652 - Introduction to Italian Culture and Civilization II: Age of Enlightenment, Romanticism, Modernism**Credits:** 4

Survey of major representative writers and artists, studied against a backdrop of social and cultural history. Parini, Goldoni, Leopardi, Manzoni, Pavese, Calvino. Pre- or co-req: ITAL 631 or permission. Special fee. (Not offered every year.) Writing intensive.

Attributes: Writing Intensive Course

ITAL 675 - Special Topics in Italian Studies**Credits:** 4

Topics drawn from all aspects and periods of Italian Studies. Prereq: ITAL 631 or permission of the instructor. May be repeated for credit barring duplication of materials.

ITAL 681A - Interdisciplinary Field Seminar in Italian Culture: Ancient and Medieval Italy**Credits:** 4

Taking an interdisciplinary, but historically centered perspective, this course examines the construction of Italy as both a nation and a culture. The course is conducted on site and includes several fieldtrips throughout Italy.

Attributes: Historical Perspectives(Disc)

ITAL 681B - Interdisciplinary Field Seminar in Italian Culture: Ancient and Medieval Italy**Credits:** 4

Taking an interdisciplinary, but historically centered perspective, this course examines the construction of Italy as both a nation and a culture. The course is conducted on site and includes several fieldtrips throughout Italy.

Attributes: Humanities(Disc)

ITAL #682A - Interdisciplinary Field Seminar in Italian Culture: Early Modern and Contemporary Italy**Credits:** 4

Taking an interdisciplinary, but historically centered perspective, this course examines the construction of Italy as both a nation and a culture. The course is conducted on site and includes several fieldtrips throughout Italy.

Attributes: Historical Perspectives(Disc)

ITAL #682B - Interdisciplinary Field Seminar in Italian Culture: Early Modern and Contemporary Italy**Credits:** 4

Taking an interdisciplinary, but historically centered perspective, this course examines the construction of Italy as both a nation and a culture. The course is conducted on site and includes several fieldtrips throughout Italy.

Attributes: Humanities(Disc)**ITAL 684 - UNH-in-Italy Summer Program****Credits:** 0

UNH-in-Italy summer programs in Ascoli Piceno. A) Intensive Italian, B) Italian Cinema and Culture, C) Explorations in Nutrition and Culture, D) EcoGastronomy, E) Music and Language in Italy. These course numbers are placeholders, and differ with regard to the special fee. Students are registered for both this administrative course number and the actual course number(s) of the course(s) being offered on site. Permission required. Special fee. Cr/F.

Co-requisite: INCO 589**Attributes:** World Cultures(Discovery)**ITAL 685 - UNH-in-Italy Study Abroad****Credits:** 0

Provides a unique opportunity to study abroad in Ascoli Piceno, Italy during the fall semester. Special fee. Cr/F.

Attributes: World Cultures(Discovery)**ITAL 686 - UNH-in-Italy Study Abroad****Credits:** 0

Provides a unique opportunity to study abroad in Ascoli Piceno, Italy during the spring semester. Special fee. Cr/F.

Co-requisite: INCO 588**Attributes:** World Cultures(Discovery)**ITAL 733 - History and Development of the Italian Language****Credits:** 4

Development of the Italian language from Roman times to the present. Examines the comparative method and internal reconstruction as well as processes of changes in phonology, syntax and lexicon. The course introduces issues in dialect geography, the basic features of paleography and surveys the evolution of scripts. Prereq: ITAL 631 or above or permission of instructor. Special fee.

ITAL 795 - Independent Study in Italian Language and Literature**Credits:** 1-4

Individual guided study. Prereq: permission. Special fee.

ITAL 796 - Independent Study in Italian Language and Literature**Credits:** 1-4

Individual guided study. Prereq: permission. Special fee.

Japanese (JPN)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

JPN 401 - Elementary Japanese I**Credits:** 4

Elements of Japanese grammar. Oral practice and written drills designed to achieve a mastery of basic grammatical patterns. Reading of graded exercises introducing the student to written Japanese (Hiragana and Katakana) and Chinese characters used in contemporary Japan. Labs. (No credit for students who have had two or more years of Japanese in secondary school; however, any such students whose studies of Japanese have been interrupted for a significant period of time should consult with the department chairperson about possibly receiving credit.) Special fee.

JPN 402 - Elementary Japanese II**Credits:** 4

Elements of Japanese grammar. Oral practice and written drills designed to achieve a mastery of basic grammatical patterns. Reading of graded exercises introducing the student to written Japanese (Hiragana and Katakana) and Chinese characters used in contemporary Japan. Labs. (No credit for students who have had two or more years of Japanese in secondary school; however, any such students whose studies of Japanese have been interrupted for a significant period of time should consult with the department chairperson about possibly receiving credit.) Special fee. Prereq: JPN 401.

Attributes: Foreign Language Requirement**JPN 425 - Introduction to Japanese Culture and Civilization****Credits:** 4

Taught in English and designed for students interested in exploring Japanese culture and society. Learning by means of lectures, discussions, guest speakers, selected readings, and multimedia. Does not fulfill B.A. foreign language requirement, but does fulfill the Group 5 foreign culture general education requirement. Also counts toward the Asian Studies Minor. Special fee. Writing intensive.

Attributes: World Cultures(Discovery); Writing Intensive Course**JPN 425H - Honors/Introduction to Japanese Culture and Civilization****Credits:** 4

Taught in English and designed for students interested in exploring Japanese culture and society. Learning by means of lectures, discussions, guest speakers, selected readings, and multimedia. Does not fulfill B.A. foreign language requirement, but does fulfill the Group 5 foreign culture general education requirement. Also counts toward the Asian Studies Minor. Special fee. Writing intensive.

Attributes: World Cultures(Discovery); Writing Intensive Course**JPN 503 - Intermediate Japanese I****Credits:** 4

Review of Japanese grammar. Reading of prose and practice in oral and written expression. Labs. Prereq: JPN 402 with a grade of C (2.00) or better or permission of instructor. Special fee.

Attributes: World Cultures(Discovery)**JPN 504 - Intermediate Japanese II****Credits:** 4

Review of Japanese grammar. Reading of prose and practice in oral and written expression. Labs. Prereq: JPN 402 with a grade of C (2.00) or better or permission of instructor. Special fee.

Attributes: World Cultures(Discovery)

JPN 631 - Advanced Japanese I**Credits:** 4

Advanced spoken and written Japanese to attain aural-oral fluency. Advanced reading and composition. Prereq: JPN 504 with a grade of C or better or permission of instructor. Writing intensive. Special fee.

Attributes: Writing Intensive Course**JPN 795 - Independent Study****Credits:** 1-4

Open to highly qualified juniors and seniors. To be elected only with the permission of department chairperson and of the supervising faculty member or members. Barring duplication of subject, may be repeated for credit.

JPN 796 - Independent Study**Credits:** 1-4

Open to highly qualified juniors and seniors. To be elected only with the permission of department chairperson and of the supervising faculty member or members. Barring duplication of subject, may be repeated for credit. Special fee.

Justice Studies (JUST)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

JUST 401 - Introduction to Justice Studies**Credits:** 4

Overview of justice studies as the study of law and law-like systems. Includes literature from both the law and society, and criminology. Topics will include morality versus legality, the American legal civil and criminal system, torts, and adult versus juvenile justice.

JUST 405 - Technology, Crime, and Society: A Forensic Exploration of High-Tech and Digital Crime**Credits:** 4

This course addresses the ways in which technology, crime, and law converge in the wider society in the twenty-first century. While emerging technologies bring great benefits, they also bring unintended and unforeseen consequences. This course uses a social science orientation to explore a new and evolving field of forensic technology.

Attributes: Environment,TechSociety(Disc)**JUST 410 - Sexual Harassment and Rape Prevention (SHARPP) Peer Advocacy****Credits:** 2

Provide education and awareness around issues of sexual and intimate partner violence, sexual harassment, and stalking. This course teaches students the skills needed to support survivors and their allies, by providing resources and advocacy, including university systems, medical, legal advocacy, and Title IX issues. This course allows for privileged communication by NH law, and requires a 1 year commitment to SHARPP Peer Advocacy. All majors accepted. Permission required.

JUST 415 - SHARPP Advocacy II**Credits:** 2

This course is a continuation of JUST 410. Advocates will demonstrate understanding of skills learned in JUST 410 by practical use of the skills on the Crisis Line. Prereq: JUST 410.

JUST 501 - Research Methods**Credits:** 4

Overview of the various methodologies used in justice studies research: quantitative, qualitative, and legal. Topics include issues of design such as ethics, reliability, and validity measurement. Students will design and write up research proposals using one of the methods reviewed in the course. Prereq: PSYC 402 or SOC 502 or equivalent.

Attributes: Inquiry (Discovery)**JUST 520 - Girls Gone Bad: Delinquent Girls in Cultural Context****Credits:** 4

This course explores the important and under-studied intersection between gender/girls and delinquency. Who is the typical female delinquent? What causes her to get into trouble? What happens to her if she is arrested? Topics include the extent and nature of adolescent girl's delinquency and theoretical explanations for delinquency. Focus on social contexts (family, peers, school), developmental and social psychological factors and adolescent girls' experiences with the juvenile system.

JUST #530 - Inside the Courtroom: Torn from the Headlines**Credits:** 4

JUST #530 provides students an overview of criminal law procedure. The course is expressly aimed to serve students in the humanities and social sciences who may work in law-related fields, pursue advanced course work in academic disciplines that focus on law-related phenomena or go to law school. The course uses a distance education model, which requires students to invest significant amounts of time and effort outside of "class" activities to master the salient concepts presented in the course. The course provides students with a thorough introduction to the major legal categories of crime. The course also provides students with an understanding of the importance and role of the law of criminal procedure through an exploration of current issues and controversies. From time to time the course touches upon comparative views of other legal traditions. Class discussions, readings, and assignments frequently use current New Hampshire law and criminal cases as points of reference.

Attributes: Humanities(Disc)**JUST 550 - Mock Trial****Credits:** 2

Participation in American Mock Trial Association intercollegiate competition. Study and preparation for trial of national case (criminal or civil, alternate years). Year long course, 2 credit hours per semester. May be repeated up to a maximum of 8 credits. Special fee. Permission required.

JUST 551 - Mock Trial**Credits:** 2

Participation in American Mock Trial Association intercollegiate competition. Study and preparation for trial of national case (criminal or civil, alternate years). Year long course, 2 credit hours per semester. May be repeated up to a maximum of 8 credits. Special fee. Permission required.

JUST 591 - Forensic Psychology**Credits:** 4

Forensic psychology is one of the fastest growing sub-fields in psychology and in fact one of the fastest growing disciplines in the world of social science. Still, most people in the general population as well as many individuals within the study of psychology know very little about what forensic psychology actually is. This course is designed to cover the various roles and issues that constitute the science of forensic psychology and to help student deepen their understanding of the various roles forensic psychologists play in the real world. Needless to say, this course will not train you to be a forensic psychologist, but hopefully it will spark your interest about a very exciting topic and encourage you to study some of the issues we touch on, as you move on academically.

JUST 595 - Special Topics**Credits:** 1-4

Special topics of advanced study in Justice Studies. Selected offerings reflect faculty expertise in teaching and research. May be repeated in different topic areas.

JUST 601 - Internship**Credits:** 4

Placement by the justice studies coordinator in a position related to the justice system (e.g., criminal courts, corrections, civil courts, law firms, policy-making agencies, law enforcement agencies); weekly class meetings. Prereq: permission; seniors only.

JUST 602 - Research Internship**Credits:** 4

Independent research working with Justice Studies faculty on their projects. Includes working with faculty at such research centers as Crimes against Children, Family Research Lab, and Justiceworks. Student/supervisor contract required. Minimum time commitment: 12 hours per week. Prereq: JUST 401, 501; or permission.

JUST 650 - Special Studies in Comparative Justice Systems**Credits:** 4

This course will involve periodic offerings in comparative analysis of justice systems in an international context. May be repeated for a total of 8 credits provided both course offerings are substantially different. Must be taken with JUST 651 for those students participating in the Justice Studies Budapest Program. Prereq: POLT 507 and/or SOC 515.

Co-requisite: COLA 657, INCO 588, JUST 651**JUST 651 - Field Studies in the Hungarian Justice System****Credits:** 6

This course is designed to provide Justice Studies Budapest Program students with first-hand experience with the workings of the Hungarian justice system. Weekly field trips to agencies in law enforcement, the courts, and correctional facilities in the Budapest area will be arranged, and periodic lectures by Hungarian criminal justice professionals and scholars will compliment these visits. Must be taken with JUST 650 for those students participating in the Justice Studies Budapest Program. Prereq: POLT 507 and/or SOC 515. Cr/F.

Co-requisite: COLA 657, INCO 588, JUST 650**JUST 701 - Senior Seminar****Credits:** 4

Advanced material in which the instructor has specialized knowledge through research and study. Topics may include the death penalty, terrorism, psychology of the jury, ethics and morality, immigration, therapeutic jurisprudence, and juveniles tried as adults. Prereq: JUST 401, 501.

Attributes: Writing Intensive Course**JUST 765 - Special Topics****Credits:** 4

New or specialized courses are presented under this listing. Staff present material not normally covered by the course offerings. Cross-listed courses. May be repeated but not duplicate content.

JUST 765W - Special Topics**Credits:** 4

New or specialized courses are presented under this listing. Staff present material not normally covered by the course offerings. Cross-listed courses. May be repeated but not duplicate content. Writing intensive.

Attributes: Writing Intensive Course**JUST 795 - Reading and Research****Credits:** 1-4

An independent study that is arranged by the student and supervised by a Justice Studies faculty member. Course requirements include: assembling and reading a substantial bibliography in the field; completing several written assignments and in some cases participating in hands-on experiences such as data collection and analysis. This course is by permission only and requires a signed agreement/proposal prior to registration. May be taken for 1-4 credits and includes a minimum of 3 hours of coursework per week per credit hour. Writing intensive in some select cases.

Kinesiology (KIN)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

KIN 406 - Intro to Athletic Training**Credits:** 1

Introduction to the profession of athletic training. Past, present, and future of athletic training in the U.S. and Internationally. Components of the academic and experiential preparation of athletic trainers. Overview of the professional and personal attributes to be successful in a health care profession. Kin: Athletic Training and Undeclared HHS majors only.

KIN 407B - Introduction to Outdoor Education & Leadership - Three Season Experiences**Credits:** 2

An exploration of three-season adventure programs and career opportunities in the outdoor field. Students will be introduced to a variety of on-campus outdoor pursuits programming in spring, summer, and fall, including hiking, orienteering, climbing, and watersports. An emphasis on experiential teaching and learning will help students understand essential elements in program planning, administration and risk management. You will examine current trends in public participation in three-season outdoor activities and employment in the outdoor field. No experience required.

KIN 444A - Risk and the Human Experience**Credits:** 4

Explores the construct of risk in two phases: 1) knowledge building, focusing on the historical development of risk and its current manifestations in contemporary society; and 2) knowledge application, which focuses on applying conceptions of risk to various case study examples. The second phase of the course employs a problem-based learning approach with four distinct modules that ask students to apply, experience, and evaluate risk in a variety of contexts. Each module includes: a) a case study description, b) an experiential exercise, and c) a collaborative debriefing of the experience and reflective application to broader societal issues.

Attributes: Social Science (Discovery); Inquiry (Discovery)

KIN 444C - Amped Up: Social and Psychological Perspectives on Adventure**Credits:** 4

Interest in the topic of adventure has exploded in recent years; with enough money, almost any adventure is available to anyone. The widespread rise in popularity of adventure brings questions, however. What is the role of adventure in modern society? What is its value to individuals? Through lectures, written assignments, group projects, multimedia, and experiential learning, this course surveys psychological, sociological, and anthropological perspectives on these and students' own questions. Special fee.

Attributes: Social Science (Discovery); Inquiry (Discovery); Writing Intensive Course

KIN 500 - Introduction to Health and Physical Education**Credits:** 2

This is a foundational course for anyone interested in the field of health and physical education (PE). Topics will include the role of health and PE in society, health and PE as a means for improving academic outcomes and the role health and PE teachers contribute to creating a culture of wellness in schools. Other topics for discussion include career considerations and future trends in the profession.

KIN 501 - First Aid: Responding to Emergencies**Credits:** 1

Covers the American Heart Association HeartSaver First Aid/CPR/AED: Adult, Child, Infant curriculum, the National Association of EMTs Bleeding Control for the Injured (BCon) curriculum which meets the Department of Homeland Security's Stop the Bleed initiative, and training for civilian responses to critical incidents. May repeat once for credit. Special fee. Cr/F.

KIN 505 - Activity, Injuries and Disease**Credits:** 4

Sports and exercise are a part of American society and are used as entertainment, leisure activity as well as a means to better health. Unfortunately while we partake in these activities few individuals are aware of the risks they are exposing themselves to. In addition as more women engage in sports and exercise medical science is realizing that many conditions and injuries are gender specific. It is well known that women athletes deal with reproductive, orthopedic and nutritional issues that differ greatly from men. Also we know that individuals with varying diseases benefit greatly from exercise. This course will join, musculoskeletal anatomy, injuries, gender and special problems together to explain how an individual can enjoy activities safely. In addition this course addresses the interpretation of current medical literature and how to utilize new information.

Attributes: Biological Science(Discovery)

KIN 506 - Concepts of Athletic Training for the Professional**Credits:** 4

Introduces techniques for prevention, recognition, treatment, and rehabilitation of common athletic injuries. Course is a prerequisite for beginning clinical experience in athletic training rooms for the athletic training professional. Prereq: BMS 507. Open to Athletic Training and HHS undeclared majors only.

Co-requisite: KIN 507

KIN 507 - Concepts of Athletic Training Lab**Credits:** 1

Theory and techniques of protective taping and wrapping to prevent common athletic injuries. Techniques of transfer and transportation of injured athletes. Identification of anatomical landmarks. Observation and practice in the University athletic training rooms. Special fee.

Co-requisite: KIN 506

KIN 515 - History of Outdoor Pursuits in North America**Credits:** 4

Voluntary pursuits in the outdoors have defined American culture since the early 17th century. Over the past 400 years, activities in outdoor recreation have reflected Americans' spiritual aspirations, imperial ambitions, social concerns, and demographic changes. This course will give students the opportunity to learn how Americans' experiences in the outdoors have influenced and been influenced by major historical developments of the 17th, 18th, 19th and 20th, and early 21st centuries. This course is cross-listed with RMP 515.

Attributes: Historical Perspectives(Disc)

KIN 520 - Contemporary Perspectives in Exercise Science**Credits:** 4

This course is designed to introduce undergraduate students to the field of Exercise Science. Research studies, experiential learning and professional development will be used to explore the different aspects of Exercise Science including fitness, wellness, human performance, research and clinical exercise physiology. Students will discover the many ways exercise is used as a health and fitness intervention. Career options will be studied and evaluated giving students an informed exposure to potential areas of future. Permission required.

KIN 521 - Theory of Coaching Basketball**Credits:** 2

Individual and team offense and defense; rules of the game. Problems in team handling and conditioning. Prereq: permission. Pre- or Coreq: KIN 565.

KIN 522 - Theory of Coaching Football**Credits:** 2

Systems of play; team and individual offensive and defensive fundamentals; theory and strategy of team play; coaching methods, physical conditioning; rules.

KIN 523 - Theory of Coaching Hockey**Credits:** 2

Basic hockey skills. Fundamentals of individual and team offense and defense; coaching methods; rules. Prereq: student must have basic skating skills prior to taking course. Pre- or Coreq: KIN 565. Special fee.

KIN 525 - Theory of Coaching Soccer**Credits:** 2

Fundamental and advanced skills and techniques; offensive and defensive principles of team play; tactical formations and strategy; methods of training and practicing; rules. Prereq: permission. Pre- or Coreq: KIN 565. Only open to KIN: Sport Studies majors.

KIN 527 - Scientific Foundations of Health and Fitness**Credits: 4**

Provides students with practical, scientific, entry-level information relative to physical conditioning, health, and wellness from childhood through adulthood. Students are given theoretical information that will be followed by practical, hands-on experiences offered through laboratories experiences. No credit given if credit earned for NUTR 506. Special fee. Writing intensive.

Attributes: Biological Science(Discovery); Discovery Lab Course; Writing Intensive Course

KIN 528 - Theory of Coaching Track and Field**Credits: 2**

Starting, sprinting, middle-distance and distance running, relay, hurdling, high and broad jumping, pole vault, shot putting, discus, hammer, and javelin. Methods of training and practicing. Prereq: permission. Pre- or Coreq: KIN 565.

KIN 533 - Basic Scuba**Credits: 3**

Full semester in the fundamentals of scuba diving. Through a progressive series of classroom lectures and pool sessions, students gain the knowledge and skill necessary to conduct themselves with competence underwater. Emphasizes safety and problem prevention. Once the students are ready, further training takes place in an open ocean environment. NAUI Certification for successful completion of all course requirements and at least five open-water dives. Strong swimming ability required. Special fee. Lab. Credit/Fail.

KIN 539 - Artificial Climbing Wall Management**Credits: 2**

The primary purpose of this course is an introduction to the procedures, methods, and techniques of artificial climbing wall management. Within the scope of this course, students will be introduced to operations, supervision, equipment and facility use/maintenance, risk management strategies, routesetting, individual and group programming/facilitation/teaching, technical skills and rescues/emergency procedures. A variety of teaching styles will be used to familiarize students with each topic area. Special fee. Optional certification fee. Lab.

KIN 540 - Top Rope Rock Climbing**Credits: 4**

Provides students with an understanding of the equipment, techniques, and procedures necessary for the setup and management top rope rock climbing and rappelling sites, including advanced rescue skills. Students also develop basic climbing movement techniques and skills, an understanding of the pedagogical techniques used in climbing, and the requisite knowledge/skill development to conduct safe top rope experiences in multiple settings. The format of this course is a combination of demonstration/lecture and "hands-on" learning with the emphasis upon student interaction and practical skill development. Special fee. Lab.

KIN 541 - Management of Challenge Courses**Credits: 4**

Provides students with an introduction to the basic facilitation/technical skills to manage a challenge course program. Exposure to intermediate technical skills usually required for lead facilitators. Specific topics include group process, framing, and sequencing, belay methods, participant and instructor equipment, operating procedures for low and high challenge course elements, and industry standards. Special fee. Lab.

KIN 542 - Sea Kayaking**Credits: 2**

An introduction to the technical, teaching, and leadership skills required to lead inland kayaking programs and to assist with coastal canoeing programs. Emphasis on individual kayaking skills, self- and group-assisted rescues, safety and group management in a marine environment, and tactics for ocean travel and navigation. Special fee. Lab.

KIN 543 - Winter Adventure Programming**Credits: 2**

An introduction to winter programming and backcountry travel, including snowshoeing and Nordic skiing, winter interpretation activities, backpacking, and winter camping. Emphasis on teaching of introductory winter programs and trips. Prereq: KIN:OE major, KIN 551 or instructor permission. Special fee. Lab.

KIN 545 - High Angle Rescue**Credits: 2**

Provides students with the skills necessary to perform self and group rescues in a variety of steep terrain and high angle environments. Students also gain the basic skills necessary for the implementation of self- and partner-rescues while in a technical climbing environment. The skills learned from this class will adapt readily to climber rescue, crevasse rescue, big wall rescue, cave rescue, and vertical urban rescue. Prereq: KIN 547 or instructor permission; KIN: Outdoor Education majors only. Special fee. Lab.

KIN 546 - White Water Canoeing**Credits: 3**

Introduces white water canoeing skills. Students gain a basic understanding of the equipment, techniques, and procedures to conduct canoeing activities in flat water, moving water, and white water environments. Emphasizes development of individual paddling skills, safe and conscientious paddling, and group management on moving water and white water. Prereq: Previous canoeing experience or KIN 552. Special fee. Lab.

KIN 547 - Lead Rock Climbing**Credits: 3**

Advanced climbing course designed to provide students with a structured environment to transition from top rope rock climbing or sport climbing to multi-pitch traditional lead climbing. Focuses on the development of the technical skills and judgment associated with leading in a multi-pitch environment. Specific topics include use of artificial protection, belay anchor construction, multi-pitch rappelling, knots, rope/belay station management, climbing technique, and multi-pitch leading considerations. Prereq: KIN 540 or instructor permission. Special fee. Lab.

KIN 548 - Winter Expedition Programming**Credits: 4**

Introduces methods and techniques of winter expedition travel including camping, snowshoeing, alpine climbing skills, technical skiing and ice climbing skills. A variety of teaching styles are used to familiarize students with each topic area, and occur in classroom, basecamp, and wilderness settings. Prereq: KIN OE majors, KIN 551. Special fee. Lab.

KIN 549 - Wilderness Navigation**Credits: 4**

Introduces the methods and techniques of wilderness navigation. Topics include map interpretation, compass use, global positioning systems, and other navigation methods. A variety of teaching styles are used to familiarize the students with each topic area, and occur in both classroom and wilderness settings. Special fee. Lab.

KIN 550 - Outdoor Education Philosophy and Methods**Credits: 4**

Explores the philosophical basis for experiential and outdoor education. Experiential exercises and readings focus on the role of risk, traditional versus progressive education, role of nature, ethics, models of learning and facilitation, and developing a personal philosophy of outdoor education. Includes full-day outdoor education laboratory experiences. Special fee. Writing intensive.

Attributes: Inquiry (Discovery); Writing Intensive Course

KIN 551 - Adventure Programming: Backcountry Based Experiences**Credits: 4**

Introduces the leadership of land-based backpacking programs. Students develop an understanding of backpacking equipment, trip planning and organization, instruction of basic camping skills, implementation of safety procedures and group management on backpacking trips. Special fee. Lab.

KIN 552 - Adventure Programming: Water Based Experiences**Credits: 3**

Introduces the leadership of canoe expeditions. Students develop an understanding of necessary canoeing equipment, trip planning and organization, instruction of basic canoeing strokes, implementation of safety procedures, and group management on canoe expeditions. Special fee. Lab.

KIN 560 - Sport Psychology**Credits: 4**

Introduction to the discipline of sport psychology. Explores behavioral, cognitive, and social psychology in relation to elite, collegiate, and high school athletes, as well as recreational sport participants.

KIN 561 - History of American Sport and Physical Culture**Credits: 4**

Major individuals, organizations, and trends that influenced the development of an American industry in sports, active recreation, and physical fitness. Readings, discussions, and research projects provide experience in the craft and utility of history.

Attributes: Historical Perspectives(Disc)

KIN 561W - History of American Sport and Physical Culture**Credits: 4**

Major individuals, organizations, and trends that influenced the development of an American industry in sports, active recreation, and physical fitness. Readings, discussions, and research projects provide experience in the craft and utility of history. Writing intensive.

Attributes: Historical Perspectives(Disc); Writing Intensive Course

KIN 562 - Sport Media Relations**Credits: 4**

A survey of basic concepts of sports media relations for students considering careers in school or college sports coaching or administration, media or related fields. The focus is on developing necessary skills, techniques and recommended media relations practices as well as social implications of the media in sports public relations including print, radio, television, the World Wide Web, and social media.

KIN 565 - Principles of Coaching**Credits: 4**

Overviews current theory and practice in coaching education, including sport pedagogy, physiology, psychology, administration, and risk management. Issues of performance and competition specific to child, youth, and collegiate coaching are addressed.

KIN 570 - Elementary Physical Education Practicum**Credits: 4**

This course requires sixty hours of observation and teaching experiences in physical education within an elementary school setting. The primary purposes are to: develop more confident and competent teaching skills in elementary physical education, to critically reflect on one's skills and to acquire a level of professionalism that will prepare pre-professionals. Special fee. Prereq: KIN 610; KIN: HLTH & PHYS ED.

Attributes: Writing Intensive Course

KIN 580 - Sport Industry**Credits: 4**

Overviews the various segments that make up the sport industry, including governing bodies, the mass media, sporting goods firms, players' and coaches' associations, public regulatory agencies, and secondary and higher education. Readings and discussions consider the development and structure of each segment. Interaction between segments, legal issues, and policy implications. While the course will focus on the United States, there is some comparison to other countries.

KIN 585 - Emergency Medical Responder**Credits: 4**

Standards of practice that conform to the content of the U.S. Department of Transportation curriculum for Emergency Medical Responder. Initial evaluation and stabilization of patients at the scene of medical emergencies, CPR, and other basic medical care for illness and injury. Prepares the student for the National Registry of EMT and EMR certifications exams. Prereq: KIN: Athletic Training; KIN: Exercise Science; HHS: undeclared. Lab. Special fee.

KIN 600 - Movement and Gymnastics Exploration**Credits: 4**

Combines the elements of movement education and gymnastics progressions to develop a basis for students to learn the fundamentals of movement and how to teach efficient and safe movement and gymnastics skills in a variety of settings. Includes fundamental movement skills, movement elements, fundamental gymnastics skills, and fundamental gymnastics spotting skills. Only open to Human Development & Family Studies, and KIN: Hlth & Phys Ed majors.

KIN 601 - Lifetime Sports**Credits: 3**

Provides students with the technical knowledge as well as the psychomotor and pedagogical skills necessary for instructing lifetime activities, including tennis, golf and cross country skiing, among others.

KIN 603 - Team Sports**Credits: 3**

Provides students with the technical, physical, and pedagogical skills necessary for instructing team sports, including soccer, basketball and volleyball, among others.

KIN 607 - Biology of Aging**Credits: 4**

Biological mechanisms of the aging process, with special emphasis on human aging; changes due to chronic disease.

Attributes: Biological Science(Discovery)

KIN 610 - Elementary Physical Education Pedagogy**Credits:** 4

Planning, implementing, and evaluating a movement-based curricular model of instruction relative to teaching preschool and elementary-aged children physical education. Systematic observation, teaching, strategies and styles, lesson design, and methods of integrating academic subject matter into elementary physical education. Prereq: Open only to KIN: Hlth & Phys Ed majors.

KIN 620 - Physiology of Exercise**Credits:** 4

Acute and chronic effects of exercise. Muscle physiology, respiration, cardiac function, circulation, energy metabolism, and application to training. Prereq: BMS 507 and BMS 508.

KIN 621 - Exercise Laboratory Techniques**Credits:** 4

Laboratory assessment of functional capacity, body composition, anaerobic power, anaerobic threshold, pulmonary function, blood pressure control, muscle strength, and temperature regulation. Field tests are used where appropriate. Extensive out-of-class time is required as each week a detailed lab report is submitted for grading. Prereq: KIN 620. KIN Exercise Science majors. Special fee. Writing intensive.

Attributes: Writing Intensive Course**KIN 630 - Sport Facility and Event Management****Credits:** 4

Students learn the principles and processes involved in effective sport facility and event management. In terms of facilities, students explore the concepts of facility design, planning, systems, risk management, marketing, and ownership. In terms of events, students explore the concepts of creation, impact(s) on host communities, marketing/sponsorship, and the potential positive and negative outcomes of sport events. Special fee.

KIN 643 - Social Media Marketing in Sport**Credits:** 4

Students examine the use of social media as a tool in the marketing of sport and sport-related products. They are expected to effectively analyze and prescribe different ways in which social media can enhance the marketing profile of such products upon course completion. Student work should facilitate a deep understanding of social media in its constituent forms as they apply to sport and students should be able to examine such use critically.

KIN 648 - Current Issues in Teaching Health**Credits:** 4

This course provides the background information and skills teachers need to implement a health education program in schools at the grade levels they are certified. Aligned with the CDC Characteristics for effective Health Education the course introduces the National Health Education Standards and prepares students on the development of teaching skills needed for implementing effective health education while including functional information based on local data and student need.

KIN 650A - Internship in Exercise Science**Credits:** 4 or 8

Individualized experiential training in an external (off-campus) exercise science setting (hospital, health & fitness club, business, physical therapy, or medical (physician assistant) offices, research laboratory) offering programs of prevention, intervention, and/or rehabilitation. The internship requires 400 contact hours and is a full-time commitment (10 weeks at 40 hours per week) usually taken the summer following the senior academic year. Activities may include graded exercise testing, exercise prescription, and exercise leadership. Must have completed all requirements for the option or have permission from the instructor prior to starting the internship. The course may be repeated once with 4 credits taken each time for a total of 8 credits. Cr/F. (IA continuous grading). Only open to KIN: Exercise Science majors.

KIN 650B - Internship in Outdoor Education**Credits:** 2-8

Experiential learning in a setting appropriate to the student's objectives. An 2 credit internship requires a minimum of 400 hours experience. Provides an appropriate transition from undergraduate education to future employment in the field of outdoor education. Generally done after students have completed all other requirements for the option. Prereq: permission. Cr/F. May be repeated up to a maximum of 8 credits. (IA continuous grading).

KIN 650C - Internship in Sport Studies**Credits:** 1-8

Experiential learning in a setting appropriate to the major option and to student's objectives. An 8 credit internship requires a minimum of 600 hours experience; fewer credits will require proportionally fewer hours. Sport Studies: May be on- or off-campus with an approved organization. Student must participate in securing the internship. A journal, bi-weekly reports and a final paper required. Prereq: junior/senior major; permission. May be repeated up to a maximum of 12 credits, with no more than 8 credits taken in any given semester. (IA continuous grading).

KIN 650D - Internship in Coaching**Credits:** 2-4

Experiential learning in a setting appropriate to student's learning objectives in coaching. May be on- or off-campus with an approved organization. Student must participate in securing the assistantship. A journal, bi-weekly reports, and final report required. May be repeated up to a maximum of 4 credits. Prereq: KIN 505, KIN 565. (IA continuous grading).

KIN 652 - Clinical Kinesiology**Credits:** 4

The science of human movement from biomechanical, neuromuscular, and anatomical perspectives; human muscular, joint, and connective tissue anatomy; and actions of skeletal muscles are detailed. Prereq: BMS 507 and BMS 508.

KIN 653A - Musculoskeletal Assessment**Credits:** 2

Principles and methodology of joint range of motion, body mechanics, and muscle strength evaluation. Uses muscle palpation, goniometry, manual muscle testing, hand-held dynamometry to facilitate understanding of musculoskeletal anatomy and assessment. Special fee. Prereq: BMS 507 and BMS 508.

KIN 653B - Biomechanical Analysis of Movement**Credits:** 2

Principles and methodology of analyzing posture and movement. Uses muscle palpation and testing, electromyography, and cinematography to facilitate students' understanding of movement analysis. Special fee. Prereq: BMS 507 and BMS 508.

KIN 655 - Middle School and Secondary Physical Education Pedagogy**Credits:** 4

Planning, implementing, and evaluating curricular models of instruction, as well as effective teaching strategies and styles relevant to secondary (grades 6-12) physical education is studied. Content and process knowledge is applied through micro-teaching episodes with peers. Systematic observation is introduced for the purpose of reflecting on teaching behaviors. Prereq: Only open to KIN: Hlth & Phys Ed majors.

KIN 658 - Evaluation and Care of Athletic Training Injury I**Credits:** 4

Factors involved in the care and recognition of athletic injuries. Mechanisms, etiology, and pathology. Clinical signs and symptoms. Techniques for performing appropriate test and assessment procedures. First aid procedures. Emphasizes fractures, soft tissue injury, and the lower extremities. Prereq: KIN 506; BMS 507 and BMS 508. Writing intensive.

Co-requisite: KIN 658L**Attributes:** Writing Intensive Course**KIN 658L - Evaluation and Care of Athletic Training Injury I Lab****Credits:** 1

Techniques and practice for performing test and assessment procedures for athletic injuries. Prereq: KIN 507.

Co-requisite: KIN 658**KIN 659 - Evaluation and Care of Athletic Training Injury II****Credits:** 4

Factors involved in the care and recognition of athletic injuries. Mechanisms, etiology, and pathology. Clinical signs and symptoms. Techniques for performing appropriate test and assessment procedures. First aid procedures. Emphasizes upper extremities, head, and trunk. Prereq: KIN 506; BMS 507 and BMS 508. Writing intensive.

Co-requisite: KIN 659L**Attributes:** Writing Intensive Course**KIN 659L - Evaluation and Care of Athletic Training Injury II Lab****Credits:** 1

Techniques and practice for performing test and assessment procedures for athletic injuries. Prereq: KIN 507.

Co-requisite: KIN 659**KIN 660 - Therapeutic Exercise in Athletic Training****Credits:** 4

Rationale, use, and application of exercise in athletic injury rehabilitation. Basic components of designing and implementing rehab programs. Assessment of physical/injury status.

Co-requisite: KIN 661**KIN 661 - Therapeutic Exercise in Athletic Training Laboratory****Credits:** 1

Students learn and practice psychomotor techniques associated with rehabilitative and conditioning exercise.

Co-requisite: KIN 660**KIN 662 - Therapeutic Modalities in Athletic Training****Credits:** 4

Rationale, use, and application of therapeutic modalities in athletic injury rehabilitation. Principles of electrophysics and biophysics. Physiological effects on body tissues, indications and contraindications, and clinical applications. Prereq: KIN 506; KIN 507.

Co-requisite: KIN 663**KIN 663 - Therapeutic Modalities in Athletic Training Laboratory****Credits:** 1

Students use and practice with the devices, machines, and techniques associated with the treatment and rehabilitation of athletic injuries.

Co-requisite: KIN 662**KIN 665 - Laboratory Practicum in Athletic Training****Credits:** 2

Clinical experience in athletic training under the supervision of UNH approved clinical instructor. Special fees (sections A-E) 2 credits (per section - 5 credits total). KIN 665A Prereq: KIN 506 and KIN 507. KIN 665B Prereq: KIN 658, and KIN 662. KIN 665C Prereq: KIN 659 and KIN 660. KIN 665D Co- or Prereq: KIN 710. KIN 665E Prereq: KIN 665D.

KIN 666 - Middle School and Secondary Physical Education Practicum**Credits:** 4

Students observe, assist and teach grades 6 through 12 within a public school. The course emphasizes lesson and unit plan design and implementation. Prereq: Open only to KIN: Hlth & Phys Ed majors. Writing intensive.

Attributes: Writing Intensive Course**KIN 667 - Pharmacology for Athletic Training****Credits:** 2

Introduces the use of drugs as they pertain to the health care of athletes and their effect on athletic competition. Topics to be covered will include basic drug action, commonly prescribed medications, dealing with the diabetic and asthmatic athlete and performance enhancing substances. Prereq: junior or senior Standing.

KIN 668 - Ergogenic Aids in Sports**Credits:** 2

In sports, faster, higher, stronger, longer, and better is what everyone wants. Athletes and coaches seek out sports ergogenics that will give them a training and performance advantage over their competition. This course introduces the use of sports ergogenics and their use in athletic competition. Prereq: sophomore, junior or senior Standing.

KIN 670 - General Medical Conditions in Athletics**Credits:** 4

Athletes often sustain non-orthopedic pathologic conditions. An athletic trainer must be able to recognize, assess, and determine appropriate action or referral in an athlete suffering general or systemic illness or disease. Covers conditions affecting the major systems of the body. Prereq: KIN 620.

KIN 671 - Health Education Pedagogy**Credits:** 4

This course provides the pedagogical foundation for teaching health education in K-12 settings. Aligned with the CDC's Characteristics of Effective Health Education Curriculum this course builds on previous knowledge of the National Health Education Standards and other appropriate practices in health education. As future educators, students will develop the ability to teach in ways that increase levels of health literacy and skill proficiency.

KIN 675 - Motor Development and Learning**Credits:** 4

This class examines motor development throughout the life-span utilizing an ecological perspective that incorporates the individual, the environmental conditions and the required tasks. Topics include developmental motor skills, motor milestones, elements of fitness, assessment, and appropriate teaching strategies that align learning with educational outcomes.

KIN 676 - Adventure Activities**Credits:** 3

Provides students with the technical, physical, and teaching skills necessary to instruct adventure activities, initiatives, ropes course management, and orienteering. Prereq: KIN: Hlth & Phys Ed majors or permission of instructors. Special fee.

KIN 681 - Theory of Adventure Education**Credits:** 4

Provides an in-depth investigation of the theories that underpin professional practice and research in adventure education. Students examine program applications in different settings, analyze pertinent outdoor education and social science research, and independently complete a research or applied project. Prereq: KIN 550 or permission of the instructor. Special fee. Writing intensive.

Attributes: Writing Intensive Course**KIN 682 - Experiential Teaching and Leadership****Credits:** 4

This class is an orientation to experiential learning, teaching, and leadership in an interactive environment. Students develop and implement lesson and program plans for internal and external agencies. Emphasis on learning methods, teaching and leadership styles, and risk management for youth and adult programs. Prereq: KIN 541, KIN 550, KIN 686.

KIN 684 - Emergency Medical Care: Emergency Medical Technician (EMT)**Credits:** 3

Based on the curriculum established by the U.S. Department of Transportation for Emergency Medical Technician, and authorized by the State of New Hampshire-Bureau of Emergency Medical Services (EMS). Topics covered include trauma; medical, environmental and psychiatric emergencies; childbirth; hazardous materials; and infection control procedures. Students participate in clinical observations in one of the region's hospital emergency departments. Students have the option to take the state of NH-EMS Practical Examination and the National Registry Written Examination for EMT. Passage of both these examinations leads to national certification as an EMT. Pre- or Coreq: ANSC 511 and ANSC 512, ZOO 401, BMS 507 and BMS 508.

Co-requisite: KIN 685**KIN 685 - Emergency Medical Care: EMT Lab****Credits:** 2

Basic emergency health care, including trauma patients, medical and environmental emergencies, and childbirth. Includes clinical experience with a local hospital and ambulance service. Prepares the student for the National Registry of EMT's Examination. Prereq: department approval. Pre- or Coreq: ANSC 511 and ANSC 512, ZOO 401, BMS 507 and BMS 508. Special fee.

Co-requisite: KIN 684**KIN 686 - Wilderness Emergency Medical Care****Credits:** 4

Standards of practice for professionals providing emergency medical care in remote areas. Consideration of prolonged transport times, severe environments, and the use of portable and improvised equipment. Topics include wilderness trauma and illness, search and rescue operations, and environmental emergencies. KIN: Outdoor Education majors. Special fee.

KIN 687 - Career and Professional Development Practicum**Credits:** 4

Explores professional competencies required in long-term careers in the outdoors. Includes job shadowing, teaching, and leadership experiences at external agencies. Students focus their learning experience in areas of the field that interest them and develop professional identity through self-assessment, resume development, job search processes, interview techniques, and negotiation strategies. Students co-design and focus their learning in specific areas of the field.

KIN 690 - Study Abroad in Kinesiology**Credits:** 16

A) Foreign study in, or related to, athletic training. Interested students should contact Program Director, Kinesiology Athletic Training Option. Prereq: KIN: Athletic Training majors only. special fee. Cr/F. Permission. B) Foreign study in, or related to, exercise science. Interested students should contact Program Director, Kinesiology Exercise Science Option. Prereq: KIN: Exercise Science majors only. special fee. Cr/F. Permission. C) Foreign study in, or related to, outdoor education. Interested students should contact Program Director, Kinesiology Outdoor Education Option. Prereq: KIN: Outdoor Education majors only. special fee. Cr/F. Permission. D) Foreign study in, or related to, physical education. Interested students should contact Program Director, Kinesiology Physical Education Option. Prereq: KIN: Physical Education majors only. special fee. Cr/F. Permission. E) Foreign study in, or related to, sports studies. Interested students should contact Program Director, Kinesiology Sports Studies Option. Prereq: KIN: Sports Studies majors only. special fee. Cr/F. Permission.

Co-requisite: INCO 588**Attributes:** World Cultures(Discovery)**KIN 693 - Teaching Assistantship****Credits:** 2

A) Physical Education Pedagogy; B) Exercise Leader; C) Outdoor Education; D) Science Labs; E) Cardiac Rehabilitation; F) Coaching. Students serve as teaching assistants in assigned class activities. Assignments to be made by the class instructor may include teaching assistants' and administrative duties. May take two different sections. May be repeated up to a maximum of 4 credits. Prereq: junior standing; departmental approval. Cr/F.

KIN 694 - Supervised Teaching in Health and Physical Education**Credits:** 4-6

This student teaching course is the capstone/culminating experience for students desiring teaching certifications in Health Education and Physical Education. All other required KIN courses need to be completed before student teaching. This course is for variable credit - 4 credits for teaching PE only, 6 credits for Health and PE. Students must also register for EDUC 694D for 4 credits. This course is Cr/F. Prereq: KIN 666, KIN 648, and KIN 712.

Co-requisite: EDUC 694D

KIN 696 - Independent Study**Credits:** 2-4

An advanced, individual scholarly project under the direct supervision of a faculty member. Prereq: junior or senior; departmental approval. May be repeated to a maximum of 8 credits. Special fee.

KIN 696W - Independent Study**Credits:** 2-4

An advanced, writing-intensive, individual scholarly project under the direct supervision of a faculty member. Student and Faculty Adviser will prepare a written proposal that outlines: the questions to be pursued, the methods of investigation, the student's qualifications to conduct the research, the nature of the finished written product (e.g. case study, position paper, extended lab report) This proposal must be approved by option faculty and the department chair prior to the student's registration for KIN 696 WI. All KIN 696 WI projects must include: Some forms of informal, ungraded writing such as a journal, reading summaries, draft chapters, or invention activities. Regular writing interaction between student and faculty adviser (i.e. at least weekly or biweekly), to include written feedback from the adviser. A finished product that is polished via revision. Faculty sponsors and students should consult the resources and guidelines of the UNH Writing Program. Prereq: junior or senior; departmental approval. May be repeated to a maximum of 8 credits. Writing intensive.

Attributes: Writing Intensive Course**KIN 699H - Honors Project****Credits:** 4

Project first involves tutorial sessions to introduce the student to the experimental design, after which a research question is developed. After an appropriate literature review, the student collects and analyzes data, forms conclusions, and prepares a written report on the findings.

KIN 702 - Health Content and Youth Risk Behavior**Credits:** 4

This course explores topics related to adolescent health, well-being, and risk behaviors that are relevant in the health education classroom today. Grounded in health behavior theories and behavior change, students explore ten dimensions of wellness: Cultural, Emotional, Environmental, Financial, Intellectual, Occupational, Physical, Sexual, Social, and Spiritual. Students develop a content base for teaching Standard 1 (Core Concepts) of the National Health Education Standards and better understand how health behaviors affect individual health and health instructions. Pre- or Co-req: KIN 648.

KIN 704 - Electrocardiography**Credits:** 4

Designed to provide exposure to basic interpretation and identification of electrocardiograms (ECGs). Includes detailed heart anatomy, coronary circulation, cardiac conduction system, electrocardiogram development, and all aspects pertaining to normal and abnormal ECGs. Prereq: KIN 621, KIN Exercise Science majors.

KIN 705 - Topics in Applied Physiology**Credits:** 4

Advanced exercise physiology course dealing with topics both current and relevant to exercise science majors. Includes genetics, environmental influences, immune system, detraining and over-training, epidemiology, ergogenic acids, and the influence of age and gender. Prereq: KIN 620, 621, KIN 736. KIN Exercise Science majors. Special fee.

KIN 706 - Neurology**Credits:** 4

Development, morphology, internal configuration, physiology, histology, function, and pathology of the human nervous system. Prereq: BMS 507-508 or equivalent.

Co-requisite: KIN 707**KIN 707 - Neurology Lab****Credits:** 2

Basic histology, neuroanatomy and neurophysiology of the human nervous system. Use of brain specimens, videos and pathology case studies to elucidate cell structure, sensory and motor systems, and spinal cord, brainstem and cortical organization and anatomy. Prereq: BMS 507-508 or COMM 521 or equivalent. Special fee. Cr/F.

Co-requisite: KIN 706**KIN 710 - Organization and Administration of Athletic Training Programs****Credits:** 4

Principles of organization and administration of athletic training programs; management of personnel; legal aspects; relation of athletic trainer to athletic programs and sports medicine team. Writing intensive.

Attributes: Writing Intensive Course**KIN 712 - Health Education Practicum****Credits:** 4

The purpose of this practicum is to provide students with the opportunity to observe, develop, and teach in a health education classroom. Students are required to accumulate 60 hours of teaching experience in the schools over the course of the semester. Weekly seminars will integrate field experience with content knowledge in health, nutrition and physical activity. Prereq: KIN 648.

KIN 715 - Seminar in Athletic Training**Credits:** 4

Career issues and special topics in athletic training. Students are required to submit and present a term project on assigned topic. Prereq: KIN 665C.

KIN 718 - Career Preparation in Athletic Training**Credits:** 4

The last Athletic Training required course, and designated "Capstone Experience", this course is designed to provide the students with means to integrate and augment concepts, skills, and knowledge gained in all previous major course requirements. Students write an evidenced-based-practice paper understanding and appreciating the role of evidence-based medicine in athletic training. Comprehensive practical exam. Prereq: KIN 665, sections A-D. Athletic Training majors only.

KIN 720 - Science and Practice of Strength Training**Credits:** 4

Designed to provide students exposure to the knowledge and practical experience necessary for establishing strength development programs in a variety of populations, including healthy, athletic, and higher risk individuals. Program design, correct lifting techniques, physiological adaptations, and organization and administration of programs are highlighted. Includes fundamentals regarding the selection of programs and equipment, spotting techniques, as well as ways to assess strength and power in humans without expensive equipment. Prereq: KIN 620, KIN 621, or Instructor Permission.

KIN 722 - Applied Biomechanics**Credits: 4**

This course provides students with a background in the fundamental biomechanical principles that describe and govern human movement. Topics of the course will include friction, linear and angular motion, tissue mechanical properties, conservation of energy, work and power, fluid mechanics, stability and center of gravity, walking and running gait analysis. These topics are taught by quantitatively analyzing human movements through the use of modern biomechanical analyses including dynamometry, electromyography, accelerometry, and optical motion analysis. Prereq: BMS 507, BMS 508, KIN 621 or permission. KIN: Athletic Training major or permission.

KIN 724 - Exercise Metabolism: Acute and Chronic Adaptations**Credits: 4**

Overview of the metabolic processes that occur during exercise and metabolic changes that occur as a result of exercise training. Topics include glycogenolysis and glycolysis in muscle, cellular oxidation of pyruvate, lipid metabolism, metabolism of proteins and amino acids, neural and endocrine control of metabolism, and fatigue during muscular exercise. Prereq: KIN 621; CHEM 404; KIN: Exercise Science majors. Special fee.

KIN 730 - Research Diving Techniques**Credits: 4**

Takes previously certified divers with the need to assist, or conduct research underwater, and trains them in the methods and specific techniques of scientific diving programs. Progressively builds upon the basic diving skills until the student is knowledgeable and competent. Culminates with a small research project formulated and implemented by the students. Prereq: SCUBA certification, department approval. Special fee. (Also offered as ZOO 730.)

KIN 731 - Inclusive Teaching Through Sport**Credits: 4**

This hybrid course examines the practical application of inclusion through Paralympic and adapted sports including wheelchair basketball, sitting volleyball, goalball, boccia, table-top games and "traditional" sports. In-class sessions will be held the first three weeks while an on-line/independent portion will be conducted the last two weeks of the course. A variety of sporting activities will be introduced that provide educators with the needed tools to develop and implement physical and recreational programs for all.

KIN 735 - Advanced Scuba**Credits: 4**

Classroom, pool, and open-water "hands-on" application in advanced diving techniques. The student's diving ability progresses to become safer and highly educated in a variety of diving disciplines. Topics covered are navigation, search and recovery, low visibility/night diving, surface supplied diving, boat diving, accident management hyperbaric medicine, and physiology and scientific research methods for divers. Special fee. Lab.

KIN 736 - Fitness and Graded Exercise Testing**Credits: 4**

Designed to provide students exposure to the knowledge and practical experience necessary for establishing exercise programs in apparently healthy populations. Topics include fitness testing, test interpretation, and exercise prescription. Prereq: KIN 621, KIN 704, KIN Exercise Science majors. Special fee.

KIN 737 - Exercise Prescription and Leadership in Healthy and Special Populations**Credits: 4**

Provides exposure to the knowledge and practical experience necessary for establishing exercise and health promotion programs in a variety of populations. Includes fundamentals regarding personal training and program selection, implementation and equipment, legal issues, and budget establishment. Strength training programs and special populations are highlighted. Prereq: KIN 621, KIN 736; KIN: Exercise Science majors.

KIN 740 - Athletic Administration**Credits: 4**

Introduces basic management components and processes used in the successful administration of school and college athletic programs. Topics include planning, organizing, and managing sports programs, personnel, and policies; game scheduling; finances and facilities; equipment and event management; student support services; and key legal issues.

KIN 741 - Social Issues in Contemporary Sports**Credits: 4**

Investigation of interrelationships among sport, culture, and society in an attempt to understand the role and function of sport in contemporary society. Overview of selected socio-cultural factors that influence and result from participation in sports.

KIN 742 - PE Practicum for Students with Disabilities**Credits: 4**

This experience is part of the required coursework for the Adapted Physical Education (PE/APE) certificate through the Graduate School. As a bi-weekly seminar intergrates the field experience with general physical education (GPE) and adapted physical education (PE/APE) concepts through class discussion, exercises, readings, and written assignments. The seminar format provides an opportunity for refinement and continued development of teacher skills and attributes for working with students with disabilities. Students learn to instruct effectively, to participate in the Individual Education Plan (IEP) process, and to manage their time.

KIN 743 - Sport Marketing**Credits: 4**

Survey of concepts and processes used in the successful marketing of sport programs and events. Special emphasis on the unique or unusual aspects of sport products, markets, and consumers. Prereq: MKTG 550 or permission.

KIN 761 - Senior Seminar Sport Studies**Credits: 4**

Discussions of sport studies topics, such as gambling, aggression, media, gender, race, class. Students consider different disciplinary approaches to these topics and develop projects to advance knowledge related to their interests. Prereq: KIN: Sport Studies majors; students must accumulate an aggregate total of 150 hours of work (paid or unpaid) in four approved sport organizations before they are allowed to register for KIN 761. Writing intensive.

Attributes: Writing Intensive Course

KIN 765 - Advanced Topics in Coaching**Credits:** 4

This course goes beyond the basic principles of coaching and addresses advanced topics in coaching (talent identification, talent development) from both the science and the art of coaching technique and strategies. This course is structured as an upper division course in Sports Studies. Content includes topics related to the development of the field of coaching. The class makes extensive use of case studies and analysis of practical coaching situations for the betterment of coach development. This course combines lecture, small group discussion and practical application of material. Prereq: KIN 565.

KIN 780 - Psychological Factors in Sport**Credits:** 4

Factors of outstanding athletic achievement; psychological variables in competition; the actions and interactions of sport, spectator, and athlete. Special attention directed to strategies for coaches, teachers, and athletic trainers to utilize sport psychology in their professional practice. Prereq: PSYC 401.

KIN 781 - Inclusion in Physical Education**Credits:** 4

The course examines the needs of individuals with disabilities in school based and physical activity settings. Legal mandates that define school policy and student placement are addressed while discussing the various teaching orientations that inform practice. This course also includes hands-on teaching experiences across a range of ages and disabilities that shape teaching competencies.

Attributes: Writing Intensive Course**KIN 782 - Therapeutic Applications of Adventure Programming****Credits:** 4

A study of theory, practice, and research of adventure experiences in therapeutic settings. Incorporates theoretical seminars and associated practical experiences. Prereq: KIN 787.

KIN 786 - Organization and Administration of Outdoor Education Programs**Credits:** 4

Study of administration of outdoor education programs using a variety of organizational models. Students use simulated exercises and work with outdoor agencies on special projects to learn the key factors necessary to manage a program. manage a program. KIN Outdoor Education majors. Special fee. Writing intensive.

Attributes: Writing Intensive Course**KIN 794 - Cardiopulmonary Pathologies****Credits:** 4

Lecture study of the anatomy, physiology, and pathophysiology of the cardiac, vascular, and pulmonary systems. Particular emphasis on the study of cardiovascular function in diseased and stressed states. Clinical assessment of the cardiopulmonary patient. Prereq: KIN 704.

KIN 795 - Practicum in Cardiac Rehabilitation**Credits:** 2

Provides students with practical and theoretical experience in all aspects involving cardiac rehabilitation programs. Prereq: KIN 704, 794. Kin: Exercise Science majors only.

KIN 798 - Special Topics**Credits:** 1-4

New or specialized courses not normally covered in regular course offerings. May be repeated up to 8 credits. Special fee on some sections.

Languages, Literatures & Cultures (LLC)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

LLC #444C - World of Salvador Dali**Credits:** 4

Students investigate essential components of modern culture and Western tradition through the mind, art and writing of Salvador Dalí. This interdisciplinary course poses fundamental, universal questions about human existence including death, rebirth, eternity and God, sexuality and love as well as the irrational dark side of our psyche. Certain cultural movements such as the Surrealist movement, Freudian psychoanalysis, the Gothic tradition and modern scientific discoveries and concepts are also explored. Special fee. Writing intensive.

Attributes: Humanities(Disc); Inquiry (Discovery); Writing Intensive Course**LLC 535 - Professional Culture in the European Union - Case Study/****Germany****Credits:** 4

Conducted in English. No previous German required. Conducting business with countries of the European Union, with a particular emphasis on Germany. The course focuses on the central role played by professional culture and business practices in the global marketplace.

Attributes: World Cultures(Discovery)**LLC 535A - Professional Culture in European Union - - Case Study:****Germany****Credits:** 4

No previous German required. Conducting business with countries of the European Union, with a particular emphasis on Germany. The course focuses on the central role played by professional culture and business practices in the global marketplace. Special fee.

Attributes: World Cultures(Discovery)**LLC 535B - Professional Culture in Latin America - Case Study:Mexico****and Brazil****Credits:** 4

Conducted in English. No previous Spanish or Portuguese required. Conducting business with countries in Latin America with a particular emphasis on Mexico and Brazil. The course focuses on the central role played by professional culture and business practices in the global marketplace. Special fee.

Attributes: World Cultures(Discovery)**LLC 535C - Professional Culture in Asia -- Case Study: China and Japan****Credits:** 4

Conducted in English. No previous Chinese or Japanese required. Conducting business with countries in Asia, with a particular emphasis on China and Japan. The course focuses on the central role played by professional culture and business practices in the global marketplace. Special fee.

Attributes: World Cultures(Discovery)

LLC 540 - Film History**Credits:** 4

Examines the historical development of film from a global perspective and the emergence of national cinemas as well as the cross-cultural influences that have produced the modern transnational film industry. Special fee.

Attributes: Historical Perspectives(Disc)**LLC 551 - Comparative Literature: Masterpieces of World Literature I****Credits:** 4

Comparative studies of major authors representative of important periods of literary achievement. Common themes and development of epic and lyric traditions in early Western and non-Western literatures. Introduction to various concepts of literature and genre. Topics and approaches may vary from semester to semester. Special fee. Writing intensive.

Attributes: Humanities(Disc); Writing Intensive Course**LLC #552 - Comparative Literature: Masterpieces of World Literature II****Credits:** 4

Comparative studies of major authors representative of important periods of literary achievement. Renaissance to modern. Studies the age of empires through the colonial and post colonial periods. Introduction to various concepts of literature and genre. Topics and approaches may vary from semester to semester. Special fee. Writing intensive.

Attributes: Humanities(Disc); Writing Intensive Course**LLC 555 - Discover Cuba: An Arts Experience****Credits:** 4

This discovery course is designed to provide students with first-hand experience of the art, history, culture, music and visual arts of Cuba. The course combines an online academic class with on-site experiential learning through a fourteen day trip to Cuba. The course takes a highly contextual approach, locating the artwork in its historical, social, economic and cultural context for students to analyze and understand the complexities of modern Cuba. Special fee.

Attributes: FinePerformingArts(Discovery)**LLC 595 - Language Practicum****Credits:** 2-4

Practical use of language skills outside the classroom through special projects. Prereq: LLC 504 or its equivalent. May be repeated up to a maximum of 4 credits. Cr/F.

LLC 642 - Theory and Practice of Translation**Credits:** 4

This course is designed both as an introduction to various theories and philosophies of translation and as an intensive workshop on different types of translation (literary, technical, professional, business, and health related, etc.). Translation is both a simple matter of transferring content and an intensely complex process of adapting linguistic, tonal, and cultural components of communication. The course works extensively on the craft of translation while developing detailed analyses of the theoretical and philosophical implications of choices made. Students complete various translation exercises and develop a significant final project. It is open to students at different levels of language ability but requires at least an intermediate competency. Students work at their own level. Taught in English. Prereq: Intermediate language or permission. Special fee.

LLC 695 - International Internship**Credits:** 12

Field experience in governmental or nongovernmental organization abroad. Students are responsible for identifying and making arrangements with the sponsoring internship organization. All such arrangements are subject to the approval of the Department of Languages, Literatures, and Cultures. Open to juniors and seniors with at least a 3.2 G.P.A. Permission from the Program Coordinator and the Department chair is required. Approval of the Center for International Education is also required. Only open to European Cultural Studies majors. The internship is for 12 credits (non-variable). Cr/F.

LLC 791 - Methods of Foreign Language Teaching**Credits:** 4

Objectives, methods and techniques in teaching foreign languages from elementary grades through college. Discussion, demonstration, preparation of instructional materials, microteaching of the language skills, including developments in computer-aided instruction. Special fee.

Latin (LATN)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

LATN 400 - Grammar for Students of Latin**Credits:** 1

A one-semester review of grammar provides a background in concepts for those students who have never studied Latin or who need review. Weekly meetings introduce topics; readings and assignments reinforce them. Enrollment is limited to students enrolled in LATN 401, LATN 402, or LATN 403. Course does not count toward major or minor requirements. May be repeated for up to 2 credits. Coreq: LATN 401 or LATN 402 or LATN 403. Cr/F.

LATN 401 - Elementary Latin I**Credits:** 4

Elements of grammar, reading of simple prose. (No credit for students who have had two or more years of Latin in secondary school; however, any such students whose studies of Latin have been interrupted for a significant period of time should consult the section supervisor about possibly receiving credit.) Special fee.

LATN 402 - Elementary Latin II**Credits:** 4

Elements of grammar, reading of simple prose. (No credit for students who have had two or more years of Latin in secondary school; however, any such students whose studies of Latin have been interrupted for a significant period of time should consult the section supervisor about possibly receiving credit.) Special fee.

Attributes: Foreign Language Requirement**LATN 403 - Review of Latin****Credits:** 4

Intensive review of Latin grammar and vocabulary. Preparation for LATN 503. Designed primarily for those whose study of Latin has been interrupted for a year or more and for those who have had only two years of high school Latin. Special fee.

LATN 503 - Intermediate Latin I**Credits:** 4

Review. Readings from Cicero, Caesar, Sallust, Livy, Catullus, Horace, Ovid, Plautus, Terence, and Seneca. Prereq: LATN 402 or equivalent. Special fee.

Attributes: World Cultures(Discovery)

LATN 504 - Intermediate Latin II**Credits:** 4

Review. Readings from Cicero, Caesar, Sallust, Livy, Catullus, Horace, Ovid, Plautus, Terence, and Seneca. Prereq: LATN 402 or equivalent. Special fee.

Attributes: World Cultures(Discovery)**LATN 595 - Directed Reading****Credits:** 2 or 4

Independent study of a classical or medieval Latin author. May be repeated to a maximum of 8 credits. Prereq: LATN 503, LATN 504, or equivalent. Special fee. Cr/F.

LATN 596 - Directed Reading**Credits:** 2 or 4

Independent study of a classical or medieval Latin author. May be repeated to a maximum of 8 credits. Prereq: LATN 503, LATN 504, or equivalent. Special fee. Cr/F.

LATN 605 - Readings in Latin Literature**Credits:** 4

Reading and analysis of major works of Latin literature. Focus on improving translation skills and comprehension of Latin grammar and Latin language. Introduction to the critical analysis of Latin literature in the context of Roman civilization and culture. Prereq: Latin 504 or equivalent with a grade of C or better. Satisfies foreign language requirement. Special fee.

Attributes: Foreign Language Requirement**LATN 606 - Readings in Latin Literature****Credits:** 4

Reading and analysis of major works of Latin literature. Focus on improving translation skills and comprehension of Latin grammar and Latin language. Introduction to the critical analysis of Latin literature in the context of Roman civilization and culture. Prereq: Latin 504 or equivalent with a grade of C or better. Satisfies foreign language requirement. Special fee.

LATN 631 - Latin Prose Composition**Credits:** 4

Grammar review; study of Latin prose style; English to Latin translation. Prereq: permission. Special fee.

LATN 753 - Advanced Studies in the Literature of the Golden Age**Credits:** 4

A) Lucretius; B) Catullus; C) Caesar; D) Sallust; E) Vergil; F) Horace; G) Tibullus; H) Propertius; I) Ovid; J) Livy. Major Roman authors from the dictatorship of Sulla to the death of Augustus. Prereq: permission. Special fee. Writing intensive. Each special topic may be repeated two times for up to eight credits.

Attributes: Writing Intensive Course**LATN 754 - Advanced Studies in the Literature of the Golden Age****Credits:** 4

A) Lucretius; B) Catullus; C) Caesar; D) Sallust; E) Vergil; F) Horace; G) Tibullus; H) Propertius; I) Ovid; J) Livy. Major Roman authors from the dictatorship of Sulla to the death of Augustus. Prereq: permission. Special fee. Writing intensive. Each special topic may be repeated two times for up to eight credits.

Attributes: Writing Intensive Course**LATN 755 - Advanced Studies in the Literature of the Silver Age****Credits:** 4

A) Seneca the Younger; B) Persius; C) Petronius; D) Lucan; E) Statius; F) Quintilian; G) Martial; H) Juvenal; I) Tacitus; J) Pliny the Younger. Major Roman authors from the reign of Nero to the death of Trajan. Prereq: permission. Special fee. Writing intensive. Each special topic may be repeated two times for up to eight credits.

Attributes: Writing Intensive Course**LATN 756 - Advanced Studies in the Literature of the Silver Age****Credits:** 4

A) Seneca the Younger; B) Persius; C) Petronius; D) Lucan; E) Statius; F) Quintilian; G) Martial; H) Juvenal; I) Tacitus; J) Pliny the Younger. Major Roman authors from the reign of Nero to the death of Trajan. Prereq: permission. Special fee. Writing intensive. Each special topic may be repeated two times for up to eight credits.

Attributes: Writing Intensive Course**LATN 795 - Special Studies****Credits:** 4

A) Minor Authors of the Republic; B) Plautus; C) Terence; D) Minor Authors of the Empire; E) Suetonius; F) Latin Church Fathers; G) Medieval Latin; H) Advanced Latin Composition; I) Introduction to Classical Scholarship; J) Latin Epigraphy; K) Italic Dialects; L) Comparative Grammar of Greek and Latin; M) Roman Law. Topics selected by instructor and student in conference. Prereq: permission. Special fee. Writing intensive. Each special topic may be repeated two times for up to eight credits.

Attributes: Writing Intensive Course**LATN 796 - Special Studies****Credits:** 4

A) Minor Authors of the Republic; B) Plautus; C) Terence; D) Minor Authors of the Empire; E) Suetonius; F) Latin Church Fathers; G) Medieval Latin; H) Advanced Latin Composition; I) Introduction to Classical Scholarship; J) Latin Epigraphy; K) Italic Dialects; L) Comparative Grammar of Greek and Latin; M) Roman Law. Topics selected by instructor and student in conference. Prereq: permission. Special fee. Writing intensive. Each special topic may be repeated two times for up to eight credits.

Attributes: Writing Intensive Course

Life Sciences & Agriculture (LSA)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

LSA 400 - Freshmen Seminar**Credits:** 1

Assistance to the undeclared student in identifying a major within the College of Life Sciences and Agriculture, including the biological, natural, and social sciences. The goal of this seminar is to support students in developing a sound academic program and assist them in making a successful transition from high school to college. The seminar also covers strategies for being a successful college student. Guest speakers from departments and programs lead discussions on career opportunities. Required for all first-semester LSA undeclared students. Cr/F.

LSA 401 - Scientific Research Exploration**Credits:** 2

This course introduces incoming freshmen to the scientific research process via a hands-on approach, which includes case studies, group work, and a two-week research immersion experience under the guidance of the College of Life Sciences and Agriculture (COLSA) faculty. Course readings, discussions, and active participation in local research will facilitate the student's exploration of experimental design, hypothesis testing, data collection and analysis, interpretation of results, and effective communication of research findings. In the context of a group research project, students begin thinking like scientists, as well as strengthening their math, writing, and oral communication skills. Prereq: permission. Open to incoming freshmen only.

LSA 500 - College of Life Sciences and Agriculture Career Development**Credits:** 1

Deciding on a career path? This course will provide an opportunity for students to explore career trajectories, learn about a variety of industries in the labor market, understand the importance of and plan for experiential learning opportunities, and develop a career action strategy and marketing plan in preparation for post-graduation plans.

LSA 699 - Special Topics**Credits:** 1-2

Seminar on new or specialized topics that involve two or more disciplines in the College of Life Sciences and Agriculture and are not covered in regular course offerings. May be repeated to a maximum of 4 credits.

LSA 700 - COLSA Capstone Experience**Credits:** 0

Course for COLSA majors completing their capstone requirement with a non-course experience. Must receive advisor's permission and sign up in department office. Cr/F.

LSA 798 - Who's on First? Interprofessional Colloquium**Credits:** 2

Students engage with other professions on teams working through health care situations across the continuum. Students collaborate with faculty mentors to learn effective strategies in team-based care and develop competencies in ethics, responsibility, communication and teamwork. (Also listed as HHS 798.) Cr/F.

Linguistics (LING)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

LING 405 - Introduction to Linguistics**Credits:** 4

Overview of the study of language: universal properties of human language, Chomsky's innateness hypothesis, language acquisition in children, dialects and language variation, language change. Includes an introduction to modern grammar (phonology, syntax, and semantics) and to scientific linguistic methodology. (Also offered as ENGL 405.)

Attributes: Social Science (Discovery); Inquiry (Discovery)**LING 405H - Honors/Introduction to Linguistics****Credits:** 4

Overview of the study of language: universal properties of human language, Chomsky's innateness hypothesis, language acquisition in children, dialects and language variation, language change. Includes an introduction to modern grammar (phonology, syntax, and semantics) and to scientific linguistic methodology. (Also offered as ENGL 405.)

Attributes: Social Science (Discovery); Inquiry (Discovery)**LING 605 - Intermediate Linguistic Analysis****Credits:** 4

Analysis and problem solving in phonology, morphology, and syntax using data from many languages. Emphasis is both practical (learning how to describe grammar and sound system of a language) and theoretical (understanding languages' behavior). Prereq: LING/ENGL 405, or permission. (Also offered as ENGL 605.)

LING 606 - Languages of the World**Credits:** 4

A survey of the languages of the world from genetic, areal, and typological perspectives. Students learn about the geographic and demographic distribution of language families and language isolates, as well as about structural characteristics of languages, language families and language areas. Additional topics include language endangerment and the question of linguistic universals. Students work collaboratively on a project investigating a particular language family, giving in class presentations and writing up a final project report. Some prior knowledge of phonetics, phonology, morphology, and syntax is necessary. Prereq: ENGL 605/LING 605 or ENGL 405/LING 405 and permission of the instructor.

LING 620 - Applied Experience in Linguistics**Credits:** 1-4

Students who have an opportunity for appropriate career-oriented work experience may arrange with a faculty sponsor to add an academic component. The work must be related to the linguistics major, and nonacademic employers must normally be an established organization approved by Career Services. Research and writing required in addition to the job experience. Registration requires permission of employer, faculty sponsor, and major adviser. May be repeated with permission to a maximum of 8 credits. Up to 4 credits may count toward the linguistics major requirements, with permission of the program coordinator. Prereq: LING 505; permission. Cr/F.

LING 695 - Senior Honors**Credits:** 4

Open to senior LING majors who, in the opinion of the department, have demonstrated the capacity to do superior work. Prereq: permission.

LING 719 - Sociolinguistics Survey**Credits:** 4

How language varies according to the characteristics of its speakers: age, sex, ethnicity, attitude, time, and class. Quantitative analysis methods; relationships to theoretical linguistics. Focus is on English, but some other languages are examined. Prereq: ENGL or LING 405 (previously numbered 505) or permission. (Also offered as ENGL 719.)

LING 779 - Linguistic Field Methods**Credits:** 4

Study of a non-Indo-European language by eliciting examples from an informant, rather than written descriptions of the language. Students learn how to work out the grammar of a language from raw data. Prereq: ENGL 405/LING 405. (Also offered as ENGL 779.) (Not offered every semester.) Writing intensive.

Attributes: Writing Intensive Course

LING 790 - Special Topics in Linguistics Theory**Credits:** 4

Advanced course on a topic chosen by the instructor. Inquire at the English department office for a full course description each time the course is offered. Topics such as word formation, dialectology, linguistic theory, and language acquisition, history of linguistics, language and culture, cross-disciplinary studies relating to linguistics. Barring duplication of subject, may be repeated for credit. (Also offered as ENGL 790.) Writing intensive.

Attributes: Writing Intensive Course**LING 793 - Phonetics and Phonology****Credits:** 4

Sound system of English and of other languages viewed from the standpoint of modern linguistic theory, including the following topics: the acoustic and articulatory properties of speech sounds, the phonemic repertoires of particular languages, phonological derivations, and prosodic phenomena such as stress and intonation. Prereq: a basic linguistics course or permission. (Also offered as ENGL 793.)

LING 794 - Syntax**Credits:** 4

Relationship of grammar and meaning viewed from the standpoint of modern linguistic theory. Emphasis on the syntax and semantics of English, with special attention to the construction of arguments for or against particular analyses. Prereq: a basic linguistics course or permission of the instructor. (Also offered as ENGL 794.) Writing intensive.

Attributes: Writing Intensive Course**LING 795 - Independent Study****Credits:** 1-4

A) Synchronic Linguistics, B) Diachronic Linguistics, C) Linguistic Theory. For students showing a special aptitude for linguistics who desire to pursue a line of inquiry for which no appropriate course is offered. All requests must be forwarded by the faculty sponsor to the director of the Inter-departmental Linguistics Committee.

LING 796 - Independent Study**Credits:** 1-4

A) Synchronic Linguistics, B) Diachronic Linguistics, C) Linguistic Theory. For students showing a special aptitude for linguistics who desire to pursue a line of inquiry for which no appropriate course is offered. All requests must be forwarded by the faculty sponsor to the director of the Inter-departmental Linguistics Committee.

Management (MGT)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

MGT 444 - Meaning of Entrepreneurship**Credits:** 4

This course explores the idea and ideals of entrepreneurship, the creating of value through individual initiative, creativity, and innovation. The idea of entrepreneurship is of significant relevance in the highly dynamic and competitive 21st century global economy. It is an idea that is important for students to understand and to critically consider and apply. The course encourages the development of multiple views of entrepreneurship, and uses a broad, not just business, approach to the study as it engages students in the subject matter. Open to freshmen from all majors. (Also offered as DS 444 in alternating terms). Writing intensive.

Attributes: Environment,TechSociety(Disc); Inquiry (Discovery); Writing Intensive Course**MGT 580 - Introduction to Organizational Behavior****Credits:** 4

Application of behavioral science concepts to work settings in profit and nonprofit organizations. Individual settings behavior, interpersonal relations, work groups, relations among groups studied in the context of organizational goals and structure. Experiential focus. For non-business administration majors and minors. No credit for students who have had ADMN 575.

MGT 598 - Topics**Credits:** 4

Special topics; may be repeated.

MGT 614 - Organizational Leadership and Structure**Credits:** 4

How structural characteristics in an organization (e.g., the design of roles, reporting relationships, coordinating mechanisms, communication systems, and processes, etc.) affect whether leader actions and choices enable or prevent high performance. An open systems framework is used to assess how reactions to change occurring inside and outside an organization determine whether individuals, groups, and organizations position themselves to adapt, grow and develop, or decline. Examination of individual roles in organizations. Prereq: ADMN 575.

MGT 647 - Business Law I**Credits:** 4

Law of contracts, agency, sales, negotiable instruments, real and personal property, partnership and corporations, with application of the Uniform Commercial Code. Prereq: Junior standing, ECON 401, ECON 402, and ADMN 420.

MGT 701 - Business, Government, and Society**Credits:** 4

Managerial problem solving and decision making relative to economic, ethical, legal, political, social, and technological aspects of an organization's environment. Case discussion, stakeholder analysis, managerial values and ethics, and social issues management are important course components. Open to WSBE majors only. Prereq: ADMN 575; at least two of ADMN 570 or ADMN 580 and ADMN 585..

MGT 713 - Leadership Assessment and Development**Credits:** 4

Activities and exercises to help students determine their ideal job upon graduation as well as their career goals for the next three to five years. Students learn a matrix of key leadership behaviors and skills that distinguish high-performing managers and executives. Each student's behavior is assessed using this model so that students can determine the leadership behaviors and skills they most need to develop to meet their early career goals. Faculty assist students in developing a personal leadership development plan to focus professional energy, efforts, and achievements over the next three to five years. Prereq: ADMN 575.

MGT 732 - Exploration in Entrepreneurial Management**Credits:** 4

Examines the management of change and innovation, especially the role of entrepreneur in managing new ventures. Uses case analysis, guest speakers, and business plan preparation to study the characteristic behavioral, organizational, financial, and marketing problems of entrepreneurs and new enterprises. Prereq: ADMN 570, ADMN 575, and ADMN 585. Writing intensive.

Attributes: Writing Intensive Course**MGT 742 - Internship in Entrepreneurial and Management Practice****Credits:** 4

Involves working for leading companies and dynamic entrepreneurs, as well as classroom instruction. The priority experiential, real-world, and real-time learning in the high growth environment of entrepreneurial ventures. Focuses on several topic areas, including venture capital. Prereq: senior standing; permission. (Also listed as DS 742.)

MGT 755 - International Management**Credits:** 4

Develops an understanding of international ventures and partnerships from the viewpoint of management, leadership, human resource management, and organizational structure and strategy. Emphasizes the impact of culture on business practices and on interpersonal skills and global perspectives needed for personal effectiveness in international and multicultural environments. Prereq: ADMN 575. Writing intensive.

Attributes: Writing Intensive Course**MGT 798 - Topics****Credits:** 4

Special topics; may be repeated. Prereq: permission.

MGT 798W - Topics**Credits:** 4

Special topics; may be repeated. Prereq: permission. Writing intensive.

Attributes: Writing Intensive Course

Marine, Estuarine and Freshwater Biology (MEFB)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

MEFB 401 - Marine Estuarine and Freshwater Biology: Freshmen Seminar**Credits:** 1

The purpose of this course is threefold: First to acquaint freshmen MEFB majors to the wide range of topics that are included in the broad area of marine, estuarine and freshwater biology. Second, to introduce new UNH students to many of the MEFB faculty at UNH and give them the opportunity to become aware of the types of research that is being conducted at UNH. Finally, to begin teaching freshmen how to read the primary literature, write concise summaries of papers they read, give oral presentations to their peers, and understand how scientific knowledge is acquired and disseminated. Students attend a series of seminars presented by a wide range of MEFB faculty. The topics presented vary from year to year depending on the faculty that agree to participate. In addition students are required to read the current literature, write short papers and give presentations to the class. Cr/F.

MEFB 403 - Investigative Marine Biology Laboratory**Credits:** 2-4

This course is an intensive marine-based introduction to the scientific method and experimental biology taught at a Shoals Marine Laboratory. The course takes advantage of the unique learning opportunities afforded by the pristine marine environment (especially the intertidal) around Appledore Island. The overall course philosophy is to allow students to learn the scientific method by doing it themselves under the guidance of veteran marine biologists. The course is structured around two class projects that are designed to expose students to concepts and techniques in marine ecophysiology and biomechanics. Permission required. Special fee.

MEFB 410 - Marine Immersion**Credits:** 2

An intensive 2-credit course for incoming freshmen, surveying a range of marine-related fields (with an emphasis on biology and ecology), research approaches, and organisms. The course is based at the Shoals Marine Laboratory on Appledore Island, where students, and some faculty, will be in residence. "Marine Immersion" introduces students to the breadth, excitement, and challenges of marine sciences through lectures, demonstrations, and field experiences offered by a cohort of UNH faculty, and through short research projects carried out on the island. It also introduces them to resources and opportunities available at UNH, provides an opportunity to get to know some of their professors, and lets them begin building a network among their peers even before they arrive in Durham. Special fee.

MEFB 500 - Coastal Habitat Field Research Methods**Credits:** 4

This two-week intensive field based course is intended for students who wish to explore and gain proficiency in various research and assessment methods of terrestrial and aquatic plant communities of the Isles of Shoals and nearby coastal habitats of the Seacoast and Great Bay Estuary. Topics covered will include quantitative surveys methods, GIS based an aerial (UAV) mapping of plant communities, taxonomy and systematics of major vascular taxa, island biogeography, rare species ecology and conservation, and the management of invasive species. Through both field and classroom exercises, we will use a variety of sampling protocols to document the existing plant communities, contribute to ongoing plant community studies, investigate the floristic changes that the Isles of Shoals have experienced from past to present, and use these data to predict trends into the future to help preserve their unique flora. Student will use skills developed in class to design and implement brief field research project in a related topic of their choice. Prereq: BIOL 411 or BIOL 412. Permission required. Special fee.

MEFB 503 - Introduction to Marine Biology**Credits: 4**

Emphasizes the organization of marine biological communities. Various marine environments pelagic, benthic, temperate, tropical, and their characteristic communities. Major emphasis on the approaches (e.g., analysis of energy flow and predator-prey interactions) used to analyze marine communities as well as the sampling techniques employed for each approach and the characteristic habitat type. Prereq: BIOL 411 and BIOL 412. Special fee.

MEFB 504 - Field Wildlife Forensics**Credits: 2**

Introduction to forensic science and the utilization of marine biology within the justice system. Comprehensive instruction concerning the recognition, documentation, collection, and preservation of physical evidence. Students develop practical incident response, scene management, and forensic teamwork skills. Prereq: BIOL 411 or BIOL 412. Special fee. Permission required.

MEFB 505 - Introduction to Applied Science Communication**Credits: 4**

In this course students develop the capacity to solve increasingly challenging problems with greater independence. Students fill their science communication "tool box," learning how to engage a nonscientist audience. They will be introduced to video production, podcasts, Wikipedia editing, public science events, social media platforms, blogging and press release writing. After gaining basic skills with these communication platforms and tools, students will apply their skills to a topic of their own research interest on the island. Students will actively participate in a local public science event (Rock talks) and learn how to start a science cafe on their own. Students will receive feedback from their peers and their instructors, and by the end of this course they will become more effective science communicators. Skills gained in this course in this unique environment can be applied to any research field and are essential for every scientist. Prereq: BIOL 411, BIOL 412.

MEFB 506 - Marine Parasitology and Disease**Credits: 2**

This course will focus on one of the most diverse and fascinating groups of marine organisms: parasites. The course will explore marine parasites and pathogens at multiple levels, including: (1) the evolutionary perspective with an emphasis on coevolutionary relationships; (2) parasitic diseases and life cycles (from simple to complex); (3) taxonomic and phylogenetic understanding of parasite and host groups (with a focus on metazoan parasites and hosts); (4) ecological implications of parasitism in marine systems at the population, community, and ecosystem levels; and (5) the effects of human induced global change on parasitism in marine communities. Prereq: Biol 411, BIOL 412.

MEFB 507 - Examining Marine Climate Changes on Appledore Island, ME**Credits: 2**

Marine climatic changes will severely impact ocean-based ecosystems, coastlines, and human communities. Hands-on inquiry research in this course at the Shoals Marine Laboratory located on Appledore Island, ME will involve students in examining alterations to the marine environment due to global climatic changes. Students will use the Columbia University-National Aeronautics and Space Administration (NASA) Goddard Institute for Space Studies (GISS) Educational Global Climate Model (EdGCM) and smartphone applications to envision future shorelines. Guest lectures and fieldwork will be led by marine and climate scientists from University of New Hampshire and the Woods Hole Oceanographic Institution and involve examination of changes to the littoral zone, Gulf of Maine, and the world's oceans more broadly. Topics covered in this one-week field course include: Examining the evidence that the Earth's climate is changing, the greenhouse effect and natural forcings on global climate, climate change and sea-level rise, sea-levels and coasts of the geologic past, alterations to ocean chemistry and temperature, marine ecological impacts, human coastal impacts, and possible policy solutions. This course is targeted toward early and mid-career students with backgrounds in Earth and environmental science, marine science, or environmental policy. Prereq: BIOL 411, BIOL 412.

MEFB 510 - Field Ornithology**Credits: 4**

Introduces field ornithology focusing on the biology, ecology, and behavior of avifauna on the Isles of Shoals. Includes such ornithological field methods as censuring techniques, territory mapping, banding, behavioral observation, and creating a field notebook. Fieldwork is designed to supplement many classroom concepts, including territoriality, breeding biology, and survivorship. Prereq: one year of college-level biology. Lab. (Summers only at Shoals Marine Lab.) Special fee. Permission required.

MEFB 515 - Marine Environmental Science and Conservation**Credits: 4**

Focuses on the major principles of conservation biology and methods to bring human communities into a better relationship with natural resources: Coastal ecosystem processes; coastal biodiversity; threats to coastal ecosystems; species conservation; conserving ecosystem function and services. Projects: construct management goals/actions for local land owners. Prereq: BIOL 411 or BIOL 412. Special fee. Permission required.

MEFB 525 - Introduction to Aquatic Botany**Credits: 4**

This team-taught course introduces students to microalgae, seaweeds, and vascular aquatic plants with an emphasis on unique habitats and plant adaptations to the aquatic environment. Students survey the diversity of algae and aquatic plants spanning fresh, estuarine, and marine habitats through a combination of lecture, field, and laboratory exercises. Special fee.

MEFB 527 - Aquatic Animal Diversity**Credits: 4**

Provides a survey of aquatic animal groups from the simplest multicellular forms to birds and mammals. The emphasis is on comparing the basic functional systems (i.e., skeletal, digestive, reproductive, etc.) between groups and to illustrate how they change with increasing complexity and to describe adaptations to freshwater, estuarine and marine environments and the roles the groups play in aquatic communities. Special fee.

MEFB 530 - Evolution and Marine Diversity**Credits:** 4

Patterns of diversity and processes of evolution. Topics include the diversity of life, the fossil record, macro-evolutionary patterns, the genetics and developmental basis of evolutionary change, processes at the population level, evolution by natural selection, modes of speciation, long-term trends in evolution, and human evolution. Prereq: BIOL 411 or BIOL 412. Special fee. Permission required.

MEFB 535 - Marine Mammal Biology**Credits:** 4

This course explores the biology and conservation of the whales and seals, with a particular focus on species of the Gulf of Maine. Lectures examine many facets of marine mammal science including: taxonomy and species diversity, morphological and physiological adaptations for life in the sea, foraging ecology and behavior, reproductive cycles, bio-acoustics, anthropogenic interactions, and management of threatened species. Land and open water observations of whale and seal behavior give students hands on opportunities to study marine mammals in the field. Prereq: BIOL 411 or BIOL 412. Special fee. Permission required.

MEFB 540 - Introductory Field Oceanography**Credits:** 2 or 4

Over 70% of the earth's surface is covered by oceans. Students in this course will gain familiarity with the basic concepts and field techniques (and equipment) used by biological oceanographers as we explore the Gulf of Maine waters using the Isles of Shoals as our base. Minimal lecture time, maximum boat time is the theme of this field immersion course. Special fee. Prereq: BIOL 411 or BIOL 412. Permission required.

MEFB #609 - Biology of the Lobster**Credits:** 3

An introduction to the biology of the American lobster, *Homarus americanus*. The course includes an overview of this ecologically and economically important species, and covers several major topics in depth, each taught by a lobster biologist expert in that field. Topics may include life history, larval development and metamorphosis, anatomy, physiological adaptation, fisheries and fishing methods, feeding mechanisms, ecology, and behavior. Lecture, laboratory, discussion, and field work. Special fee. (Summers only at Shoals Marine Lab.) Prereq: one year college level biology.

MEFB #615 - Field and Experiment Oceanography**Credits:** 3

Intended for mid-upper division undergrads, this course provides a foundation in oceanography (the four oceanographic disciplines: geological, chemical, physical, and biological) applied in experimental and field settings. Includes two oceanographic trips in the Gulf of Maine. Student groups develop a small oceanographic project while on Appledore Island, carry it out, and present their study to the Shoals academic community. The course integrates investigative, practical, and theoretical aspects of oceanography. Prereq: one term college biology or permission. Special fee.

MEFB #616 - Tropical Coastal Plant Ecology**Credits:** 4

A field-based course taught on location in Grenada, West Indies, providing an introduction to the physical, chemical and biological processes that form and sustain tropical coastal plant communities with an emphasis on mangroves and seagrasses. Plant adaptations to various environmental stresses will be examined over a range of habitats spanning a gradient of salinity from fresh to saline environments. As a dynamic ecosystem affected by both natural and anthropogenic disturbances from hurricanes to large-scale development, major environmental impacts and pressures will be examined first hand, and conservation and management actions will be discussed. A variety of on-going, community-based coastal habitat restoration and ecological monitoring sites will be visited throughout Grenada. Student participation in management actions will be encouraged through interaction with students from St. Georges University, local volunteers, and representatives from governmental environmental agencies and local non-governmental organizations. The course material is relatively specialized and is appropriate for juniors and seniors with interest/background in botany, coastal ecology and restoration, and conservation. Prereq: BIOL 411 and BIOL 412.

Co-requisite: INCO 589**MEFB 625 - Introduction to Marine Botany****Credits:** 4

Life history, classification, and ecology of micro- and macroscopic marine plants, including phytoplankton, seaweed, and salt marsh plants, and the interactions between humans and marine plant communities. Occasional Saturday morning field trips. Prereq: BIOL 412 or PBIO 412 or permission. Special fee. Lab.

MEFB 630 - Biodiversity and Biology of Marine Invertebrates**Credits:** 4

An introduction to the biology and evolution of the major invertebrate phyla, concentrating on marine representatives. Emphasis placed on the evolution of form and function, and the ecology, behavior, physiology, chemical ecology, and natural history of invertebrates. Appledore Island's unique location provides an excellent venue for the study of freshly collected and in situ representatives of most of the major phyla. Special fee. (Summers only at Shoals Marine Lab.) Prereq: one year college level biology. Permission required.

MEFB 631 - Ecotoxicology and Quantitative Reasoning**Credits:** 4

An introduction to the field of ecotoxicology through hands-on laboratory research on the impact of biotoxins on wildlife, humans and ecosystems. Focus of the course is on development of the students ability to design and carry out actual research projects using modern technique in this field. Concepts and application of quantitative thinking and biostatistics are integrated throughout the course. Results are communicated through oral and written reports, publications and posters. Pre- or Co-reqs: BIOL 411, BIOL 412, CHEM 403, CHEM 404.

MEFB 674 - Ecology and Marine Environment**Credits: 4**

Introduces the marine sciences with an emphasis on field work in natural habitats. Examines aspects of the systematics, morphology, physiology, behavior, and ecology of marine organisms, including intertidal plants and invertebrates, fishes, marine mammals and birds; fisheries biology; oceanography, marine geology; and human impacts on the marine environment. Sessions include lectures, discussions, field work, experience aboard a coastal research vessel, and excursions to distinctive habitats. Offered in cooperation with Cornell University. Students may not take Field Marine Science after taking Field Marine Biology and Ecology. Prereq: one full year of college-level biology/ or permission. Special fee. (Summers only at Shoals Marine Lab.) Permission required.

MEFB 702 - Sustainable Marine Fisheries**Credits: 4**

An intensive course for undergraduate students that introduces students to the complex challenges facing today's fishing industry, which is being asked to simultaneously sustain the livelihood of fishermen while meeting long-term conservation goals. The course is held both at the UNH Campus and at the Shoals Marine Laboratory. New England fisheries are used as a case-study for this course through global fishing management, trends, and issues are also discussed. Special fee. Permission required.

MEFB 714 - Field Animal Behavior**Credits: 4**

An animal's behavioral patterns represent its abilities to deal with the environment dynamically. Course focuses on ecological and evolutionary significance of behavioral patterns found in all organisms, particularly those animals that inhabit coastal marine environments. Strong emphasis on methods of behavioral research and interpretation of behavioral patterns using field observations of diverse fauna of Appledore Island and surrounding waters. Prereq: one year college biology or permission. Special fee. (Summers only at Shoals Marine Lab.) Permission required.

MEFB 717 - Lake Ecology**Credits: 4**

Introduces the ecology of freshwater systems with emphasis on lakes. Origins of lakes and the effects of watersheds on lake chemistry and nutrient cycling are explored. Other topics include the impact of human disturbances on productivity and aquatic food webs and methods used for the management and restoration of lakes. Comparisons are made of the structure and functions of lake ecosystems found in temperate, tropical and arctic regions. Prereq: general biology.

MEFB 719 - Field Studies in Lake Ecology**Credits: 4**

Ecology of lakes and other freshwater habitats examined through field studies. Emphasizes modern methods for studying lakes; analysis and interpretation of data; and writing of scientific papers. Seminars on research papers and student presentations of class studies. Field trips to a variety of lakes, from the coastal plain to White Mountains; investigate problems, such as eutrophication, acidification, biodiversity and biotoxins. Capstone experiences include interaction with state agencies, lake stakeholders and the submission of written manuscripts for publication. Prereq: introductory biology. Special fee. Writing intensive.

Attributes: Writing Intensive Course

MEFB 722 - Marine Phycology**Credits: 4**

Identification, classification, ecology, and life histories of the major groups of marine algae, particularly the benthonic marine algae of New England. Periodic field trips. Prereq: BIOL 412 or BIOL 703. Lab. (Offered alternate years.) Special fee.

MEFB 725 - Marine Ecology**Credits: 4**

Marine environment and its biota, emphasizing intertidal and estuarine habitats. Includes field, laboratory exercises, and independent research project. Prereq: general ecology; permission. Marine invertebrate zoology, oceanography, and statistics are desirable. Special fee. (Offered alternate years.)

MEFB 727 - Algal Physiology**Credits: 3**

Survey of major topics in the physiology and biochemistry of marine and freshwater algae including: nutrition, metabolic pathways, reproductive physiology, storage and extracellular products, cell inclusions, growth and development. Prereq: plant physiology or introductory biochemistry or permission. (Not offered every year.)

MEFB 730 - Underwater Research**Credits: 4**

Hypothesis testing and experimental design, theoretical and practical aspects of sampling, and critiques of current research papers. Includes special problems of conducting research underwater (diving physics and physiology, theory and use of diving tables, hyperbaric medicine) and underwater techniques (underwater photography and video, photo quadrates, tagging and marking, cages and enclosures). Students must supply their own equipment. Students with special research interests are encouraged to enroll in an additional third week of independent underwater research. Prereq: recognized scuba certification, a medical examination, one year of biology or other supporting science. (Summers only at Shoals Marine Lab.) Special fee. Permission required.

MEFB 732 - Lake Management**Credits: 4**

Lectures and seminars on interpreting lake water quality, developing a natural history inventory for lakes, the process of creating a lake management plan, and resolution of conflicting uses of lakes. Students develop lake management plans in cooperation with governmental agencies and lake associations. Guest speakers from state agencies and non-governmental organizations. Introduces use of GIS (Geographic Information Systems) methods for the analysis of lakes and watersheds. Presents lake management issues from scientific and social science points of view. Open to students from all disciplines. (Also offered as ZOO 732.) Special fee. Lab.

MEFB #734 - Diversity of Fishes**Credits: 3**

Emphasizes the diversity of fishes in two aspects: diversity of evolutionary solutions to problems faced by fishes and the great diversity of different types of fishes that inhabit the world. Prereq: one full year of college level biology; background in vertebrate biology is recommended, but not required. Special fee. (Summers only at Shoals Marine Lab.)

MEFB 741 - Sharks: Biology and Conservation**Credits:** 4

The last 30 years have produced an explosion of new information on the biology of the approximately 1,000 living species of sharks, skates, rays, and chimaeras, which collectively make up the group Chondrichthyes. This course will cover advanced topics in the evolution, diversity, anatomy, functional morphology, physiology, sensory systems, behavior, reproduction, development, and conservation of cartilaginous fishes. Prereq: BIOL 411, BIOL 412; ZOO 518 or ZOO 625.

MEFB 747 - Aquatic Plants in Restoration/Management**Credits:** 4

A field-intensive class focusing upon freshwater and marine vascular plants with an emphasis on species commonly associated with ecological restoration, the identification and conservation of rare species, and the adaptations and management of invasive species of aquatic habitats in New England. Field trips emphasize the flora of various wetland habitats, including open water and vegetated fresh water wetlands, as well as coastal and estuarine habitats. Lectures and readings examine the current trends in research and management focusing upon specific taxa and pertinent facets of their taxonomy, physiology, and natural history. Prereq: PBIO 566 or permission. Special fee.

MEFB 750 - Marine Ecological Genomics**Credits:** 4

This course combines fieldwork for sample collection with extensive training in marine genomics research approaches including next generation sequence analysis, phylogenomics, differential gene expression and population genomics. Prereq: BIOL 411 and BIOL 412. Special fee.

MEFB 751 - Research in Marine Biology**Credits:** 4

Introduces the adaptations of organisms to marine environments and the role these adaptations have in structuring marine communities using an experimental approach. Emphasizes experimental design, implementation, data analysis, and scientific presentations. Prereq: one year of college-level biology or permission. Additional experience in biology, ecology or physiology is recommended. Prereq: BIOL 411, BIOL 412. Special fee. (Summers only at Marine Lab.)

MEFB 754 - Anatomy and Function of Marine Vertebrates**Credits:** 4

The course is designed to introduce students to a comparative study of the principal organ systems of vertebrates (i.e., fishes, sea turtles, marine birds, marine mammals) that are specifically adapted to the marine environment. Rather than focusing only on description of anatomical structure, the anatomy of structures are investigated with function, biological role, and evolutionary relationships. Laboratory exercises cover osteology, dissection, behavior and biomechanics. Special fee. (Summers only at Shoals Marine Lab.) Prereq: one year college biology/or permission. Permission required.

MEFB 795 - Investigations in Marine, Estuarine, Freshwater Biology**Credits:** 1-4

This course provides a mentored independent research opportunity for highly motivated undergraduate students to explore data and/or research interests with a faculty member. Research goals must be articulated by the student and approved by faculty prior to enrollment. Through weekly meetings faculty and subsequent independent work/study, successful students will engage in related activities that may include one or more of the following: conduct intensive literature review, conduct hands-on lab or work approved by the faculty mentor. Students will be required to complete weekly progress reporting and a final written report, formal presentation (such as a poster or talk for a professional conference or UNH Undergraduate Research Conference), or a draft manuscript for publication.

Marketing (MKTG)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

MKTG 550 - Survey of Marketing**Credits:** 4

Focuses on marketing as the process of planning and executing the conception, pricing, promotion, and distribution of ideas, goods and services to create exchanges that satisfy individual and organizational objectives. For business administration minors and non-business administration majors. No credit for students who have had ADMN 585 or HMGT 600.

MKTG 557 - Promotion and Advertising**Credits:** 4

Focuses on advertising and promotions while providing coverage of other marketing communication tools (direct marketing, point-of-purchase, personal selling, public relations). Examines both traditional and electronic/online/digital approaches to advertising and promotions as means to reach audiences with messages that support the organization's goals. Prereq: MKTG 550.

MKTG 559 - Foundations of Personal Selling**Credits:** 4

The Foundations of Personal Selling combines heavy experiential learning with the academic principles of relationship selling to prepare students for the professional world. Students learn personal selling as they develop an understanding of, and appreciation for, applying the consultative sales process through partnering with customers. This course is ideal for those exploring a career in sales or simply interested in knowing how to sell their own strengths.

MKTG 598 - Topics in Marketing**Credits:** 1-4

Special topics covering a variety of marketing principles. Topics may include promotion and advertising; retail and retail management; sales and sales management. Certain topics may have pre- or co-requisite courses. May be repeated up to 12 credits. Certain topics may have a special fee.

MKTG 598T - Topics in Marketing/Study Away**Credits:** 1-4

Study away. May be repeated up to 12 credits. Special fee.

Co-requisite: INCO 589

MKTG 750 - Marketing Strategy**Credits: 4**

An integrative marketing course designed to provide the student with a cohesive understanding of marketing decision making through the exploration of marketing problems with an emphasis on qualitative analysis as well as strategy formulation. Through the use of case studies, the course is designed for students who want to learn and apply what they learn, and thus emphasizes both the understanding and the application of concepts and practices in marketing strategy. Prereq: ADMN 585. MKTG 752 and/or MKTG 753 are recommended.

MKTG 752 - Marketing Research**Credits: 4**

Understanding fundamental concepts, tools, and methods used in conducting a marketing research study. Taking general managerial problems and structuring them in terms of specific questions amenable to research. Developing a competence in designing and conducting common qualitative and quantitative research (e.g., survey research). Students will learn various statistical techniques commonly used in marketing research and be able to use these analyses to provide managerial recommendations. Prereq: ADMN 585 or HMGT 600.

MKTG 753 - Consumer/Buyer Behavior**Credits: 4**

Covers concepts, models, and theories from the behavioral sciences applied to consumer decision making and purchasing behavior. Examines consumer behavior from economic, psychological, sociological, and anthropological perspectives. Topic coverage includes discussion of marketing strategies and tactics to understand and influence consumer choice. Prereq: ADMN 585 or HMGT 600. Writing intensive.

Attributes: Writing Intensive Course

MKTG 756 - International Franchising**Credits: 4**

Designed to provide an understanding of franchising as a system of distribution and business expansion. Franchising is studied from both the perspectives of the franchise and the franchiser. In addition, economic, financial, and legal issues associated with franchising are covered. By the end of the course, students have skills and sources of information that permit sound assessment of the business opportunities available in franchising. Prereq: ADMN 585 or HMGT 600. (Also offered as HMGT 756.)

MKTG 757 - Integrated Marketing Communication**Credits: 4**

Provides balanced coverage of all marketing communication tools: advertising, sales promotion, public relations, direct marketing, personal selling, POP, packaging, sponsorships, licensing, and customer service. Emphasizes the integration of these tools to send target audiences a consistent, persuasive message that promotes the organization's goals. Prereq: ADMN 585 or HMGT 600.

MKTG 759 - The Business of Sales**Credits: 4**

The Business of Sales combines heavy experiential learning with the academic principles of relationship selling to prepare students for the professional world. Students learn personal selling skills as they develop an understanding of, and appreciation for, applying the consultative sales process through partnering with customers. This course builds on the core business curriculum to help shape and present compelling value proposals. It is ideal for those exploring a career in sales or simply interested in knowing how to sell their own strengths.

MKTG 760 - International Marketing**Credits: 4**

Environmental factors affecting international trade: culture and business customs, political and legal factors and constraints, economic and technological development, and the international monetary system. Integration of these with the marketing management functions of market research and segmentation; product, promotion, distribution, and pricing decisions. Prereq: ADMN 585 or HMGT 600.

MKTG 762 - Marketing Workshop**Credits: 4**

This course is open only to senior marketing option students and serves as their capstone learning experience. Students work in small teams on a real-world marketing problem given them by outside businesses, non-profits, or government agencies. The teams conduct extensive field research, formulate strategy, and then implement, or test marketing campaign ideas and programs. Prereq: Senior standing; at least two of MKTG 752, MKTG 753, and MKTG 763. Writing intensive.

Attributes: Writing Intensive Course

MKTG 763 - Marketing Analytics**Credits: 4**

Marketing Analytics introduces students to the fascinating world of marketing analytics. It provides a broad perspective on product, consumer, marketing-mix, and digital analytics areas. It blends the art and science of marketing and orients students to the systematic use of data and empirical models, which enhance the decision-making of a company about its customers, competitors, and the industry. Prereq: ADMN 585 or HMGT 600. Pre- or Coreq: ADMN 580.

MKTG 764 - New Product Development**Credits: 4**

Tactical and strategic issues concerned with the development and marketing of product and service innovations. Equips students with the concepts, tools, and approaches useful in the development, management, and marketing of products and services. Provides an integrated experience of the process of uncovering customer problems, understanding these problems, and providing superior solutions. Prereq: ADMN 585 or HMGT 600.

MKTG 765 - Applications in Digital Marketing**Credits: 4**

This class will introduce students to the different disciplines that make up digital marketing in order to better prepare them for roles as either digital marketing generalists (where they will need to appreciate and possess a broad understanding of these disciplines), or as digital marketing specialists, (where they will need to focus on and master one of these disciplines). Prereq: ADMN 585.

MKTG 798 - Topics**Credits: 4**

Special topics; may be repeated. Prereq: ADMN 585 OR HMGT 600. Special fee on some topics.

MKTG 798T - Topics/Study Away**Credits: 4**

Special topics study away; may be repeated. Prereq: ADMN 585 or HMGT 600. Special fee..

Co-requisite: INCO 589

MKTG 798W - Topics**Credits: 4**

Special topics; may be repeated. Prereq: ADMN 585 or HMGT 600. Writing intensive.

Attributes: Writing Intensive Course

Materials Science (MS)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

MS 401 - Science of Stuff

Credits: 4

Materials Science is a relatively new and fast growing field that studies all types of materials, including metals, ceramics, polymers, semiconductors, and composites. Material Science explores how stuff is put together, how to change stuff and make it better, the properties and applications of stuff, and even how to make totally brand new stuff. This course explores materials from various topic areas, including sports, forensics, medicine and health, fashion, architecture and construction, music and art, food and transportation from the perspective of materials science. Students explore additional materials independently as well as practice the process of science through simple experimentation and data analysis. Special fee.

Attributes: Physical Science(Discovery)

MS 402 - Nanoscience in Energy

Credits: 4

An introduction to nanomaterials, or matter with important structural features that are nanometers in size. A nanometer is very small—a billionth of a meter; a sugar molecule is only about 1 nm wide. Scientists and engineers are now building materials by manipulating atoms or groups of atoms. The course explores how materials with nanoscale features demonstrate novel and beneficial properties for energy applications. The growing energy demands of the planet require timely, if not urgent, innovative multidisciplinary solutions. These solutions require an informed citizenry knowledgeable about the various perspectives related to powering our planet. This course is a means to inform the non-scientist student about the physical science aspects of energy, nanomaterial solutions for our energy needs, along with some historical, economic, and environmental perspectives. The energy discussion provides a backdrop for our exploration of the structure and properties of nanomaterials. Special fee.

Attributes: Physical Science(Discovery)

MS #762 - Electronic Materials Science

Credits: 4

Provides students with a foundation in the materials science of modern electronic devices. Examples are taken primarily from the fields of semiconductor electronics and nanotechnology. Prereq: PHYS 408, MATH 527.

Mathematics & Statistics (MATH)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

MATH 301 - Elementary Math I

Credits: 4

Beginning algebra including integer operations, solving linear equations, graphing linear functions, solving linear inequalities, systems of linear equations, polynomials, rational expressions and equations, and exponents and radicals. May not be taken for credit toward a bachelor's degree.

MATH 302 - Elementary Math II

Credits: 4

Review of elementary algebra, exponents, polynomials, factoring, rational exponents, and absolute value. Solving linear and quadratic equations and inequalities; systems of equations; radical equations. Linear functions and related notions; quadratic functions. May not be taken for credit toward a bachelor's degree. Prereq: MATH 301 or the equivalent.

MATH 400 - Freshman Seminar

Credits: 1

A seminar experience that presents a mathematical culture associated with first-year college mathematics, including the ideas of abstraction, theorem and proof, and that provides a perspective of the diversity of mathematical areas of research and their interrelationships. Emphasis is on reading and writing mathematics. Cr/F.

MATH 418 - Analysis and Applications of Functions

Credits: 4

Analysis and applications of algebraic and transcendental functions, with special emphasis on exponential, logarithmic, and trigonometric functions. Graphical analysis. Written projects are required on some or all of the following topics: rates of change, optimization, logarithmic or exponential modeling, and trigonometric functions. Intended for students planning to take MATH 425. Prereq: MATH 302 or equivalent. Not offered for credit if credit is received for MATH 424 or MATH 425.

MATH 420 - Finite Mathematics

Credits: 4

Topics selected from probability, systems of linear equations, matrix algebra, linear programming, mathematics of finance. Not a preparation for calculus. Prereq: MATH 302 or the equivalent. Not offered for credit to mathematics majors.

Attributes: Quantitative Reasoning(Disc)

MATH 421 - Pathways between Mathematics and the Arts

Credits: 4

Exploration of the interaction between mathematics and the arts on numerous levels. The course builds on basic knowledge of elementary number systems to illuminate such topics symmetry, fractals, light, color, sound structures and musical materials. Student immediately apply new knowledge and techniques to make computer generated 2-D and 3-D images, animations and sound/music.

Attributes: Quantitative Reasoning(Disc)

MATH 422 - Mathematics for Business Applications

Credits: 4

Functions, sets and their use in mathematical models in business, economics and finance, including probability, linear systems and mathematics of finance; basic concepts of differential calculus and relevant applications.

Attributes: Quantitative Reasoning(Disc)

MATH 424A - Calculus for Social Sciences**Credits:** 4

Rational, exponential and logarithmic functions; associated derivatives and their applications; associated antiderivatives and their applications. Applications focus on contexts relevant to majors in the College of Liberal Arts and the Paul College. Not offered for credit to CEPS majors. Repeat rule applies for MATH 425 and MATH 424B. Students wanting a two-semester calculus course are strongly advised to take MATH 425-426. Those students who successfully complete MATH 424A and subsequently wish to continue their study of mathematics with MATH 426 are encouraged to complete supplementary modules available from the Mathematics Center (MaC).

Attributes: Quantitative Reasoning(Disc)**MATH 424B - Calculus for Life Sciences****Credits:** 4

Rational, exponential and logarithmic functions; associated with derivatives and their applications; associated with antiderivatives and their applications. Applications focus on contexts relevant to majors in the College of Life Sciences and Agriculture. Not offered for credit for CEPS majors. Repeat rule applies for MATH 425 and MATH 424A. Students wanting a two-semester calculus course are strongly advised to take MATH 425-426. Those students who successfully complete MATH 424B and subsequently wish to continue their study of mathematics with MATH 426 are encouraged to complete supplementary modules available from the Mathematics Center (MaC).

Attributes: Quantitative Reasoning(Disc)**MATH 425 - Calculus I****Credits:** 4

Calculus of one variable covering limits, derivatives of algebraic, trigonometric, exponential, and logarithmic functions; applications include curve sketching, max-min problems, related rates, and volume and area problems. Prereq: completing MATH 418 with a grade of C or better or qualifying with the placement evaluation. Beginning in Spring 2019 students who have taken MATH 418 may not take the placement test as a means of entry into MATH 425. (Repeat rule applies for MATH 424A and MATH 424B).

Attributes: Quantitative Reasoning(Disc)**MATH 425H - Honors/Calculus I****Credits:** 4

Calculus of one variable covering limits, derivatives of algebraic, trigonometric, exponential, and logarithmic functions; applications include curve sketching, max-min problems, related rates, and volume and area problems. Prereq: completing MATH 418 with a grade of C or better or qualifying with the placement evaluation. (Not offered for credit if credit is received for MATH 424.) Enrollment in MATH 425H requires concurrent enrollment in PHYS 407H.

Attributes: Quantitative Reasoning(Disc)**MATH 426 - Calculus II****Credits:** 4

Second course in calculus of one argument, techniques and applications of integration, polar coordinates, and series. Prereq: MATH 425.

MATH 426H - Honors/Calculus II**Credits:** 4

Second course in calculus of one argument, techniques and applications of integration, polar coordinates, and series. Prereq: MATH 425. Enrollment in MATH 426H requires concurrent enrollment in PHYS 408H.

MATH 439 - Statistical Discovery for Everyone**Credits:** 4

Introduces the framework and concepts for learning with data. Emphasis on statistical discovery in everyday life and on drawing valid conclusion from data. Topics include: good and bad data, data ethics, how to conduct a valid survey, how to describe a population distribution; when to believe a poll; how to design an experimental study; how to avoid ambiguous results caused by "lurking" variables; how to make inference about an entire population based on a sample; how to describe relationships among variables; an understanding of the question of causation and chance in everyday life and in scientific studies, as well as the use and misuse of statistics in explaining what is statistical significance. This course has an activity-based learning component with lab exercises using statistical software for calculations without assuming a calculus background. The course may be used as a preparation for a more technical introductory statistics course. Not offered for credit if credit is received for ADM 430, ADMN 420, BIOL 528, EREC 525, HHS #540, MATH 539, MATH 644, PSYC 402, SOC 502. Science and Engineering students should take MATH 539 or MATH 644 according to their programs.

Attributes: Quantitative Reasoning(Disc)**MATH 444 - Excursions in Quantitative Reasoning****Credits:** 4

Problems involving quantitative reasoning (most are nontraditional, some are fun, while others are interdisciplinary) designed to inspire curiosity encourages students to formulate and evaluate questions, all the while slowly drawing them into the process of scholarly investigation. In this regard, in addition to traditional mathematics homework, students need to do research outside of class to write and present projects.

Attributes: Quantitative Reasoning(Disc); Inquiry (Discovery)**MATH 445 - Mathematics and Applications with MATLAB****Credits:** 4

Through the use of the MATLAB computation software, this course reinforces and builds on a student's mathematics foundation and previews more advanced mathematical concepts. The power and limitations of modern computational algorithms to solve real world problems are introduced and shown to influence nearly every aspect of modern society. The state-of-the-art computational tools afforded by MATLAB provide the student with a strategy for enhancing their knowledge and comprehension in subsequent Science, Engineering, or Technology themed courses. Prereq: MATH 418 or permission.

Attributes: Environment,TechSociety(Disc)**MATH 525 - Linearity I****Credits:** 6

Examines the fundamental role that linear models play in science and engineering; and the role of linearization in understanding nonlinear phenomena. Models are considered along several conceptual axes: discrete to continuous, one-dimensional to multidimensional, and static to dynamic, with an emphasis on the former. Mathematical areas of coverage include matrix algebra, concepts from calculus of several variables, difference equations, and linear transformations. Prereq: MATH 426, permission. Lab.

MATH 526 - Linearity II**Credits:** 6

Continuation of study of linear models and the process of linearization begun in MATH 525, with an emphasis on models of dynamic phenomena. Additional mathematical areas of coverage include differential equations, eigenvalue and eigenvector analysis, phase plane analysis, and additional concepts from vector calculus. Prereq: MATH 525, permission. Lab.

MATH 527 - Differential Equations with Linear Algebra**Credits:** 4

Fundamental methods of solving first-order equations, essentials of matrix algebra; higher-order linear equations, and linear systems; series solutions; Laplace transforms; selected applications. Prereq: MATH 426.

MATH 528 - Multidimensional Calculus**Credits:** 4

Partial differentiation; composite functions and chain rules; maximum and minimum; transformations; vector algebra; vector functions; gradient, divergence, and curl; curves and surfaces; multiple, line, and surface integrals; divergence, Green's and Stoke's theorem. Prereq: MATH 426.

MATH 531 - Mathematical Proof**Credits:** 4

Introduces reading and writing proofs in mathematics. The basic language of mathematics common to all branches of the subject, especially set theory and basic logic. Prereq: MATH 425; or permission. Writing intensive.

Attributes: Writing Intensive Course**MATH 539 - Introduction to Statistical Analysis****Credits:** 4

A first course introducing concepts of probability and scientific methods for data analysis. Exploratory data analysis, survey sampling, probability, discrete and continuous distributions, confidence intervals, hypothesis testing, comparing samples, linear regression, analysis of variance. Statistical software is used. Prereq: MATH 425; or permission. Not offered for credit if credit is received for MATH 644. Offered primarily for mathematics majors; engineering majors should take MATH 644.

MATH 545 - Introduction to Linear Algebra**Credits:** 4

Designed to reinforce ideas seen throughout the mathematics curriculum. Centered on a study of vector spaces and linear systems, beginning with a brief focus on systems of linear equations and progressing to a full discussion of linear transformation and vector spaces. The course includes a survey of properties of matrices, such as rank, kernel, eigenvalues, eigenvectors, and diagonalization. Prereq: MATH 426 Writing intensive. No credit offered if credit is received for MATH 645 or MATH 762.

Attributes: Writing Intensive Course**MATH 601 - Exploring Mathematics for Teachers I****Credits:** 4

Provides prospective elementary teachers with the opportunity to explore and master concepts involving number systems and operations, data analysis and probability. Additional topics may include geometry, measurement, and algebraic thinking. Mathematical reasoning, problem solving, and the use of appropriate manipulatives and technology are integrated throughout the course. Readings, class discussions, and assignments focus on mathematics content as well as applicable theories of learning, curriculum resources, and state and national recommendations. The course models instructional techniques that can be adapted to the elementary curricula. (Not offered for credit if credit is received for MATH 621 or MATH 623; not offered for credit to CEPS majors.)

MATH 621 - Number Systems for Teachers**Credits:** 4

Ways of representing numbers, relationships between numbers, number systems, the meanings of operations and how they relate to one another, and computation within the number system as a foundation for algebra; episodes in history and development of the number system; and examination of the developmental sequence and learning trajectory as children learn number concepts. Prereq: permission.

MATH 622 - Geometry for Teachers**Credits:** 4

Explorations of the foundations of informal measurement and geometry in one, two and three dimensions. The van Hiele model for geometric learning is used as a framework for how children build their understanding of length, area, volume, angles and geometric relationships. Visualization, spatial reasoning and geometric modeling are stressed. As appropriate, transformational geometry, congruence, similarity and geometric constructions will be discussed. Prereq: permission.

MATH 623 - Probability and Statistics for Teachers**Credits:** 4

An introduction to probability, descriptive statistics and data analysis; exploration of randomness, data representation and modeling. Descriptive statistics will include measures of central tendency, dispersion, distributions and regression. Analysis of experiments requiring hypothesizing, experimental design and data gathering. Prereq: permission.

MATH 624 - Analysis of Secondary School Mathematics**Credits:** 4

Examines concepts from calculus and pre-calculus mathematics with an emphasis on connecting and logically refining the concepts of function, limit, sequences, series, and probability. Includes a deeper analysis of problems and topics drawn from secondary school mathematics with the kind of mathematical knowledge and sophistication that the student has gained from other collegiate mathematics courses. Proofs for many of the theorems that are typically introduced in a non-rigorous fashion in calculus are studied. Prereq: EDUC 500, MATH 425 and 545 (or equivalent); or permission. Offered in alternate years in the spring semester following MATH 623.

MATH 625 - Functions and Algebra for Teachers**Credits:** 4

Representation and analysis of mathematical situations and structures using generalization and algebraic symbols and reasoning. Attention is given to the transition from arithmetic to algebra, working with quantitative change, and the description of and prediction of change. Prereq: MATH 621. The course is offered in alternative years in spring semester.

MATH 632 - Financial Mathematics**Credits:** 4

A mathematical introduction to interest theory and an overview of mathematical models used to analyze and price standard financial instruments including: interest bearing accounts, stocks and bonds. Introduction to basic concepts used in mathematical finance including: random variables, mathematics of arbitrage, risk and diversification. Includes a substantive introduction to all aspects of the financial mathematics actuarial exam.

MATH 644 - Statistics for Engineers and Scientists**Credits:** 4

Introduces the design of controlled experiments and the collection and analysis of scientific data. Use of a statistical software package is an integral part of the course; interpreting and drawing conclusions from standard software output is emphasized. Graphical data analysis, statistical process control, regression and correlation, multifactor experimental designs, confidence intervals, hypothesis testing. Not offered for credit if credit is received for MATH 539. Prereq: MATH 426.

MATH 645 - Linear Algebra for Applications**Credits:** 4

Fundamental notions of vector space theory, linear independence, basis, span, scalar product, orthogonal bases. Includes a survey of matrix algebra, solution of systems linear equations, rank, kernel, eigenvalues and eigenvectors, the LU- and QR-factorizations, and least squares approximation. Selected applications in mathematics, science, engineering and business. Prereq: MATH 426. (Not offered for credit if credit is received for MATH 545 or MATH 762.)

MATH 647 - Complex Analysis for Applications**Credits:** 4

Complex numbers, analytic functions, Cauchy-Riemann equations, conformal mapping, contour integration, Cauchy's integral formula, infinite series, residue calculus, Fourier and Laplace transforms. Prereq: MATH 528. (Not offered for credit if credit is received for MATH 788.)

MATH #656 - Introduction to Number Theory**Credits:** 4

Unique factorization, arithmetic functions, linear and quadratic congruence's, quadratic reciprocity law, quadratic forms, introduction to algebraic numbers. Prereq: MATH 531. Offered in alternate years.

MATH 658 - Topics in Geometry**Credits:** 4

Topics selected from among projective geometry, finite geometrics, convexity, transformational geometry, non-Euclidean geometry, and other areas of elementary geometry within the framework of modern mathematics. Prereq: MATH 657. Offered in alternate years.

MATH 696 - Independent Study**Credits:** 1-4

Individual projects of study developed by the student and a faculty sponsor. Intended for students with superior scholastic achievement. May be repeated up to 8 credits. May be taken as writing intensive. Prereq: a written proposal, including goals and assessment, endorsed by a faculty sponsor and approved by the department chairperson.

MATH 696W - Independent Study**Credits:** 1-4

Individual projects of study developed by the student and a faculty sponsor. Intended for students with superior scholastic achievement. May be repeated up to 8 credits. May be taken as writing intensive. Prereq: a written proposal, including goals and assessment, endorsed by a faculty sponsor and approved by the department chairperson. Writing intensive.

Attributes: Writing Intensive Course**MATH 699 - Internship Experience****Credits:** 1

Provides the opportunity to apply and enhance knowledge in a setting associated with future professional employment. A written mid-semester report is required as well as a final report along with an oral presentation that is open to other undergraduates. Prereq: A written proposal, endorsed by a faculty sponsor and approved by the department chairperson (or designee), that outlines the goals, academic merit and assessment of the work experience. May be repeated up to 4cr. Only open to Math majors. Cr/F.

MATH 700 - Introduction to Mathematics Education**Credits:** 4

General background information about mathematics education, such as theories of learning and teaching mathematics, mathematics curricula, classroom management, and techniques for the teaching and learning of mathematics that are common to all levels of mathematics education K-12. Prereq: MATH 426 and EDUC 500; or permission.

MATH 703 - Teaching of Mathematics in Grades K-5**Credits:** 4

Methods of teaching mathematics at the elementary school level; uses of technology, manipulatives, models, and diagrams; developing unit and lesson plans; assessment ; instructional formats; teaching reading and writing in mathematics. Prereq: MATH 621 (or MATH 601); or permission.

MATH 708 - Teaching Mathematics in Grades K-8**Credits:** 4

Methods of teaching mathematics in grades K-8, uses of technology, manipulatives, models, and diagrams; developing unit and lesson plans; investigating instructional formats. Prereq: MATH 700 or permission. Offered in alternate years in the spring semester.

MATH 709 - Teaching of Mathematics in Grades 6-12**Credits:** 4

Methods of teaching mathematics at the middle and high school levels; uses of technology, manipulatives, models, and diagrams; developing unit and lesson plans; assessment; instructional formats; teaching reading and writing in mathematics. Prereq: MATH 700; or permission.

MATH 736 - Advanced Statistical Methods for Research**Credits:** 4

An introduction to multivariate statistical methods, including principal components, discriminant analysis, cluster analysis, factor analysis, multidimensional scaling, and MANOVA. Additional topics include generalized linear models, general additive models, depending on the interests of class participants. The use of statistical software, such as JMP, S PLUS, or R, is fully integrated into the course. Prereq: MATH 739.

MATH 737 - Statistical Methods for Quality Improvement and Design**Credits: 4**

Six Sigma is a popular, data-focused methodology used worldwide by organizations to achieve continuous improvement of their existing processes, products and services or to design new ones. This course provides a thorough introduction to the Six Sigma principles, methods, and applications for continuous improvement (DMAIC process) and an overview of Design for Six Sigma (DFSS). Both manufacturing and non-manufacturing (transactional Six Sigma) applications are included. Emphasis is placed on the use of case studies to motivate the use of, as well as the proper application of, the Six Sigma methodology. Formal Six Sigma Green Belt certification from UNH may be attained by successfully completing TECH 696. Prereq: MATH 539, MATH 644; or permission.

MATH 738 - Data Mining and Predictive Analytics**Credits: 4**

An introduction to supervised and unsupervised methods for exploring large data sets and developing predictive models. Unsupervised methods include: market basket analysis, principal components, clustering, and variables clustering. Important statistical and machine learning methods (supervised learning) include: Classification and Regression Trees (CART), Random Forests, Neural Nets, Support Vector Machines, Logistics Regression and Penalized Regression. Additional topics focus on metamodeling, validation strategies, bagging and boosting to improve prediction or classification, and ensemble prediction from a set of diverse models. Required case studies and projects provide students with experience in applying these techniques and strategies. The course necessarily involves the use of statistical software and programming languages. Undergraduate students are required to have junior or senior status to enroll in this course. Prereq: MATH 539 (or MATH 644); or permission.

MATH 739 - Applied Regression Analysis**Credits: 4**

Statistical methods for the analysis of relationships between response and input variables: simple linear regression, multiple regression analysis, residual analysis and model selection, multi-collinearity, nonlinear curve fitting, categorical predictors, analysis of variance, analysis of covariance, examination of validity of underlying assumptions, logistic regression analysis. Emphasizes real applications with use of statistical software. Prereq: MATH 539 (or 644). Writing intensive.

Attributes: Writing Intensive Course**MATH 740 - Design of Experiments I****Credits: 4**

Course in design of experiments with applications to quality improvement in industrial manufacturing, engineering research and development, or research in physical and biological sciences. Experimental factor identification, statistical analysis and modeling of experimental results, randomization and blocking, full factorial designs, random and mixed effects models, replication and sub-sampling strategies, fractional factorial designs, response surface methods, mixture designs, and screening designs. Focuses on various treatment structures for designed experimentation and the associated statistical analyses. Use of statistical software. Prereq: MATH 539 (or 644); or permission.

MATH 741 - Survival Analysis**Credits: 4**

Explorations of models and data-analytic methods used in medical, biological, and reliability studies. Event-time data, censored data, reliability models and methods, Kaplan-Meier estimator, proportional hazards, Poisson models, loglinear models. The use of statistical software, such as SAS, JMP, or R, is fully integrated into the course. Prereq: MATH 739. (Offered in alternate years in the spring semester.)

MATH 743 - Time Series Analysis**Credits: 4**

An introduction to univariate time series models and associated methods of data analysis and inference in the time domain and frequency domain. Topics include: auto regressive (AR), moving average (MA), ARMA and ARIMA processes, stationary and non-stationary processes, seasonal ARIMA processes, auto-correlation and partial auto-correlation functions, identification of models, estimation of parameters, diagnostic checking of fitted models, forecasting, spectral density function, periodogram and discrete Fournier transform, linear filters, parametric spectral estimation, dynamic Fournier analysis. Additional topics may include wavelets and long memory processes (FARIMA) and GARCH Models. The use of statistical software, such as JMP, or R, is fully integrated into the course. Prereq: MATH 739. Offered in alternate years in the spring semester.

MATH #744 - Design of Experiments II**Credits: 4**

A second course in design of experiments, with applications in quality improvement and industrial manufacturing, engineering research and development, research in physical and biological sciences. Covers experimental design strategies and issues that are often encountered in practice: complete and incomplete blocking, partially balanced incomplete blocking (PBIB), partial confounding, intra and inter block information, split plotting and strip plotting, repeated measures, crossover designs, Latin squares and rectangles, Youden squares, crossed and nested treatment structures, variance components, mixed effects models, analysis of covariance, optimizations, space filling designs, and modern screening design strategies. Prereq: MATH 740; or permission.

MATH 745 - Foundations of Applied Mathematics I**Credits: 4**

An introduction to Partial Differential Equations (PDEs) and associated mathematical methods and the analytical foundation for applied mathematics. Topics include: PDE classification, superposition, separation of variables, orthonormal functions, completeness, convergence, Fourier Series, Sturm-Liouville eigenvalue problems, and eigenfunctions. Methods are introduced for the analysis and solution of boundary value problems, in particular, the Heat, Wave, and Laplace equations. Prereq: MATH 527 and MATH 528; or equivalent.

MATH 746 - Foundations of Applied Mathematics II**Credits: 4**

An introduction to special functions, asymptotic analysis, and transform methods applied to partial differential equations. Topics include: Boundary value problems in cylindrical coordinates, the Bessel equation and Bessel functions, Fourier-Bessel expansions in cylindrically symmetric spatial domains, the Fourier Transform, the Hilbert Transform, Cosine and Sine Transforms, problems on semi-infinite intervals, and Asymptotic Analysis. Prereq: MATH 527 and MATH 528; or equivalent.

MATH 747 - Introduction to Nonlinear Dynamics and Chaos**Credits: 4**

The mathematics of chaos and nonlinear dynamics. Topics include linear and nonlinear systems of ordinary differential equations, discrete maps, chaos, phase plane analysis, bifurcations and computer simulations. Prereq: MATH 527, MATH 528, and MATH 645.

MATH 753 - Introduction to Numerical Methods I**Credits:** 4

Introduces mathematical algorithms and methods of approximation. Topics include a wide survey of approximation methods. Methods examined include polynomial interpolation, root finding, numerical linear algebra, numerical integration, and the approximation of differential equations. Included in each case is a study of the accuracy and stability of a given technique, as well as its efficiency. Prereq: MATH 426; MATH 445 (or CS 410 or IAM 550).

MATH 755 - Probability with Applications**Credits:** 4

Introduces the theory, methods, and applications of randomness and random processes. Probability concepts, random variable, expectation, discrete and continuous probability distributions, joint distributions, conditional distributions; moment-generating functions, convergence of random variables. Prereq: MATH 528 and MATH 539 (or MATH 644).

MATH 756 - Principles of Statistical Inference**Credits:** 4

Introduces the basic principles and methods of statistical estimation and model fitting. One- and two-sample procedures, consistency and efficiency, likelihood methods, confidence regions, significance testing, Bayesian inference, nonparametric and re-sampling methods, decision theory. Prereq: MATH 755; or permission.

MATH 757 - Mathematical Optimization for Applications**Credits:** 4

This course introduces the foundations of mathematical optimization and reinforces them via applications. The content includes convex optimization, first and second-order methods, constrained problems, duality, linear and quadratic programming, as well as discrete and non-convex optimization. Applications will focus on machine learning methods but also include problems from engineering and operations research. Prereq: MATH 426; Programming proficiency in MATLAB, R, Java, C, Python, or equivalent.

MATH 759 - Introduction to the R Software**Credits:** 1

This course provides a basic introduction to the open-sources statistical software R for students who have never used this software or have never formally learned the basics of it. Topics include: Numeric calculations, simple and advanced graphics, object management and work-flow, RStudio, user-contributed packages, basic programming, writing of functions, statistical modeling and related graphs, distributed computing, reproducible research and document production via markup language. Cr/F.

MATH 760 - Geometry**Credits:** 4

Advanced approach to fundamental properties of Euclidean and other geometries through deductive reasoning and proof. Prereq: MATH 531. Writing intensive.

Attributes: Writing Intensive Course**MATH 761 - Abstract Algebra****Credits:** 4

This course establishes the axiomatic framework that underlies number systems and similar mathematical structures, investigating basic properties of groups, rings, fields and their homomorphisms. Prereq: MATH 531. Writing intensive.

Attributes: Writing Intensive Course**MATH 762 - Linear Algebra****Credits:** 4

Vector spaces over arbitrary fields, linear transformations and their relationship with matrices, eigenvalues and eigenvectors, the rational and Jordan canonical forms for linear transformations. Prereq: MATH 761.

MATH 763 - Abstract Algebra II**Credits:** 4

This course extends the investigations of MATH 761 into more specialized situations related to old and new problems in mathematics, such as the nature of solutions of polynomial equations. It presents advanced properties of groups, rings, fields and their applications. Prereq: MATH 761.

MATH 765 - Introduction to Commutative Algebra and Algebraic Geometry**Credits:** 4

Methods of determining solution sets of polynomial systems; affine varieties and their ideals; the 'algebra-geometry correspondence'; theory and applications of Grobner bases. Prereq: MATH 531, MATH 761 or permission of instructor.

MATH 767 - One-Dimensional Real Analysis**Credits:** 4

Theory of limits, continuity, differentiability, and integrability. Prereq: MATH 531. Writing intensive.

Attributes: Writing Intensive Course**MATH 768 - Real Analysis II****Credits:** 4

Theory of integration; series; power series and uniform convergence of power series. Prereq: MATH 767.

MATH 769 - Introduction to Differential Geometry**Credits:** 4

Introduction to the study of geometric properties of curves and surfaces in 3-dimensional space. Prereq: MATH 527, MATH 528, MATH 645.

MATH 770 - Foundations of Number Theory**Credits:** 4

Factorization and prime numbers, arithmetic functions, congruences, reciprocity laws, quadratic forms, Diophantine equations, computational number theory. Prereq: MATH 531. Offered in alternate years.

MATH 772 - Combinatorics**Credits:** 4

Graph theory (including planar graphs, graph coloring, Hamiltonian circuits, trees); counting principles (including permutations, combinations, pigeonhole principle, inclusion-exclusion principle); and related topics. Prereq: MATH 531.

MATH 776 - Logic**Credits:** 4

Examination of the basic notions of soundness and completeness, first for sentential and then for propositional logic. Turning to the question of decision procedures for logical formulae, the concept of recursive function, which emerges in the work of Church and Turing, provides the essential link between logic and theory of computation. The course culminates with Godel's Incompleteness Theorems, which demonstrate the intrinsic limitations of the logical method. Prereq: MATH 531. Offered in alternate years.

MATH 783 - Set Theory**Credits:** 4

Axiomatic set theory, including its history. Cantor's theory of infinite cardinal and ordinal numbers seemed laden with contradictions and paradoxes. A satisfactory treatment of these difficulties came with the axiomatic set theory of Zermelo and Fraenkel. This course develops the Zermelo-Fraenkel axioms and examines cardinal and ordinal arithmetic in the context they provide. The course then investigates the consequences of various additional axioms extending Zermelo-Fraenkel, such as the Axiom of Choice, the Continuum Hypothesis, large cardinal axioms of determinacy. Prereq: MATH 531. Offered in alternate years.

MATH 784 - Topology**Credits:** 4

Open sets, closure, base, and continuous functions; connectedness, compactness, separation axioms, and metrizability. Prereq: MATH 767/ MATH 867 or permission.

Attributes: Writing Intensive Course**MATH 788 - Complex Analysis****Credits:** 4

Complex functions, sequences, limits, differentiation and Cauchy-Riemann equations, elementary functions, Cauchy's theorem and formula, Taylor's and Laurent's series, residues, conformal mapping. Prereq: MATH 767. Not offered for credit if credit is received for MATH 647.

MATH 790 - Historical Foundations of Mathematics**Credits:** 4

Historical development of number theory, geometry, probability, algebra, and analysis. Study of the significant mathematical contributions to these topics made by prominent mathematicians spanning several historical periods. Prereq: MATH 531 or MATH 545. Writing intensive.

Attributes: Writing Intensive Course**MATH 796 - Topics****Credits:** 1-4

New or specialized courses not covered in regular course offerings. Prereq: permission of instructor. May be repeated.

MATH 797 - Senior Seminar**Credits:** 4

Exploration of mathematical topics beyond the student's previous coursework in the seminar format. The course focus is on independent research, collaborative work and classroom engagement; oral presentations and written work are required. Prereq: senior standing.

MATH 798 - Senior Project**Credits:** 4

Students work either individually or as a group under the direction of a faculty sponsor to plan and carry out an independent research project resulting in a written report and presentation to the department. Prereq: Senior standing in the department; a written proposal approved by a faculty sponsor and by the department chairperson (or designee).

MATH 799 - Senior Thesis**Credits:** 2 or 4

Students work under the direction of a faculty sponsor to plan and carry out independent research resulting in a written thesis. Required for honors-in-major. Prereq: senior standing; a written proposal endorsed by a faculty sponsor and approved by the department chairperson (or designee). May be repeated up to 4 credits. Writing intensive.

Attributes: Writing Intensive Course

Mechanical Engineering (ME)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

ME 441 - Introduction to Engineering Design and Solid Modeling**Credits:** 4

Why are some products better than others? What is the definition of "better"? This course uses an inquiry-guided approach to explore the product design process via team design projects and laboratory exercises. Everyday products are examined from historical, societal, design, safety and manufacturing perspectives. Topics include ideation, sketching, design constraints, solid modeling, decision making, statistical quality control, manufacturing methods and engineering analysis. Students develop an appreciation for good design and the ability to communicate design ideas via 3-D solid models, written and oral reports. Prereq: MATH 418 or equivalent. Writing intensive.

Attributes: Inquiry (Discovery); Writing Intensive Course**ME 477 - Introduction to Solid Modeling****Credits:** 1

Introduction to solid modeling and engineering drawings using computer-aided design software. For Mechanical Engineering students, this course can only be taken with permission as an alternative to the required ME 441 Introduction to Engineering Design and Solid Modeling for students with extensive engineering design experience (e.g., high school or another university course), an engineering project based program (e.g., FIRST Robotics or Project Lead the Way), or similar experience (e.g., working in the industry). Students should not take both ME 441 and ME 477. Lecture and Lab.

ME 503 - Thermodynamics**Credits:** 3

Properties of a pure substance, work and heat, laws of thermodynamics, entropy, thermodynamic relations, cycles. Prereq: PHYS 407. Pre- or Coreq: CHEM 405; MATH 528.

ME 523 - Introduction to Statics and Dynamics**Credits:** 3

Overview of statics and dynamics applying concepts to particles then to rigid bodies. Topics include two- and three-dimensional force systems; laws of equilibrium; analyses of trusses and frames; friction; relative motion; impulse-momentum principles; work-energy relationships. Prereq: MATH 426; PHYS 407. Not for ME majors.

ME 525 - Statics**Credits:** 3

Introduces statics. Two- and three-dimensional force systems, the concept of equilibrium, analysis of trusses and frames, centroids, bending moment and shear force diagrams, and friction. Prereq: PHYS 407 and MATH 426. Writing intensive.

Attributes: Writing Intensive Course**ME 526 - Mechanics of Materials****Credits:** 3

Introduces strength of materials. Analysis of members under torsion, axial, shear and bending stresses, superposition of stresses, stability of columns. Prereq: ME 525. Writing intensive.

Attributes: Writing Intensive Course

ME 561 - Introduction to Materials Science**Credits:** 4

The concepts of materials science and the relation of structure of material properties. Atomic structure, bonding material transport, mechanical properties of materials, solidification, phase diagrams, solid state transformations, and corrosion and oxidation. Laboratory exercises are carried out to demonstrate the basic concepts of the course. Prereq: one semester of introductory chemistry with a lab or equivalent; MATH 425. Writing intensive.

Attributes: Writing Intensive Course**ME 603 - Heat Transfer****Credits:** 3

Analysis of phenomena; steady-state and transient conduction, radiation, and convection; engineering applications. Prereq: MATH 527, ME 608.

ME 608 - Fluid Dynamics**Credits:** 3

Dynamics and thermodynamics of compressible and incompressible fluid flow; behavior of fluids as expressed by hydrostatic, continuity, momentum, and energy equations. Prereq: ME 503. Pre- or Coreq: MATH 527, IAM 550.

Co-requisite: ME 627**ME 627 - Dynamics****Credits:** 3

Introduction to particle and rigid body dynamics. Rectilinear and curvilinear motion, translation and rotation, momentum and impulse principles, and work-energy relationships. Prereq: ME 525 or permission. Writing intensive.

Attributes: Writing Intensive Course**ME 643 - Machine Design****Credits:** 3

Analysis, synthesis, and design of machine elements and systems. Development of engineering judgment; selection of materials stress and failure analysis; kinematic arrangement design for finite and infinite life. Open-ended design problems unify course topics. Prereq: ME 526, ME 561, ME 627. Writing intensive.

Attributes: Writing Intensive Course**ME 646 - Experimental Measurement and Data Analysis****Credits:** 4

Basic and advanced techniques of engineering and scientific parameter measurement including statistical data and error analysis, curve fitting, calibration and application of transducers, and technical writing. Laboratory experiments draw on concepts from mechanics, thermodynamics, and fluid mechanics. Prereq: ME 526. Pre - or Co-req: ME 608. Writing intensive.

Attributes: Writing Intensive Course**ME 670 - Systems Modeling, Simulation, and Control****Credits:** 4

Lumped parameter models for mechanical, electrical, thermal, fluid, and mixed systems. Matrix representation, eigenvalues, eigenvectors, time domain solutions, frequency response plots, and computer simulations are used to explore system response. Design of system for desired responses. Introduces feedback control, stability, and performance criteria. Prereq: ECE 537, ME 627, MATH 527. Writing intensive.

Attributes: Writing Intensive Course**ME 695 - Special Topics****Credits:** 2-4

Course topics not offered in other courses. May be repeated for credit. Lab. Prereq: permission.

ME 696 - Projects**Credits:** 1-4

Analytical, experimental, or design projects undertaken individually or in teams under faculty guidance. May be repeated for credit.

ME 699 - Engineering Internship**Credits:** 1

Internship experience provides on-the-job reinforcement of academic programs in mechanical engineering. Contact the Mechanical Engineering department office for guidelines. May be repeated to a maximum of 3 credits. Prereq: appropriate class standing in major, 2.5 grade point average, and permission. Cr/F.

ME 705 - Thermal System Analysis and Design**Credits:** 4

Engineering design of thermal systems that involve real problems and analysis of performance of the design. Design criteria include function, performance, optimization, economy, safety, and others as appropriate for the system. Required for ME seniors. Prereq: ME 503. Writing intensive.

Co-requisite: ME 608**Attributes:** Writing Intensive Course**ME 706 - Renewable Energy: Physical and Engineering Principles****Credits:** 3

The goal of this course is to become "Fluent in energy" and to learn about the engineering fundamentals of renewable energy technologies. The course will begin by giving an overview of U.S. energy usage and sources, as well as history and trends. Various renewable energy topics will then be discussed. Where applicable, topics will be discussed in detail from a fluid and thermal sciences point of view. Guest lecturers and a field trip may be included. This course is open to all engineering seniors. Prereq: ME 503 - Thermodynamics, ME 608 - Fluid Dynamics, or equivalent, or instructor permission.

ME 707 - Analytical Fluid Dynamics**Credits:** 4

Kinematics of flow; constitutive relationships; development of the Navier-Stokes equations; vorticity theorems; potential flow. Prereq: ME 608.

ME 709 - Computational Fluid Dynamics**Credits:** 3

Conservation of mass, momentum, and energy, discretization schemes, boundary and initial conditions, turbulence and turbulence models, two-equation models, CFD software such as OpenFOAM, best practice guidelines for CFD. The class incorporates the use and creation of Open Educational Resources (OER).

ME 712 - Waves in Fluids**Credits:** 3

Linear and nonlinear dynamics of hyperbolic and dispersive wave systems with application to acoustic waves, surface and internal gravity waves, Rossby waves, and capillary waves. Key physical concepts include wave-generation mechanisms, wavelength and amplitude dispersion, group velocity and energy propagation, steady streaming, and mode interactions. Prereq: ME 608 or equivalent.

ME 724 - Vibration Theory and Applications**Credits:** 4

Discrete vibrating systems. Linear system concepts; single-degree-of-freedom system with general excitation. Matrix theory and eigenvalue problems. Many degrees of freedom, normal mode theory for free and forced vibration. Numerical methods; introduction to continuous systems; applications to structural and mechanical systems. Prereq: ME 526; ME 627 or permission.

ME 727 - Advanced Mechanics of Solids**Credits:** 4

Stress, strain, stress-strain relations, anisotropic behavior, introduction to elasticity, plane stress/strain, bending and torsion of members with general cross-sections introduction to thin plates and shells, energy methods. Prereq: ME 526 or permission.

ME 730 - Mechanical Behavior of Materials**Credits:** 4

Elastic and inelastic behavior of materials in terms of micro- and macro-mechanics. Stress, strain, and constitutive relations related to recent developments in dislocation theory and other phenomena on the atomic scale and to the continuum mechanics on the macroscopic scale. Elasticity, plasticity, viscoelasticity, creep, fracture, and damping. Anisotropic and heterogeneous materials. Prereq: ME 526; 561 or permission.

ME #731 - Fracture and Fatigue Engineering Material**Credits:** 4

Reviews fundamentals of linear elastic fracture mechanics and strain energy release rate analyses. Discusses basic methods of design for prevention of failure by fast fracture and fatigue for metals, ceramics, and polymers with attention to the effect of material properties and subsequent property modification on each design approach. Prereq: ME 526; ME 561 or permission.

ME 735 - Mechanics of Composite Materials**Credits:** 4

Classification of composites. Anisotropy of composite materials. Micromechanical predictions of elastic and hygrothermal properties. Strength and failure of composite materials. Analysis of laminates. Experimental methods for characterization of composites. Prereq: ME 526; ME 603; or permission.

ME 743 - Satellite Systems, Dynamics, and Control**Credits:** 3

General satellite systems with emphasis on spacecraft dynamics and control. Topics include general satellite information such as types of satellites, missions, and orbits, as well as satellite subsystems. Basic spacecraft dynamics and orbital mechanics topics are covered. Advanced topics include attitude and orbit estimation, and automatic attitude control. Prereq: ME 670 or permission.

ME 747 - Experimental Measurement and Modeling of Complex Systems**Credits:** 4

Experimental measurements for evaluation, design, and control of mechanical, electrical, and thermal/fluid phenomena. Emphasizes the dynamic response of both sensors and systems and the interactions between physical processes. Experimental examples are drawn from mechanics, material science, thermal-fluid science and controls. Prereq: ME 646; ME 670. Writing intensive.

Attributes: Writing Intensive Course**ME 755 - Senior Design Project I****Credits:** 2

Part I of this two-part sequence emphasizes problem definition, analysis, development of alternative concepts, decision-making processes, synthesis of an optimum solution and the development of a conceptual design. Lectures on these and other topics are combined with seminars given by professionals from industry, government, and academia. Related topics include ISO9000 quality systems, engineering management, design review process, engineering economics, team building and communications. Students are organized into project teams to develop a conceptual design. Formal design reviews are conducted. A formal proposal documents the semester's work. Prereq: Senior standing in ME. Lab. Writing intensive.

Attributes: Writing Intensive Course**ME 756 - Senior Design Project II****Credits:** 2

Continuation of Senior Design Project I, in which the proposal submitted in the previous course is developed into a prototype system. Part II emphasizes the development, assembly, testing and evaluation of the system designed in Part I. Lectures and seminars focus on the prototype development process, design verification and industry practices. A formal report documents the semester's work. Prereq: ME 755. Writing intensive.

Attributes: Writing Intensive Course**ME 757 - Coastal Engineering and Processes****Credits:** 3

Introduces small amplitude and finite amplitude wave theories. Wave forecasting by significant wave method and wave spectrum method. Coastal processes and shoreline protection. Wave forces and wave structure interaction. Introduces mathematical and physical modeling. Prereq: ME 608 or permission. (Also offered as CIE 757 and OE 757.)

ME #760 - Physical Metallurgy I**Credits:** 4

Introduction to physical metallurgy; dislocations; thermodynamics of materials, diffusion, phase transformations, and strengthening mechanisms in solids. Prereq: ME 561 or permission. Lab.

ME 761 - Diffraction and Imaging Methods in Materials Science**Credits:** 4

Introduces x-ray diffraction and electron microscopy. Basic crystallography, reciprocal lattice, x-ray and electron diffraction, x-ray methods, transmission and scanning electron microscopy. Prereq: CHEM 403; PHYS 408 or permission. Lab.

ME #770 - Design with Microprocessors**Credits:** 4

Basic operation of microprocessors and micro-controllers is explained, and interfacing these devices to sensors, displays and mechanical systems is explored. Topics include: number systems, architecture, registers, memory mapping, interrupts and interfacing for system design. Methods of programming and interfacing with mechanical/electrical systems are covered in class, and then implemented in lab. Prereq: ECE 537 or permission. Lab.

ME 772 - Control Systems**Credits:** 4

Development of advanced control system design concepts such as Nyquist analysis, lead-lag compensation, state feedback, parameter sensitivity, controllability, observability, introduction to non-linear and modern control. Includes interactive computer-aided design and real-time digital control. Prereq: ME 747 or permission. (Also offered as ECE 772.) Lab.

ME 773 - Electromechanical Analysis and Design**Credits:** 4

Analysis and design of electromechanical systems using lumped parameter models and magnetic finite element analysis (FEA). Electrostatic and magnetic field equations are discussed and used to derive magnetic and electric lumped model elements. Brushless dc motor is analyzed using lumped models and FEA. Various drive types are discussed and the motor system analyzed to obtain torque-speed curves. Design principles are given and utilized in a design project. Prereq: ME 670 or permission.

ME 777 - Computer Aided Engineering**Credits:** 4

In this course, modules of Solid Works (beyond its basic solid modeling capabilities) and other software is used to demonstrate how computer based tools can be used in engineering practice, in particular design analysis and optimization. Emphasis placed on using knowledge from past engineering courses to obtain theoretical calculations to compare with the results from the computer software package. Prereq: ME 526 Strength of Materials; ME 627 Mechanics III; ME 603 Heat Transfer; and ME 608 Fluid Dynamics (or equivalent).

Attributes: Writing Intensive Course**ME 782 - Industrial Skills and Engineering****Credits:** 3

In this course, the principles of Lean Manufacturing and Value Stream Mapping (VSM) as pioneered by Toyota and now utilized by most leading manufacturers will be studied and applied. Lean Manufacturing principles will be taught with classroom instruction and a structured model factory exercise. Instruction on the theory of Value Stream Mapping (VSM) will be followed with an actual industrial VSM activity where a process will be studied and a Desired Future State defined with VSM methods. This factory floor activity will be done collaboratively with employees from a manufacturing company.

ME 785 - Solid Mechanics in Manufacturing**Credits:** 4

Characterization of material properties are studied with emphasis on plastic deformation. Also, numerical approaches to solve for the forces, stresses, and strains in manufacturing processes are covered. In particular, two prominent mass production manufacturing areas, metal forming and cutting, are examined. Prereq: ME 561; ME 627.

ME 786 - Introduction to Finite Element Analysis**Credits:** 4

Topics include basic matrix theory, potential energy approach, direct stiffness method, calculus of variations, development of finite element theory, and modeling techniques. Applications in solid mechanics, heat transfer, fluids, and electromagnetic devices, via both commercially available codes and student-written codes. Prereq: ME 526, ME 603 or permission. Lab.

ME 795 - Special Topics**Credits:** 1-4

New or specialized courses and/or independent study. May be repeated for credit.

ME 797 - Honors Seminar**Credits:** 1

Course enrichment and/or additional independent study in subject matter pertaining to a 600- or 700-level ME course other than ME 695, ME 696, ME 697, or ME 795.

Military Science (MILT)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

MILT 401 - Leadership Laboratory I**Credits:** 0

Open only to students taking another Military Science class, with different roles offered for students at different levels of the program. Involves leadership responsibilities for the planning, coordination, execution, and evaluation of various training programs. Students develop, practice and refine leadership skills by serving and being evaluated in a variety of supervisory positions. Specific events include a team-building leader reaction course, orientation to military weapons, basic tactical movement, and land navigation. Cr/F.

MILT 402 - Leadership Laboratory II**Credits:** 0

Open only to students taking another Military Science class, with different roles offered for students at different levels of the program. Involves leadership responsibilities for the planning, coordination, execution, and evaluation of various training programs. Students develop, practice and refine leadership skills by serving and being evaluated in a variety of supervisory positions. Specific events include basic marksmanship, advanced tactical movement, orienteering and land navigation. Cr/F.

MILT 403 - United States Army History**Credits:** 3

Develops an understanding of the effects the US military and society have on each other through the establishment and background of the United States Army. Presented in the context of broader US Military history and military strategy and global involvement. Through readings, oral and written presentations, and exams, students describe the role of the US Army, its evolution and its impact on society and technology; and critically analyze an armed conflict using the principles of war. This is a pre-commissioning requirement for professional military education (PME) required by the United States Army Cadet Command. It is open to non-ROTC students.

MILT 413 - Introduction to ROTC**Credits:** 2

Make your first new peer group at college one committed to performing well and enjoying the experience. Increase self-confidence through team study and activities in physical fitness, rappelling, first aid, basic marksmanship, and basic drill. Learn fundamental concepts of leadership in both classroom and outdoor laboratory environments. One hour and a required leadership lab (MILT 401L) plus optional (mandatory for scholarship cadets) participation in three one-hour sessions of physical fitness per week. Participation in one weekend exercise is also required for all cadets. Open to all college students, no military commitment required.

MILT 414 - Introduction to ROTC II**Credits: 2**

Learn and apply principles of effective leadership. Reinforce self-confidence through participation in physically and mentally challenging exercises with other ROTC cadets. Continued activities in basic drill, physical fitness, rappelling, first aid, and basic marksmanship. Develop communication skills to improve individual performance and group interaction. One hour and a required leadership lab (MILT 402L) plus optional (mandatory for scholarship cadets) participation in three one-hour sessions for physical fitness per week. Participation in one weekend exercise is also required for all cadets. Open to all college students; no military commitment required.

MILT 501 - Self/Team Development I**Credits: 2**

Learn and apply ethics-based leadership skills that develop individual abilities and contribute to the building of effective teams of people. Develop skills in oral presentations, planning of events, advanced first aid, physical fitness, and land navigation. Learn techniques for training others as an aspect of continued leadership development. Two hours and a required leadership lab (MILT 401L), plus optional participation (mandatory for scholarship cadets) in three one-hour sessions of physical fitness per week. Participation in one weekend exercise is required. Additional weekend exercises may be offered for optional participation. Open to all college students, no military commitment required.

Co-requisite: MILT 401

MILT 502 - Individual/Team Military Tactics**Credits: 2**

Introduces individual and team aspects of military tactics in small unit operations. Includes use of radio communications, making safety assessments, movement techniques, planning for team safety/security, and methods of pre-execution checks. Practical exercises with other ROTC students. Learn techniques for training others as an aspect of continued leadership development. Two hours and a required leadership lab (MILT 402L), plus optional participation (mandatory for scholarship cadets) in three one-hour sessions of physical fitness per week. Participation in one weekend exercise is required. Additional weekend exercises may be offered for optional participation. Open to all college students, no military commitment required.

Co-requisite: MILT 402

MILT 550 - Camp Challenge**Credits: 4**

Five-week leadership training course at Fort Knox, Kentucky during the summer that exposes students to intensive leadership evaluation and development. Students learn fundamental military skills such as land navigation using a map and compass, principles of leadership, first aid, drill and ceremony, team building exercises, etc. in preparation for future training as ROTC cadets. Students gain professional knowledge in management and organization and experience group interaction and interpersonal communications through total immersion in a military type environment. Open only to students who have not completed all of the following: MILT 401, MILT 402, MILT 501, and MILT 502. Airfare, lodging, and expenses are paid by the Army. Student incurs no military obligation; program offers opportunities to earn a two-year scholarship and qualifies students to take MILT 601.

MILT 601 - Leading Small Organizations I**Credits: 4**

Series of practical opportunities to lead small groups, receive personal assessments and encouragement, and lead again in situations of increasing complexity. Plan and conduct training for other ROTC students in small unit offensive and defensive operations. Three hours and required leadership lab (MILT 401L) plus required participation in three one-hour sessions of physical fitness per week. Participation in one weekend exercise is also required. Other weekend exercises are offered for optional participation. Prereq: Cadet completes MILT 550 or completes MILT 413, MILT 414, MILT 501, and MILT 502.

MILT 602 - Leading Small Organizations II**Credits: 4**

Continues the methodology from MILT 601. Analyze tasks; prepare written and oral guidance for team members to accomplish tasks. Delegate tasks and supervise. Plan for and adapt to the unexpected in organizations under stress. Examine and apply lessons from leadership studies. Examine importance of ethical decision making in setting a positive climate that enhances team performance. Three hours and a required leadership lab (MILT 402L) plus required participation in three one-hour sessions for physical fitness per week. Participation in one weekend exercise is also required, and one or two more weekend exercises may be offered for optional participation.

MILT 611 - Seminar on Leadership and Management I**Credits: 4**

Plan, conduct and evaluate activities of the ROTC cadet organization. Articulate goals and put plans into action to attain them. Assess organizational cohesion and develop strategies to improve it. Develop confidence in skills to lead people and manage resources. Learn/apply various Army policies and programs in this effort. Three hours and a required leadership lab (MILT 401L) plus required participation in three one-hour sessions for physical fitness per week. Participation in one weekend exercise is also required, and one or two more weekend exercises may be offered for optional participation. Prereq: MILT 601 and MILT 602.

MILT 612 - Transition to Lieutenant**Credits: 4**

Continues the methodology from MILT 611. Identify and resolve ethical dilemmas. Refine counseling and motivating techniques. Examine aspects of tradition and law as related to leading as an officer in the Army. Prepare for a future as a successful Army lieutenant. Three hours and a required leadership lab (MILT 402L) plus required participation in three one-hour sessions for physical fitness per week. Participation in one weekend exercise is also required, and one or two more weekend exercises may be offered for optional participation. Prereq: MILT 611.

MILT 695 - Officer Internship**Credits: 1-4**

Experiential learning through fieldwork in a military-type unit. Written analysis required. Prereq: MILT 611 (may be taken concurrently). By permission only. Coreq: MILT 401. May be taken up to a total of 8 credits.

Music (MUSI)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

MUSI 401 - Introduction to Music**Credits:** 4

Fundamental approach to perceptive listening based on a detailed study of several masterpieces representing different periods and forms. Historical perspective, but main emphasis is on confronting significant works of musical art on their own terms. Some participation in musical life of the University required. This course does not fulfill a music major program requirement nor does it satisfy the Fine and Performing Arts Discovery requirement for any music major program.

Attributes: FinePerformingArts(Discovery)**MUSI 401H - Honors/Introduction to Music****Credits:** 4

Fundamental approach to perceptive listening based on a detailed study of several masterpieces representing different periods and forms. Historical perspective, but main emphasis is on confronting significant works of musical art on their own terms. Some participation in musical life of the University required. This course does not fulfill a music major program requirement nor does it satisfy the Fine and Performing Arts Discovery requirement for any music major program.

Attributes: FinePerformingArts(Discovery)**MUSI 402 - Survey of Music History****Credits:** 4

The study of the development of musical styles and idioms in the context of selected historical and cultural aspects of Western civilization. This course does not fulfill a music major program requirement nor does it satisfy the Fine and Performing Arts Discovery requirement for any music major program.

Attributes: FinePerformingArts(Discovery)**MUSI 402H - Honors/Survey of Music History****Credits:** 4

The study of the development of musical styles and idioms in the context of selected historical and cultural aspects of Western civilization. This course does not fulfill a music major program requirement nor does it satisfy the Fine and Performing Arts Discovery requirement for any music major program.

Attributes: FinePerformingArts(Discovery)**MUSI 403 - Roots of Rock****Credits:** 4

Focuses on the musical styles, traditions, and social circumstances that led to a distinctive form of American popular music in the 1950's and '60's. In addition to developing critical listening skills to discern subtle distinctions among such styles and sub-styles as blues, folk, jazz, and country, the course also considers the diverse social trends that helped drive changes and developments in the various styles and genres covered. While some attention will be devoted to rock music of the mid-late sixties, the course emphasizes the various musical styles that preceded rock.

Attributes: FinePerformingArts(Discovery)**MUSI 404 - An Introduction to Music, Media, and the Moving Image****Credits:** 4

Through selected readings, attentive listening, viewing, and discussion of a variety of films and multi-media productions, students develop a common vocabulary for analyzing music accompanying moving images. Students develop an understanding of the western and non-western musical conventions that work, often at a subconscious level, in conjunction with images to shape and cue audience responses to, and interaction with, visual cues. Media includes canonic Hollywood films, independent and foreign cinema, with explorations of non-Western films, video game scoring, television, and animation. This course does not fulfill a music major program requirement nor does it satisfy the Fine and Performing Arts Discovery requirement for any music major program.

Attributes: FinePerformingArts(Discovery)**MUSI 405 - Survey of Music in America****Credits:** 4

From colonial times to the present, including various European influences, the quest for an American style, and the emergence of such indigenous phenomena as jazz. This course does not fulfill a music major program requirement nor does it satisfy the Fine and Performing Arts Discovery requirement for any music major program. (Formerly MUSI 511).

Attributes: FinePerformingArts(Discovery)**MUSI 406 - Country Music****Credits:** 4

This course surveys the rich musical, cultural, and economic history of country music in the United States. Since its inception, country music has embodied a tension between tradition and progress. Country music thereby reflects a basic feature of the American story, valorizing our history while valuing social and technological development. Throughout the course, we consider this tension as it affects the musical content and cultural meaning of country music.

Attributes: FinePerformingArts(Discovery)**MUSI 411 - Fundamentals of Music Theory****Credits:** 4

Elements of music theory for the non-music major; principles of musical structure, analysis, elementary written counterpoint and harmony, and ear training. May not be counted for credit toward a music major. Prereq: ability to read music and permission of the instructor.

MUSI 412 - Fundamentals of Music Theory**Credits:** 4

Elements of music theory for the non-music major; principles of musical structure, analysis, elementary written counterpoint and harmony, and ear training. May not be counted for credit toward a music major. Prereq: ability to read music and permission of the instructor. Prereq: MUSI 411 or permission of instructor.

MUSI 441 - Concert Choir**Credits:** 1

A mixed chorus that studies and performs classical and modern literature. Recommended for voice majors. Open to all students. May be repeated for a maximum of 8 credits.

MUSI 442 - Chamber Singers**Credits:** 1

A specialized mixed chamber choir that concentrates on the a cappella repertoire from the Renaissance to the present. Prereq: Audition.

Co-requisite: MUSI 441

MUSI 444 - Music and Social Change**Credits:** 4

The connections between music and social change with a twofold goal: 1) to heighten critical listening skills so as to become more aware of ways in which music can express social attitudes; and 2) to introduce the social, cultural, and political issues surrounding the music being studied. Course work consists of listening to selected repertoires, reading scholarly and popular essays about those repertoires, and extensive in-class (and on-line) discussion about issues raised by the listening and reading. This course does not fulfill a music major program requirement nor does it satisfy the Fine and Performing Arts Discovery requirement for any music major program. Writing intensive.

Attributes: FinePerformingArts(Discovery); Inquiry (Discovery); Writing Intensive Course

MUSI 448 - Opera Workshop**Credits:** 1

Operatic singing, acting, and production techniques; performance of both complete operas and operatic excerpts. Prereq: audition.

MUSI 450 - Symphony**Credits:** 1

Presents several concerts during the year of repertoire ranging from the great, standard symphonic literature to large modern works. Prereq: audition.

MUSI 451 - Concert Band**Credits:** 1

The Concert Band performs serious, concert music, ranging from transcriptions of works for other mediums, to the 20th century "classics" of the wind band repertoire and music written for wind band. Anyone with previous band experience is welcome. Auditions are for chair placement only. May be repeated up to a maximum of 12 credits.

MUSI 452 - Wind Symphony**Credits:** 1

Select wind ensemble which performs difficult classical and contemporary literature. Prereq: audition.

MUSI 453 - Symphonic Band**Credits:** 1

Original band music, transcription, marches, etc. For students whose program does not permit music as a major interest, but who are interested in maintaining their playing proficiency and continuing their study of music. May be repeated for a maximum of 8 credits. Prereq: audition.

MUSI 454 - UNH Marching Band**Credits:** 1

Open to all students; performs during football games. Rehearsals conclude at the end of the football season. May be repeated up to a maximum of 8 credits. 0 or 1 credit.

MUSI 455 - Piano Ensemble**Credits:** 1

Drawing from available student instrumentalists and singers, pianists learn the art of performing in trios, duo sonatas, and two-piano works, and gain experience in Lieder accompaniment.

MUSI 456 - String Ensemble**Credits:** 1

Groups of instrumentalists gain experience in the performance of literature for the smaller ensemble. Prereq: permission.

MUSI 457 - Woodwind Ensemble**Credits:** 1

Groups of instrumentalists gain experience in the performance of literature for the smaller ensemble. Prereq: permission.

MUSI 458 - Brass Ensemble**Credits:** 1

Groups of instrumentalists gain experience in the performance of literature for the smaller ensemble. Prereq: permission.

MUSI 459 - Percussion Ensemble**Credits:** 1

Groups of instrumentalists gain experience in the performance of literature for the smaller ensemble. Prereq: permission.

MUSI 460 - Jazz Band**Credits:** 1

Two jazz bands perform a wide spectrum of big band literature. May be repeated up to a maximum of 8 credits. Prereq: audition.

MUSI 461 - Vocal Jazz Ensemble**Credits:** 1

Singers perform a wide spectrum of vocal jazz literature. May be repeated up to a maximum of 8 credits. Open to all students pending an audition during the first week of the semester. Contact the Department of Music for further information.

MUSI 462 - Pep Band**Credits:** 1

Rehearsal and performance of a broad range of band music at hockey and basketball games. May be repeated up to a maximum of 8 credits. 0 or 1 credit.

MUSI 463 - Jazz Combo**Credits:** 1

Groups of instrumentalists gain experience in the performance of literature for the smaller jazz ensemble. May be repeated up to a maximum of 9 credits. Prereq: permission.

MUSI 464 - Guitar Ensemble**Credits:** 1

Groups of instrumentalists gain experience in the performance of literature for the smaller ensemble. May be repeated up to a maximum of 9 credits. Prereq: permission.

MUSI 471 - Theory I**Credits:** 3

Introduces the tonal system; species counterpoint; principles of voice leading and harmonic progression through the analysis, realization, and composition of one-, two-, and four-voiced textures. Concept of triad inversion and consonant diatonic harmonies of the major and minor modes. Students should register for MUSI 473 and MUSI 474 concurrently. Prereq: permission.

MUSI 472 - Theory I**Credits:** 3

Introduces the tonal system; species counterpoint; principles of voice leading and harmonic progression through the analysis, realization, and composition of one-, two-, and four-voiced textures. Concept of triad inversion and consonant diatonic harmonies of the major and minor modes. Students should register for MUSI 473 and MUSI 474 concurrently. Prereq: permission. Prereq: MUSI 471.

MUSI 473 - Ear Training I**Credits:** 1

Laboratory exercises to develop aural skills; sight-singing and dictation. Students should register for MUSI 471 and MUSI 472 concurrently. Prereq: permission.

MUSI 474 - Ear Training I**Credits:** 1

Laboratory exercises to develop aural skills; sight-singing and dictation. Students should register for MUSI 471 and MUSI 472 concurrently. Prereq: permission. Prereq: MUSI 473.

MUSI 475 - Functional Piano I**Credits:** 1

Basic instruction for music majors with no previous keyboard training. Piano technique, keyboard harmony geared to the practical harmonization of simple melodies, sight reading, transposition, and modulation. May involve both class instruction and periodic short individual lessons. Prereq: permission.

Co-requisite: MUSI 471, MUSI 473**MUSI 476 - Functional Piano I****Credits:** 1

Basic instruction for music majors with no previous keyboard training. Piano technique, keyboard harmony geared to the practical harmonization of simple melodies, sight reading, transposition, and modulation. May involve both class instruction and periodic short individual lessons. Prereq: permission. Prereq: MUSI 475.

Co-requisite: MUSI 472, MUSI 474**MUSI 501 - History and Literature of Music****Credits:** 3

Styles, forms, and techniques of composition in Western music. Prereq: completion of MUSI 472 or MUSI 412; permission.

MUSI 502 - History and Literature of Music**Credits:** 3

Styles, forms, and techniques of composition in Western music. Prereq: completion of MUSI 472 or MUSI 412; permission.

Attributes: Inquiry (Discovery)**MUSI 515 - Music in World Cultures****Credits:** 4

An introduction to musicking (participating in any way, including listening, in musical performance) beyond the Western tradition, this course offers students an opportunity to explore the music and culture of diverse regions from an ethnomusicological perspective. Through listening to and analyzing music, readings, lecture, discussion, and individual fieldwork projects, students discover how music functions within different world cultures and gain understanding of the ways people "make music meaningful and useful in their lives," as, through musicking, they articulate, resist, and transform cultural norms.

Attributes: World Cultures(Discovery)**MUSI 520 - Diction for Singers I****Credits:** 2

Application of International Phonetic Alphabet (IPA) to English, French, German, and Italian. Emphasizes both written and spoken performance.

MUSI 521 - Diction for Singers II**Credits:** 2

Application of International Phonetic Alphabet (IPA) to English, French, German, and Italian. Emphasizes both written and spoken performance. Prereq: MUSI 520.

MUSI 536 - Early Wind Instruments**Credits:** 1-4

Private instruction in Renaissance and Baroque wind instruments. May be repeated. Special fee.

MUSI 540 - Recital Attendance**Credits:** 0

This course is a requirement for all undergraduate music majors in the Department of Music. Students are required to attend at least twelve approved recitals or concerts during each semester they are enrolled. This course must be completed six times with a grade of Credit (Satisfactory) for zero credit each time.

MUSI 541 - Piano**Credits:** 1-4

Private instruction in piano. May be repeated. Special fee for non-majors.

MUSI 545 - Voice**Credits:** 1-4

Private instruction in voice. May be repeated. Special fee for non-majors.

MUSI 546 - Violin**Credits:** 1-4

Private instruction in violin. May be repeated. Special fee for non-majors.

MUSI 547 - Viola**Credits:** 1-4

Private instruction in viola. May be repeated. Special fee for non-majors.

MUSI 548 - Violoncello**Credits:** 1-4

Private instruction in violoncello. May be repeated. Special fee for non-majors.

MUSI 549 - String Bass**Credits:** 1-4

Private instruction in string bass. May be repeated. Special fee for non-majors.

MUSI 550 - Classical Guitar**Credits:** 1-4

Private instruction in classical guitar. Special fee.

MUSI 551 - Flute**Credits:** 1-4

Private instruction in flute. May be repeated. Special fee for non-majors.

MUSI 552 - Clarinet**Credits:** 1-4

Private instruction in clarinet. May be repeated. Special fee for non-majors.

MUSI 553 - Saxophone**Credits:** 1-4

Private instruction in saxophone. May be repeated. Special fee for non-majors.

MUSI 554 - Oboe**Credits:** 1-4

Private instruction in oboe. May be repeated. Special fee for non-majors.

MUSI 555 - Bassoon**Credits:** 1-4

Private instruction in bassoon. May be repeated. Special fee for non-majors.

MUSI 556 - French Horn**Credits:** 1-4

Private instruction in French horn. May be repeated. Special fee for non-majors.

MUSI 557 - Trumpet**Credits:** 1-4

Private instruction in trumpet. May be repeated. Special fee for non-majors.

MUSI 558 - Trombone**Credits:** 1-4

Private instruction in trombone. May be repeated. Special fee for non-majors.

MUSI 559 - Euphonium**Credits:** 1-4

Private instruction in euphonium. May be repeated. Special fee for non-majors.

MUSI 560 - Tuba**Credits:** 1-4

Private instruction in tuba. May be repeated. Special fee for non-majors.

MUSI 561 - Percussion**Credits:** 1-4

Private instruction in percussion. May be repeated. Special fee for non-majors.

MUSI 562 - Jazz Piano**Credits:** 1-4

Private instruction in jazz piano. May be repeated. Special fee for non-majors. Permission required.

MUSI 563 - Jazz Guitar**Credits:** 1-4

Private instruction in jazz guitar. May be repeated. Special fee for non-majors.

MUSI 564 - Drum Set**Credits:** 1-4

Private instruction in drum set. May be repeated. Special fee for non-majors.

MUSI 571 - Theory II**Credits:** 3

Continuation of MUSI 471- MUSI 472. Compositional and analytical work stresses the treatment of dissonance within the tonal system; accessory tones, seventh chords, tonicization, modulation, basic principles of chromatic harmony, and harmonization of chorale melodies are covered. Students should register for MUSI 573 and MUSI 574 concurrently. Prereq: MUSI 472; MUSI 474.

MUSI 572 - Theory II**Credits:** 3

Continuation of MUSI 471- MUSI 472. Compositional and analytical work stresses the treatment of dissonance within the tonal system; accessory tones, seventh chords, tonicization, modulation, basic principles of chromatic harmony, and harmonization of chorale melodies are covered. Students should register for MUSI 573 and MUSI 574 concurrently. Prereq: MUSI 472; MUSI 474. Prereq: MUSI 571.

MUSI 573 - Ear Training II**Credits:** 1

Laboratory exercises to develop aural skills further. Students should register for MUSI 571-572 concurrently. Prereq: MUSI 472; 474; permission.

MUSI 574 - Ear Training II**Credits:** 1

Laboratory exercises to develop aural skills further. Students should register for MUSI 571-572 concurrently. Prereq: MUSI 472; 474; permission.

MUSI 575 - Functional Piano II**Credits:** 1

Basic instruction for music majors with no previous keyboard training. Piano technique, keyboard harmony geared to the practical harmonization of simple melodies, sight reading, transposition, and modulation. May involve both class instruction and periodic short individual lessons. Prereq: permission. Prereq: MUSI 476.

Co-requisite: MUSI 571, MUSI 573**MUSI 576 - Functional Piano II****Credits:** 1

Basic instruction for music majors with no previous keyboard training. Piano technique, keyboard harmony geared to the practical harmonization of simple melodies, sight reading, transposition, and modulation. May involve both class instruction and periodic short individual lessons. Prereq: permission. Prereq: MUSI 575.

Co-requisite: MUSI 572, MUSI 574**MUSI 595 - Special Topics in Music Literature****Credits:** 1-4

Open to music majors and non-majors; topics in areas not easily covered in historical courses. Prereq: permission. May be repeated for credit.

MUSI #610 - Popular Music and Rebellion in the 1960's**Credits:** 4

Examines the ways in which popular music helped form the youth culture, was used as an act of rebellion, and came to be a focal point of generational conflict and protest in the United States during the 1960s.

MUSI 703 - Music of the Renaissance**Credits:** 3

Works of the 15th- and 16th-century composers from Dunstable to Palestrina. Prereq: MUSI 501 and MUSI 502 or permission. Writing intensive.

Attributes: Writing Intensive Course**MUSI 705 - Music of the Baroque****Credits:** 3

Music of Europe from de Rore to Bach. Prereq: MUSI 501 and MUSI 502 or permission. Writing intensive.

Attributes: Writing Intensive Course**MUSI 707 - Music of the Classical Period****Credits:** 3

Growth of musical styles and forms from early classicism through the high classicism of Haydn, Mozart, and the young Beethoven. Prereq: MUSI 501 and MUSI 502 or permission. Writing intensive.

Attributes: Writing Intensive Course**MUSI 709 - Music of the Romantic Period****Credits:** 3

A survey of romanticism in music from Beethoven's late period to the end of the 19th century. The works of Schubert, Berlioz, Schumann, Mendelssohn, Chopin, Wagner, Verdi, Brahms, Austrian symphonists, French pre-impressionists, and national styles in European music. Prereq: MUSI 501 and MUSI 502 or permission.

MUSI 709W - Music of the Romantic Period**Credits:** 3

A survey of romanticism in music from Beethoven's late period to the end of the 19th century. The works of Schubert, Berlioz, Schumann, Mendelssohn, Chopin, Wagner, Verdi, Brahms, Austrian symphonists, French pre-impressionists, and national styles in European music. Prereq: MUSI 501 and MUSI 502 or permission. Writing intensive.

Attributes: Writing Intensive Course

MUSI 711 - Music of the 20th and 21st Centuries**Credits:** 3

Styles and techniques of composers from Debussy to the present. Special emphasis on tonal music before World War I, neoclassical trends, the emergence of atonality and serial techniques, electronic music. Prereq: MUSI 501 and MUSI 502 or permission. Writing intensive.

Attributes: Writing Intensive Course**MUSI 713 - Art Song****Credits:** 3

History and literature of the solo song with piano accompaniment. Survey of national styles of the 19th and 20th centuries and deeper study of the central core of the art song--the German Lied. Prereq: MUSI 501 and MUSI 502 or permission. Writing intensive.

Attributes: Writing Intensive Course**MUSI 715 - Survey of Opera****Credits:** 3

History of the genre from Monteverdi to the present. Prereq: MUSI 501 and MUSI 502 or permission. Writing intensive.

Attributes: Writing Intensive Course**MUSI 731 - Conducting****Credits:** 2

Physical aspects, equipment of conductor, fundamental gestures and beats, baton techniques. Reading and analysis of full and condensed scores, study of transposition, psychology of rehearsal. Prereq: MUSI 571.

MUSI 732 - Conducting**Credits:** 2

Physical aspects, equipment of conductor, fundamental gestures and beats, baton techniques. Reading and analysis of full and condensed scores, study of transposition, psychology of rehearsal. Prereq: MUSI 571. Prereq: MUSI 731.

MUSI 736 - Early Wind Instruments**Credits:** 1-4

Private instruction in Renaissance and Baroque wind instruments. May be repeated. Special fee.

MUSI 741 - Piano**Credits:** 1-4

Private instruction in piano. May be repeated. Special fee for non-majors.

MUSI 745 - Voice**Credits:** 1-4

Private instruction in voice. May be repeated. Special fee for non-majors.

MUSI 746 - Violin**Credits:** 1-4

Private instruction in violin. May be repeated. Special fee for non-majors.

MUSI 747 - Viola**Credits:** 1-4

Private instruction in viola. May be repeated. Special fee for non-majors.

MUSI 748 - Violoncello**Credits:** 1-4

Private instruction in violoncello. May be repeated. Special fee for non-majors.

MUSI 749 - String Bass**Credits:** 1-4

Private instruction in string bass. May be repeated. Special fee for non-majors.

MUSI 750 - Classical Guitar**Credits:** 1-4

Private instruction in classical guitar. Special fee.

MUSI 751 - Flute**Credits:** 1-4

Private instruction in flute. May be repeated. Special fee for non-majors.

MUSI 752 - Clarinet**Credits:** 1-4

Private instruction in clarinet. May be repeated. Special fee for non-majors.

MUSI 753 - Saxophone**Credits:** 1-4

Private instruction in saxophone. May be repeated. Special fee for non-majors.

MUSI 754 - Oboe**Credits:** 1-4

Private instruction in oboe. May be repeated. Special fee for non-majors.

MUSI 755 - Bassoon**Credits:** 1-4

Private instruction in bassoon. May be repeated. Special fee for non-majors.

MUSI 756 - French Horn**Credits:** 1-4

Private instruction in French horn. May be repeated. Special fee for non-majors.

MUSI 757 - Trumpet**Credits:** 1-4

Private instruction in trumpet. May be repeated. Special fee for non-majors.

MUSI 758 - Trombone**Credits:** 1-4

Private instruction in trombone. May be repeated. Special fee for non-majors.

MUSI 759 - Euphonium**Credits:** 1-4

Private instruction in euphonium. May be repeated. Special fee for non-majors.

MUSI 760 - Tuba**Credits:** 1-4

Private instruction in tuba. May be repeated. Special fee for non-majors.

MUSI 761 - Percussion**Credits:** 1-4

Private instruction in percussion. May be repeated. Special fee for non-majors.

MUSI 762 - Jazz Piano**Credits:** 1-4

Private instruction in jazz piano. May be repeated. Special fee for non-majors. Permission required.

MUSI 763 - Jazz Guitar**Credits:** 1-4

Private instruction in jazz guitar. May be repeated. Special fee for non-majors.

MUSI 764 - Drum Set**Credits:** 1-4

Private instruction in drum set. May be repeated. Special fee for non-majors.

MUSI 771 - Counterpoint**Credits:** 3

Contrapuntal techniques of tonal music. Melodic construction and dissonance treatment through work in species counterpoint and studies in harmonic elaboration and prolongation. Analysis of selected compositions emphasizes the connection between fundamental contrapuntal techniques and the voice-leading of composition. Prereq: MUSI 572 or permission.

MUSI 775 - Composition**Credits:** 1-4

Construction of phrases, periods, and short compositions following classical models. Problems of text-setting. Prereq MUSI 572 or permission.

MUSI 776 - Composition**Credits:** 1-4

Construction of phrases, periods, and short compositions following classical models. Problems of text-setting. Prereq MUSI 572 or permission. Prereq: MUSI 775 or permission.

MUSI 777 - Advanced Composition**Credits:** 1-4

Continuation of MUSI 776. Individual compositional projects. Prereq: MUSI 776 and permission. May be repeated for credit.

MUSI 778 - Topics in Electronic Music**Credits:** 1-4

Introduces and develops skills in the fundamentals of musical acoustics, and the principal compositional resources of digital/electronic music. Permission required.

MUSI 779 - Orchestration**Credits:** 3

Characteristics of band and orchestral instruments both individually and in small (homogeneous) and large mixed groupings. Students study scores, write assignments, and have arrangements performed if possible. Prereq: MUSI 572 or permission.

MUSI 781W - Analysis: Form and Structure**Credits:** 3

Introduces analytical techniques through the study of representative masterworks: formal and structural elements and their interrelationships. Analysis of 18th- and 19th century works. Prereq: MUSI 572 or permission. Special fee. Writing intensive.

Attributes: Writing Intensive Course**MUSI 782W - Analysis: Form and Structure****Credits:** 3

Introduction to analytical techniques through the study of representative masterworks: formal and structural elements and their interrelationships. Analysis of 20th- and 21st-century works. Prereq: MUSI 572 or permission. Writing intensive.

Attributes: Writing Intensive Course**MUSI 795 - Special Studies****Credits:** 1-4

A) J.S. Bach, B) Franz Schubert, C) Debussy and Ravel, D) the world of jazz, E) piano literature, F) 19th century French music, G) advanced analysis, H) advanced study in electronic music, I) composition through computer-generated sound, J) woodwind literature, K) brass literature, L) string literature, M) medieval performance practice, N) renaissance performance practice, O) baroque performance practice, P) classical performance practice, Q) 19th century performance practice, R) 20th century performance practice, S) woodwind repair, T) string repair, U) advanced jazz improvisation, V) advanced piano pedagogy, W) advanced accompanying, X) advanced conducting, Y) independent study. Prereq: permission. May be repeated for credit with permission.

MUSI 795W - Special Studies/Cardiff**Credits:** 1-3

Advanced Music History or Advance Music Theory for Cardiff U. Study Abroad. Prereq: permission. Writing intensive.

Attributes: Writing Intensive Course

Music Education (MUED)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

MUED 595 - Special Projects**Credits:** 1-4

Individual investigation, research, or study. Creative projects may be included. Prereq: permission.

MUED 741 - Techniques and Methods in Choral Music**Credits:** 2

Problems in the organization and performance of high school, college, and community choruses. Techniques of choral conducting and rehearsal, repertory and materials.

MUED 743 - Materials and Methods in Piano Music**Credits:** 2

Gives potential piano teachers a coherent but flexible approach to the instruction of students of different ages and levels of talent through evaluation of methods and materials and discussion of the role of the private teacher.

MUED 745 - Techniques and Methods in String Instruments**Credits:** 2

Class and individual instruction. Intensive training on the violin, viola, cello, and double bass. Classroom procedures, establishment of string programs, and evaluation of available methods materials. Permission required.

MUED 747 - Techniques and Methods in Woodwind Instruments**Credits:** 2 or 3

Basic course in embouchure formation, tone production, tonguing, fingering and instrument care as applied to each of the woodwinds: flute, oboe, clarinet, bassoon and saxophone. Methods, studies, solos and ensembles most useful with school players of woodwind instruments. Permission required.

MUED 749 - Techniques and Methods in Brass Instruments**Credits:** 2

Basic course in embouchure formation, tone, tonguing, fingering, flexibility, accuracy, and range development as applied to the trumpet or baritone horn, French horn, and trombone. Methods, studies, solos, and ensembles most likely to be useful with school players of brass instruments. Permission required.

MUED 751 - Techniques and Methods in Percussion Instruments**Credits:** 2

Basic performance skills on snare drum, timpani, mallet instruments, and other percussion instruments used in bands and orchestras. Materials and methods of instruction. Permission required.

MUED 755 - Vocal Pedagogy**Credits:** 1 or 2

A study of vocal anatomy, vocal function, and teaching methods, with an emphasis on application for singers and voice teachers.

MUED #763 - Jazz Music Methods**Credits:** 2

Organization and delivery of instruction in jazz. Historical development of jazz styles and the role of each instrument/voice in jazz combos and large ensembles. Reading jazz notation and teaching improvisation. Examination of appropriate literature. Prereq: piano proficiency. Permission required.

MUED 765 - Instrumental Music Methods**Credits:** 2

Organization and delivery of instruction to groups of instrumental music students. Examination of appropriate curricula and materials, application of instrumental and conducting techniques, structure of rehearsals, assessment of student progress. Prereq: junior standing.

MUED 771 - Marching Band Methods**Credits:** 2

Role of marching band in the school music program. Design and execution of field shows and parade marching. Understanding of marching percussion and auxiliary units. Examination of appropriate music. Prereq: MUSI 454 and MUSI 571.

MUED 790 - Teaching Elementary School Music**Credits:** 3

Experiential approach toward learning creative strategies for teaching elementary school music. Includes various curricula and methods; philosophy and psychology of music; demonstration of materials and instruments. Observation and teaching in schools. Prereq: piano proficiency.

MUED 791 - Teaching Secondary School Music**Credits:** 2

Assembling, managing, and teaching junior/senior high school music curriculum. Academic issues of philosophy, curriculum building, application of learning theories, administration, evaluation, motivation, and classroom management combined with field experience in lesson planning and teaching/rehearsal techniques. Prereq: piano proficiency; MUSI 731 and MUSI 732.

MUED 795 - Special Studies**Credits:** 1-4

Allows upper-level students to explore individually or in groups areas related to their specific professional interests. Prereq: permission.

Natural Resources (NR)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

NR 400 - Professional Perspectives in Natural Resources**Credits:** 1

Lectures by departmental faculty provide an informal look at the various natural resource disciplines and professions represented by the Department of Natural Resources. These presentations acquaint students with our faculty and inform them of some of the exciting research being undertaken in the department. Students also learn of opportunities for professional involvement. Required for all first-semester Natural Resources majors. Cr/F.

NR #401 - Introduction to Natural Resources**Credits:** 4

Overview of the history, politics, economics, ethics, and ecology involved with the conservation and management of living and non-living natural resources. Sets the stage for subsequent natural resource courses by introducing the scientific basis for natural resource conservation and management. Labs build confidence in map and compass work and provide hands on field experience within the various natural resource disciplines. Debates and discussions of natural resource related hot topics provide opportunities to practice public speaking, problem solving, and critical thinking skills. Restricted to NR majors or by Permission. Lab. Special fee.

Attributes: Inquiry (Discovery)**NR 403 - Introduction to Environmental Science****Credits:** 4

A multi-disciplinary introduction to Environmental Sciences, presenting basic concepts and controversies in geology, meteorology/hydrology, global biology and biogeochemistry, integrated through the study of the Earth as system. Intended primarily for declared or perspective majors in Environmental Sciences and related programs. Combines lecture and discussion with discovery and presentation experiences to address the history of ideas, and major questions and controversies, both settled and active.

Attributes: Inquiry (Discovery)**NR #410 - Insects and Society****Credits:** 4

Insects have had a major impact on human culture throughout the centuries as source of food, an inspiration in literature and art, and a driving force behind social change. We study basic insect biology and ecology with a focus on their relationships to humans. Special fee. Lab.

Attributes: Biological Science(Discovery); Discovery Lab Course**NR 415 - Natural Resources Field Methods****Credits:** 2

This course is intended to serve first or second year students in Forestry, Wildlife and Conservation Biology, and Environmental Conservation and Sustainability. After taking this course, students are able to navigate successfully in wild terrain using pacing, map, compass, GPS; can conduct a simple planar survey including cartography; and can sample a forest in order to characterize the abundance and quality of forest resources. Moreover, students know the fundamental principles of navigation, surveying, and field sampling.

NR 417 - Sophomore Seminar: Wildlife and Conservation Biology**Credits:** 2

This course provides a professional foundation and orientation for second-year Wildlife & Conservation Biology (WCB) students. Through readings, seminars, guest speakers, and conservation, students will explore the range of what it means to be a professional Wildlife & Conservation Biologist. After taking this course, students will be better able to navigate and critique the scientific literature, synthesize and communicate information, and understand and articulate the diverse field of Wildlife & Conservation Biology.

NR 425 - Field Dendrology**Credits:** 4

Students study forest trees in natural communities and urban settings. Identification and nomenclature of important North American trees and shrubs is emphasized. Environmental factors influencing tree growth, combined with study of disturbance history, provide the context for understanding why tree species grow where they do. Students are introduced to the major forest regions of North America. Restricted to NR majors; others by permission. Special fee.

NR 433 - Wildlife Ecology**Credits:** 4

Historical, biological, ecological, and sociological factors influencing the wildlife resource and its management. Concepts in populations, communities, habitat, and contemporary wildlife issues. Special fee. Lab.

Attributes: Biological Science(Discovery); Discovery Lab Course**NR 435 - Contemporary Conservation Issues and Environmental Awareness****Credits:** 4

Explores the impacts of technology and human activity on our environment and natural resources. Key conservation issues are used as examples of past and present biological, social, and environmental conflicts.

Attributes: Environment,TechSociety(Disc)**NR 435H - Honors/Contemporary Conservation Issues and Environmental Awareness****Credits:** 4

Explores the impacts of technology and human activity on our environment and natural resources. Key conservation issues are used as examples of past and present biological, social, and environmental conflicts.

Attributes: Environment,TechSociety(Disc)**NR 437 - Principles of Sustainability****Credits:** 4

In this course, we investigate the foundational principles of the concept of sustainability. Our objectives include: understanding the many integrated dimensions of sustainability; examining illustrations of unsustainable human-environment relations; recognizing the complexity of sustainability problems and the challenges to finding solutions; comprehending that human-environment relations are a multi-level, complex and dynamic system, and appreciating that the sustainability of ecosystems is necessarily embedded in social, cultural and historical trends.

NR 439 - Environmental Biology**Credits:** 4

Environmental biology focuses on the origins, functions, and interactions of populations, communities, species and ecosystems in relation to dynamic environmental processes. The main course objective is to provide a basic understanding of ecosystem function and the ecological, evolutionary, and genetic principles necessary to understand biological diversity and its distribution. Special fee.

NR 444B - The Real Dirt**Credits:** 4

Explores sustainable agriculture, regional and local food supply and systems, land ethics and agrarian thought as a natural resource and environmental conservation issue. Focusing on northern and central New England, the course uses the teaching of Aldo Leopold and includes hands-on study of UNH's new initiatives in sustainable and organic agriculture and the on-campus food system. A visit to University farms is included. Writing intensive.

Attributes: Environment,TechSociety(Disc); Inquiry (Discovery); Writing Intensive Course**NR 444E - Eye of Newt and Toe of Frog: The World of Poisonous Animals****Credits:** 4

Course examines a variety of animal poisons and venoms in different contexts. Historical, cultural, physiological, pharmacological, and evolutionary viewpoints are explored. Readings, guest lectures, and peer blog entries are used to refine critical thinking skills and form the basis of in-class discussions.

Attributes: Biological Science(Discovery); Inquiry (Discovery)**NR 444F - Does Extinction Matter****Credits:** 4

This course examines the causes and potential consequences of biodiversity loss. By considering ecological, economic, and ethical perspectives students will be asked to develop an informed personal answer to the question Does extinction matter? Development of critical thinking as well as written and oral communication skills will be stressed through a variety of in-class and outside class activities.

Attributes: Humanities(Disc); Inquiry (Discovery)**NR 458 - The Science of Where****Credits:** 4

This online course introduces the principles and practices of spatial thinking through lectures, readings, discussions, and hands-on laboratory exercises. Students learn not only to think spatially, but also how to apply this knowledge in their own fields of study.

Attributes: Discovery Lab Course; Physical Science(Discovery)**NR 501 - Studio Soils****Credits:** 4

An overview of physical, chemical, and biological properties of soil. Sub-disciplines of soil chemistry, soil physics, soil microbiology, soil genesis, and classification. Special fee. Lab.

NR 502 - Forest Ecosystems and Environmental Change**Credits:** 4

Forest ecosystems cover a large fraction of the Earth's land surface and account for most of its terrestrial biological productivity. This course introduces forest ecosystems around the world and explores both the natural processes that regulate them and the environmental factors that cause change over time. Topics include tree growth strategies, successional change, nutrient cycling, and human-induced stressors such as air pollution and climate change. Special fee.

Attributes: Environment, TechSociety(Disc)**NR 504 - Freshwater Resources****Credits:** 4

Major determinants of freshwater resources including hydrologic cycle and water balance, precipitation, stream-flow measurement, pollution, water supply and sewage treatment, water resource management and regulation. Special fee. Lab/field trips.

Attributes: Discovery Lab Course; Physical Science(Discovery)**NR 506 - Forest Entomology****Credits:** 4

Insects are among the most diverse and abundant organisms on the planet and play a crucial role in forest ecosystems. Insects from the base of the consumer food web in forests and are key drivers of nutrient cycling, pollination, etc. This course surveys common and important insect orders, families, and species found in forest systems and provides the tools for basic identification and biological study of these fascinating creatures. Special fee.

NR 507 - Introduction to our Energy System and Sustainable Energy**Credits:** 4

This course introduces students to our domestic energy system and the expanding efforts to develop our use and acceptance of sustainable energy. It provides a historical context of our system that explains where we are today in terms of the grid, technologies, energy use and production and energy markets, primarily for electricity and building use. The course examines how our current impedes and enhances opportunities for innovation in renewable technologies and financing.

Attributes: Environment, TechSociety(Disc)**NR 527 - Forest Ecology****Credits:** 4

Introduces basic and applied ecology of forests, with emphasis on ecosystem processes, including water, energy, and nutrient cycles; biological interactions, including biodiversity and plant-plant, plant-animal, and plant-microbe relationships; and human impacts, including forest management, land-use/land cover-change, and changes in atmospheric chemistry. Prereq: BIOL 409 or BIOL 411. Restricted to NR majors or by Permission. Special fee. Lab.

NR #542 - Forestland Measurement and Mapping**Credits:** 1

Elementary measuring equipment and techniques; preparation of maps; public land survey; court-house deed search. (Forestry and Wildlife majors only.) Special fee.

NR 561 - Chemistry of the Environment**Credits:** 4

The course is designed for students who desire a deeper understanding of chemical principles in environmental- and ecology-related disciplines. This course will focus on understanding key principles that underline many of the important chemical processes that influence the functioning and health of environmental systems. These include reaction rates, oxidation-reduction, kinetics and enzyme dynamics, pH and acid-base equilibria, organic transformations, colloids and particulate behavior, and analytical approaches to understanding environmental chemistry. Prereq: CHEM 403, CHEM 405 or CHEM 411.

NR 600 - Work Experience**Credits:** 0

As part of their degree program, students are expected to engage in a work experience or internship under professional supervision and approved by natural resources faculty. This experience may occur at any time during their sophomore through senior years. Students are responsible for arranging their own experience in consultation with their advisor and NREN faculty members. Permission. Cr/F.

NR 601 - Environmental Conservation and Sustainable Living Internship**Credits:** 4

Practical internship and field experience in a location removed from the University milieu to give the environmental conservation student a dimension and insight into sustainable resource management systems not available in the campus experience. Prereq: permission. Cr/F.

NR 602 - Natural Resources and Environmental Policy**Credits:** 4

Contemporary natural resource and environmental policy problems/issues are addressed from a policy sciences perspective with emphasis on domestic policy solutions. Critical assessment of major policy initiatives and their implementation toward sustainable resource use and a healthy environment. Public policies are analyzed to determine the extent to which their implementation strategies have succeeded, and to assess their adequacy within a bioregional or ecosystem approach, and/or capacity to integrate economic and environmental decisions. Cases include national and local policies in their global context. Students apply public policy analysis and decision tools in laboratory sessions. Prereq: junior/senior; Restricted to NR majors or by Permission. Special fee. Writing intensive.

Attributes: Writing Intensive Course**NR 603 - Landscape Ecology****Credits:** 4

This course focuses on the relationships between scale, spatial patterns and ecological processes. Through lecture, discussion and lab exercises students learn about scale and scaling techniques, the abiotic and biotic processes creating landscape patterns, how landscape patterns are characterized, and the application of landscape ecology theory to contemporary issues in conservation and management. Emphasis placed on landscape perspectives and practices as they relate to understanding and managing populations and communities. Prereq: BIOL 541, NR 527 or permission of instructor.

NR 606 - International Energy Topics**Credits:** 4

This course introduces students to international energy topics. Students will be exposed to a historical context and current status of several energy-related issues from an international perspective. Topics range from energy poverty, energy and climate change and global fossil fuel subsidies. Studies of specific technologies will be delivered through the context of international leaders, Iceland and geothermal, the UK and offshore wind and solar in Germany.

NR 615 - Wildlife Habitats**Credits:** 4

Introduces animal-habitat associations, including an examination of spatial and temporal features of wildlife habitat, the evolution of habitat selection, and how habitat suitability/productivity is evaluated. Prereq: woody plant identification; limited to wildlife management majors and minors. Permission. Special fee. Writing intensive.

Attributes: Writing Intensive Course**NR 620 - Farm to Table: A Case Study in the Northern Beauce Region of France****Credits:** 4

Course provides students a unique study abroad experience that blends the study of agroecology with an on-farm stay that allows them to see how food moves from the field to table. Students participate in lectures, fieldtrips, readings, and discussions on topics including agricultural sustainability, agriculture and environmental health (soil/water quality, biodiversity), the influence of agriculture on the local ecology, and the relationship between French agriculture and the current local food movement in the U.S. They also get practical, on-farm experience by assisting with the harvest and transport of vegetables and edible flowers for the Paris market. Permission required. Special fee.

NR #621 - Field Description of Soils**Credits:** 3

Description of soils in the field. Application of soils properties to forestry, plant science, and community planning. Strong orientation to fieldwork. Special fee. Lab.

NR 625 - Physiological Ecology**Credits:** 4

Course examines the physiological mechanisms and adaptive responses of organisms that facilitate their survival in changing natural environments. Following an introduction to homeostasis and general physiological principles, topics focus on adaptations to the marine and freshwater environments, to estuarine challenges, and the specific requirements of terrestrial and aerial environments. Additional topics center on adaptations to extreme habitats and to parasitic life styles. Furthermore, the physiological bases of migrations, sleep, and mating/life history strategies are also explored. Examples are drawn from invertebrates, vertebrates, and plants. Prereq: one year college level biology.

NR 637 - Practicum in Environmental Conservation**Credits:** 4

Independent participation in an environmental conservation activity in the area of the student's specialization. Individual or group projects may be developed under the supervision of any faculty member within or outside natural resources or with supervisors in public and private agencies, upon approval of the course instructor. Research projects not acceptable. Prereq: senior standing in the environmental conservation program. Cr/F.

NR 640 - Wildlife Population Ecology**Credits:** 4

An overview of the mechanisms that influence the characteristics of terrestrial wildlife populations. Lecture covers concepts and theory, with a central focus on population growth, how it is influenced by demographic rates of survival, recruitment, immigration/emigration, with additional consideration given to predation and competition, and how population status is monitored for wildlife, including occupancy, abundance, and viability. Lab provides hands-on exercises, often using computer software, with analysis and interpretation of data from local case studies. Prereq: BIOL 412, BIOL 541 or NR 527.

NR 642 - Introduction to Biogeography**Credits:** 4

Biogeography is an integrative field of inquiry that unites concepts and information from evolutionary biology, ecology, systematics, geology, and physical geography. Students are introduced to the distribution patterns of wild animals and plants and to the factors that determine these patterns. In this course, the emphasis is on evolutionary aspects of biogeography, biodiversity, and implications for conservation issues.

NR 643 - Economics of Forestry**Credits:** 4

Intermediate-level analysis of supply and demand for forest-based goods and services, managerial economics, taxation, capital investments. Prereq: EREC 411 or ECON 402.

NR 650 - Principles of Conservation Biology**Credits:** 4

Examines the major issues relevant to conservation of biodiversity from the genetic to the ecosystem level. In addition to addressing ecological and biological principles, the interdisciplinary nature and challenges of managing for conservation biology, including the role of economic and social factors are examined. Prereq: one semester of biology, botany, or zoology. Special fee.

NR 655 - Vertebrate Biology**Credits:** 4

Introduces the diversity and evolution of vertebrates. Topics span the morphological, physiological, behavioral, and ecological diversity among the major vertebrate taxa. Labs stress identification of vertebrate taxa based on specimens and morphological structures. Permission. Prereq: BIOL 411 and BIOL 412; or equivalent. Special fee. Lab.

NR 658 - Introduction to Geographic Information Systems**Credits:** 4

Introduces the use of geographic information systems (GIS) for natural resources and related fields. Data models/structures, map projections, data input/output/storage, data analysis/modeling, interpolation, and data quality/standards. Hands-on lab using ArcGIS software. Restricted to NR majors or permission. (Also offered as GEOG 658.)

NR 660 - Ecology and Biogeography of New Zealand**Credits: 5**

Covers the principles of ecology and biogeography, with a distinct focus on New Zealand. Students investigate the processes that have shaped the New Zealand landmass and its biota. Impact of human settlement on New Zealand's ecosystems is explored in-depth. Methods and techniques of scientific research are incorporated in this course. Field exercises focus on topical case studies in a variety of ecosystems and are designed to strengthen students' conceptual knowledge, enable students to apply this knowledge, as well as develop field skills including classification systems, mapping, habitat assessment, field identification, and sampling techniques. Prereq: junior/senior; permission. Coreq: NR 661, NR 662, and NR 663. Special fee.

Co-requisite: INCO 588, NR 661, NR 662, NR 663

NR 661 - Restoration Ecology and Ecosystem Management in New Zealand**Credits: 4**

Current restoration projects and strategies for management of natural resources in New Zealand form the framework for this course. Solving problems related to introduced species, changes in habitat, the preservation of ecological processes and watershed management are the major foci of this course. Management of resources for multiple uses, as well as primary and extractive industries is included. Field exercises focus on topical case studies in a variety of terrestrial and coastal-marine ecosystems and include the identification of habitats and communities, stresses on the environment, and risk analysis. Prereq: junior/senior; permission. Coreq: NR 660, NR 662, and NR 663.

Co-requisite: NR 660, NR 662, NR 663

NR 662 - Environmental Policy, Planning and Sustainability in New Zealand**Credits: 3**

Introduces students to politics in New Zealand. Investigating policy pathways and planning forms part of the curriculum. Students assess scope of legislation, including the Resource Management Act (1991), for the economic and socio-political environment in New Zealand. Government obligations to the Treaty of Waitangi, and customary uses of resources are included as part of this course. Students are exposed to diverse perspectives of local authority planners and policy makers, local iwi (tribes), the Department of Conservation, and community groups. Students examine case studies involving the resource consent process at several levels of decision-making. Case studies provide a comprehensive overview of the interactions between the environment and people and their cultural and socio-economic needs. Prereq: junior/senior; permission. Coreq: NR 660, NR 661, and NR 663.

Co-requisite: NR 660, NR 661, NR 663

NR 663 - Applied Directed Research in New Zealand**Credits: 4**

Working closely with faculty, student teams investigate selected ecological, resource management or policy issues. All projects have scientific and societal relevance, and contribute to ongoing/existing projects in the region. Students use the scientific method to design and carry out their projects. Development of rigorous field investigations, experimental design, data analysis, and scientific writing are emphasized. Students prepare a research report and present their findings in a seminar that includes stakeholders and people from the local community. Prereq: junior/senior; permission. Coreq: NR 660, NR 661, and NR 662. Writing intensive.

Co-requisite: NR 660, NR 661, NR 662

Attributes: Writing Intensive Course

NR 664 - Conservation Genetics**Credits: 4**

Conservation genetics is the application of genetics to preserve species as dynamic entities capable of coping with environmental change. Includes genetic management of small populations, resolution of taxonomic uncertainties, defining management units within species, and the use of molecular genetic analyses to forensics and the understanding of the biology of species. Topics include methods of measuring genetic diversity in populations, identification of the units of biodiversity to which conservation efforts are directed, genetics of population fragmentation, genetic management of wild and captive populations, reintroduction of organisms back into the wild, and the role of forensics in enforcement and development of species recovery plans. Recitation. No credit if credit received for GEN 705 or ZOO 705.

NR 701 - Ecological Sustainability and Values**Credits: 4**

Deeper more fundamental philosophical questions, including spiritual values questions, are being asked concerning the ecological/environmental challenge of our time; its causes and resolution. Aspects of this challenge—environmental education, energy, food, agriculture, and natural resources—analyzed with ethics and values approaches. Students develop ways of responding to problem identification and resolution. Writing intensive.

Attributes: Writing Intensive Course

NR 702 - Workshops**Credits: 1-4**

Short-term courses (generally a few days to two weeks) offered off campus, covering a broad variety of environmental and natural resource topics. May be repeated. Special fee required depending on topic. Prereq: permission required.

NR 703 - Watershed Water Quality Management**Credits: 4**

Principles of land use as they relate to water quality and quantity. Lectures focus on biogeochemical cycles and the watershed approach to land and water resource management. Labs and field trips focus on methods of water sampling and analysis. One year of chemistry is recommended. Prereq: NR 504 or NR 604 or permission. Special fee. Lab/field trips. Writing intensive.

Attributes: Writing Intensive Course

NR 706 - Soil Ecology**Credits: 4**

Examines the ecological relationships between soil microorganisms and their biotic and abiotic environment, with emphasis on the role of soil microorganisms in biogeochemical cycling. Specific objectives are to examine the biodiversity present in soil systems, factors controlling microbial community composition and diversity, and linkages between soil microbial communities, soil physical properties, and soil organic matter and nutrient cycling dynamics. Prereq: BIOL 412 or BIOL 409, CHEM 403, or equivalent, or permission. Special fee. Lab. Writing intensive.

Attributes: Writing Intensive Course

NR 707 - Environmental Modeling**Credits:** 4

Environmental Modeling introduces students to a range of key mathematical and computer modeling concepts and the ways they can be used to address important scientific questions. The course is divided into four topical sections: Population and Community Ecology, Hydrology, Biogeochemistry, and Ecosystems. In each section, modeling concepts and skills are presented together with environmental information to emphasize the linkage between quantitative methods and relevant scientific results. Prereq: MATH 425.

NR 710 - Endangered Species Seminar**Credits:** 2

Provides students with an interactive class of student presentations and guest lectures by endangered-species biologists. Emphasizes on biological, sociological, economic, and political factors that influence endangered-species policy. Prereq: basic ecology/biology; permission. Special fee.

NR 711 - Wetland Ecology and Management**Credits:** 4

Analysis of the natural resources of coastal and inland wetlands and environmental problems caused by human use and misuse of these ecosystems. Groups collect field data to summarize the structure and function of four wetland types within a management context. Special fee. Lab. Prereq: BIOL 541, or NR 703, or permission. Writing intensive.

Attributes: Writing Intensive Course**NR 712 - Mammalogy****Credits:** 4

Evolution, ecology, behavior, physiology and diversity of mammals. The focus of the course is on conceptual issues, such as the relation of structure, function, physiology and ecology of species; reproductive physiology and life history strategies; and the evolution of mating systems and social structure. Familiarity of mammalian groups to the family level and identification of local fauna to species will be required. Prereq: BIOL 411 and BIOL 412 or equivalent. Lab. (Not offered every year.) Special fee.

NR 713 - Quantitative Ecology**Credits:** 4

Basic quantitative concepts applied to ecological systems including: population and community dynamics, experimental design, spatial patterns, species abundance and diversity, community organization, metapopulations, and landscapes. Prereq: intro. courses in statistics, and ecology.

NR 718 - Law of Natural Resources and Environment**Credits:** 3

Federal and state environment statutory and administrative law, its application, strengths and weaknesses, and options for future amendment.

NR #719 - Wetlands Restoration and Mitigation**Credits:** 3

Assesses the problems of wetlands loss and learning how to repair the damage. Asks what steps can be taken. Does restoration work, can habitat value be replaced, what constitutes equivalent mitigation? Field experience and theoretical background in restoring marine and freshwater environments. First half of course involves field trips to visit and sample mitigation and restoration sites. Second half focuses on student projects using the scientific method to address wetlands issues. Prereq: NR 711 or permission. Special fee. Lab/field trips. (Not offered every year.)

NR 720 - International Environmental Politics and Policies for the 21st Century**Credits:** 4

Students examine policies for managing human activities to sustain the health of regional ecosystems and planetary life-support systems. Selected problems of the international commons (oceans, marine resources, atmosphere, migratory species); global and regional carrying capacity (population, resource consumption), internationally shared ecosystems (transboundary watersheds and waterbodies, tropical forests); and the relevant international institutions and politics for policy formation, conflict resolution, and implementation. Using a policy-analytic framework, students develop case studies to assess international policies and institutional arrangements to achieve the objectives of Agenda 21—Earth Summit Strategy to Save the Planet. Prereq: permission. Writing intensive.

Attributes: Writing Intensive Course**NR 724 - Resolving Environmental Conflicts****Credits:** 4

Theories and practices of environmental dispute settlement. Roles of public, non-governmental and governmental organizations. Effectiveness of public participation initiatives in influencing public policy decisions and/or resolving environmental conflicts. Alternative approaches to consensus (policy dialogues, joint problem solving; strategic planning; negotiation, mediation) as well as litigation. Specific cases are critiqued and evaluated; conflict resolution skills are developed. Students observe and/or participate in ongoing local decision processes. Prereq: second-semester juniors, seniors; permission. Lab. Special fee. Writing intensive.

Attributes: Writing Intensive Course**NR 729 - Silviculture****Credits:** 4

The science and art of establishing, growing, and tending forests to meet multiple objectives. Basics of forest stand dynamics applied to the problems of timber management, wildlife habitat, water quality, and carbon sequestration. Prereq: NR 425 and NR 527 or permission. Special fee.

NR 730 - Terrestrial Ecosystems**Credits:** 4

Processes controlling the energy, water, and nutrient dynamics of terrestrial ecosystems; concepts of study at the ecosystem level, controls on primary production, transpiration, decomposition, herbivory; links to earth-system science, acid deposition, agriculture. Prereq: NR 527 and BIOL 409 or BIOL 411, or permission.

NR 734 - Tropical Ecology**Credits:** 4

This course introduces students to the ecology of different tropical ecosystems, and involves students in analyzing and interpreting ecological field data and remotely sensed data. An important emphasis is to understand patterns and processes across scales - from individual plants to ecosystems and landscapes. The course also addresses important global issues in the tropics, including climate change, land use change, diverse ecosystem services, and sustainable resource management. Prereq: NR 527, BIOL 541, or equivalent.

NR #735 - Land Conservation Principles and Practices**Credits: 4**

Students gain practical knowledge, understanding and experience in land conservation planning and implementation of options for land protection based on current practice in New Hampshire. By interacting with practitioners, students learn what it takes to implement successful land conservation projects, and conservation stewardship requirements and practices. Prereq: senior standing in the Department of Natural Resources and permission. Special fee. Lab. Writing intensive.

Attributes: Writing Intensive Course**NR 736 - Tropical Ecology and Conservation****Credits: 4**

This intensive field course in Costa Rica introduces students to the science and practice of tropical ecology and conservation. The course includes visits to major tropical biomes, including cloud forest, rainforest, dry forest, and diverse aroecosystems. A focus in on understanding how ecological information is scaled from trees to ecosystems and landscapes, and the impact of climate change and land management. Students conduct a project on a topic of interest, involving data collection, analysis, and interpretation. Special fee.

NR #738 - Wildlife Policy and Management**Credits: 4**

Local, regional, and national issues and strategies in policy and administration. Contemporary issues including land management, commercialization of wildlife, overpopulation, endangered species, wildlife diseases, and professionalism. Prereq: senior wildlife majors or permission. Special fee. Lab. Writing intensive.

Attributes: Writing Intensive Course**NR 740 - Inventory and Monitoring of Ecological Communities****Credits: 4**

Provides an introduction to the major concepts associated with monitoring change in ecological communities. Students develop an appreciation for such issues as: identification of appropriate baselines for comparison; use of indicator species; the tools used to inventory common, rare, and secretive species; how trend data are analyzed; and the implications of failing to detect an indicator species. Restricted to senior wildlife majors others by permission. Special fee. Lab. Writing intensive.

Attributes: Writing Intensive Course**NR 744 - Biogeochemistry****Credits: 4**

Examines the influence of biological and physical processes on elemental cycling and geochemical transformations from the molecular to the global scale, involving microorganisms, higher plants and animals and whole ecosystems; factors that regulate element cycles including soils, climate, disturbance and human activities; interactions among the biosphere, hydrosphere, lithosphere, and atmosphere; transformations of C, N, S, and trace elements. Prereq: one semester biology and two semesters of chemistry or permission.

NR 745 - Forest Management**Credits: 4**

Forest land ownership, management objectives, forest inventory regulation and policy, forest administration, professional responsibilities and opportunities. Restricted to Natural Resources majors. Lab. Special fee.

Attributes: Writing Intensive Course**NR 749 - Forest Inventory and Modeling****Credits: 4**

Applied sampling and statistical techniques for assessing current forest conditions and predicting future growth, yield, and structure. Topics include plot and point sampling, ecological inventory, and evaluation of site quality and stand density. Prereq: MATH 420 and BIOL 528. Special fee.

NR 750 - Sustaining Biological Diversity**Credits: 4**

This course examines the approaches to recover and restore declining populations and at-risk communities. Major concepts addressed include: population viability analysis; use of simulation models to explore conservation alternatives; integrating the political, economic, and social realities that affect natural resource management; the adaptive nature of any restoration of rare organisms and communities; and preparing for the challenges associated with invasive organisms and climate change. Prereq: NR 650 and BIOL 528. Only open to Wildlife & Conservation Biology majors.

NR 751 - Aquatic Ecosystems**Credits: 4**

Energy flow and nutrient cycling in streams, rivers and lakes, with an emphasis on understanding the control of primary productivity, decomposition and community structure by both hydrologic and biotic drivers. Role of aquatic ecosystems in carbon and nitrogen budgets at watershed, regional, and global scales. Impacts of environmental changes such as global climate change and suburbanization on aquatic ecosystems. Prereq: General Ecology. Lab. Special fee.

NR 753 - Critical Issues in Sustainability: Sustainability as an Abundance Paradigm**Credits: 2**

After 30 years in common parlance, the success of "Sustainability" still seems far from its goal. In part, this is because sustainability is typically applied as another way to manage scarcity, a paradigm informing economic and social policy for well over a century. Underlying this dominant view of sustainability, an increasing number of approaches to sustainability projects, some of longstanding are entering the mainstream as pieces of an identifiable, and distinctly novel, paradigm based on the assumption of abundance, rather than scarcity. These include ideas of the Natural Step and Natural Capital, as well as Cradle to Cradle and Biomimicry. The goals of this seminar are (1) to survey and discuss this growing literature and its application to the solution of sustainability problems; and (2) research and analysis towards transforming scarcity-based to abundance-based solutions. To be considered as a capstone option for majors in Environmental and Conservation Sustainability, students must also register for NR 754 in the Spring semester.

NR 754 - Critical Issues in Sustainability: Sense of Place**Credits:** 2

Costa Rica is the happiest country on Earth. Bhutan is a living laboratory for education. Bolivia has a Law of Mother Earth in its constitution. Cities and towns in the US create local solutions to problems of resource sustainability while the national dialogue stagnates. What drives some places to lay the foundations for sustainable futures, while others do not? Sense of Place is a powerful lens through which to view the relative achievements of places and organizations toward creating a sustainable future. The goals of this seminar are (1) to survey the Sense of Place literature and to analyze case studies of the role of Sense of Place in the success of sustainability efforts nationally and internationally; and (2) to research the role of Sense of Place in our local community environment and to relate it to stated goals in existing sustainability plans. To be considered as a capstone option for majors in Environmental and Conservation Sustainability, students must also register for NR 753 in the Fall semester.

NR 757 - Remote Sensing of the Environment**Credits:** 4

Practical and conceptual presentation of the use of remote sensing and other geospatial technologies for mapping and monitoring the environment. This course begins with the use of aerial photographs (photogrammetry, and photo interpretation) and includes measures of photo scale and area, parallax and stereo viewing, object heights, flight planning, photo geometry, the electromagnetic spectrum, camera systems and vegetation/land cover mapping. The course concludes with an introduction to other geospatial technologies including digital image analysis, global positioning (GPS), and geographic information systems (GIS). Conceptual lectures are augmented with practical homework assignments and hands-on lab exercises. Prereq: algebra. Special fee. Lab. (Also offered as GEOG 757.)

NR 759 - Digital Image Processing for Natural Resources**Credits:** 4

Introduces digital remote sensing including multispectral scanners (Landsat and SPOT) radar, and thermal imagery. Hands-on image processing including filtering, image display, ratios, classification, registration, and accuracy assessment. GIS as it applies to image processing. Discussion of practical applications. Use of ERDAS image-processing software. Knowledge of PCs required. Prereq: NR 757 or equivalent and permission. (Also offered as GEOG 759.)

NR 760 - Geographic Information Systems in Natural Resources**Credits:** 4

This course in geographic information systems (GIS), covers advanced theory, concepts, and applications of GIS for natural resource and related disciplines. Discussion of database structures, data sources, spatial data manipulation/analysis/modeling, data quality and assessment. Students conduct a project of their design exploring aspects of GIS most useful to them. Lecture emphasizes concepts and applications through a text and selected peer-reviewed articles. Lab uses the latest version of ArcGIS software and provides hands-on experience. Prereq: introductory GIS course. Permission required.

NR 761 - Environmental Soil Chemistry**Credits:** 4

Chemical transformations in soils are the basis for soil fertility and plant productivity in natural and managed ecosystems, and also influence key ecosystem processes including soil organic matter turnover and soil-atmosphere exchange of trace gases. This class will explore soil chemistry processes and transformations related to soil nutrient cycling, plant nutrient acquisition, and other critical environmental services. Prereq: a course in soil science or instructor permission.

NR 765 - Community Ecology**Credits:** 4

Properties of biotic communities, especially biodiversity. Effects of physical stress, disturbance, competition, predation, positive interactions, and dispersal on community properties. Community dynamics, including succession and stability. Prereq: applied biostatistics and general ecology. Lecture and discussion.

NR 782 - Forest Health in a Changing World**Credits:** 4

Forests cover over 30% of the land surface of the Earth and are incredibly important ecologically, economically, and to the health of the planet. While forests show great capacity to withstand disturbance, these ecosystems are increasingly threatened worldwide by climate change, native and introduced insects and disease, poor management practices, land clearing, drought, fire, and pollution. This course offers an overview of the dominant threats to forests, their causes and consequences, and options for monitoring, management, and mitigation. Special fee.

NR #783 - Forest Communities of New Hampshire**Credits:** 4

A hands-on field course designed to introduce students to the diverse forest community types of New Hampshire. Topics include 1) field identification of forest types using different classification systems and keys; 2) identification of characteristic plant and animal species; 3) the roles of climate, geology, soils, natural disturbance, forest management, and biotic factors in determining forest community type; 4) primary and secondary succession, including old-growth. Prereq: one course in ecology or environmental biology or permission. Special fee.

NR 784 - Sustainable Living - Global Perspectives**Credits:** 4

The pursuit of sustainable solutions to living in our contemporary world is a global endeavor. In this course, the concept of living sustainably is explored from a broad international perspective. Global scale issues impacting sustainable resource use are considered, including population growth, economic globalization and development, social equity, and cultural values. We will expand our awareness of alternatives to those current practices that impede the sustainability of human societies as part of the earth's natural systems. We will also pursue an understanding of the interrelated socio-economic conditions, combined with social and personal ethics and values necessary to move toward a more sustainable future. And each of us will come to value what sustainable living means for our own lives. Prereq: NR 437 or NR 435.

NR 785 - Systems Thinking for Sustainable Solutions**Credits:** 4

This course applies systems thinking as a problem-solving approach aimed at exploring possibilities for creating a future based on sustainable relationships between healthy human societies and their natural environments. Types of systems and systems tools are utilized to describe human-environment relationships and to emphasize their resiliency or vulnerability to future unsustainable events and/or practices. We explore how systems may be restructured to create more sustainable outcomes. Pre- or Coreq: NR 437 or NR 435.

NR 786 - Leadership for Sustainability**Credits:** 4

In this course we review and evaluate current knowledge and practice regarding the attainment of sustainability in social and environmental relations. We particularly focus on the meaning and qualities of leadership for achieving a sustainable future. Along the way, we also reflect on our own leadership styles and qualities. Topics include the role of leaders and leadership practices in government, business, academia etc; concepts and theories for achieving social change; and case studies exemplifying a range of leaders and approaches toward sustainability. Prereq: NR 437 or NR 435. Writing intensive.

Attributes: Writing Intensive Course**NR 787 - Advanced Topics in Sustainable Energy****Credits:** 4

This course engages students in advanced topics in sustainable energy. Course reviews basic structures of our energy system, energy markets and economics, and the environmental, economic and technological of energy landscape. Focus is on electricity and building use with introductions to the transportation system. Students gain the knowledge to evaluate innovations in technology, policy and financing necessary to implement sustainable energy goals from conservation and efficiency to renewables and energy storage. Special fee.

NR 791 - Preparation for Capstone**Credits:** 1

This class will require that students develop a proposal for their senior capstone experience, seek approval for that proposal from a faculty sponsor, and be prepared to complete the capstone senior year. Students will also work on resume development, on writing text introducing themselves to prospective employers, and on interviewing strategies. Cr/ F.

NR 795 - Investigations**Credits:** 1-4

Investigations in Natural Resources may include topics in environmental conservation, forestry, soil and watershed management, ecosystems, and wildlife management. Permission required. Special fee on some topics.

NR 795W - Investigations**Credits:** 1-4

Investigations in Natural Resources may include topics in environmental conservation, forestry, soil and watershed management, ecosystems, and wildlife management. Permission required. Writing intensive.

Attributes: Writing Intensive Course**NR 797 - Special Topics****Credits:** 1-4

An experimental course for the purpose of introducing a new course or teaching a special topic for a semester in an area of specialization in natural resources. Permission required. Special fee on some sections.

NR 799 - Honors Senior Thesis**Credits:** 1-4

Honor/thesis students conduct an independent research project, relevant to the student's area of specialization in the major, under the direction of a faculty sponsor. Students submit a research proposal, write a final report, and provide an oral presentation. One or two semester sequence. Restricted to Senior/Natural Resource Majors. Permission required. Writing intensive.

Attributes: Writing Intensive Course

Neuroscience and Behavior (NSB)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

NSB 400 - Topics Neuroscience & Behavior**Credits:** 1

This seminar type course is designed as an introductory experience for incoming first-year students, although it may be taken by students transferring into the major. Topics covered will include sensory biology, learning and memory, homing and navigation, neuromodulators and stress, reproductive behaviors. The format will rely heavily on discussion, prompted either by assigned readings or presentations by program faculty on their areas of expertise. Credit/fail. 1 cr.

NSB 500 - Fundamentals of Neuroscience and Behavior I**Credits:** 3

The course will introduce students to the fundamental neural processes underlying behavior. It will begin with a detailed examination of the properties of individual neurons and then move on to demonstrate how neurons can communicate together to produce complex behaviors. Some of the basic concepts that will be covered will include: the molecular basis of electrical and chemical communication, sensory transduction and processing, neuropharmacology, the neural basis of reflexes and simple behavior, development of the nervous system and the influence of external stimuli on neural processing. Prereq: BIOL 411 and BIOL 412 and CHEM 403 and CHEM 404.

Co-requisite: NSB 501**NSB 501 - Fundamentals of Neuroscience and Behavior I Laboratory****Credits:** 2

The course is designed to expose students to some of the classic experiments in cellular and molecular Neurobiology. They will record from sensory and motor neurons, stain and view neurons, carry out simple behavior experiments and record from muscles in freely behaving animals. The laboratory exercises will run parallel with the concepts taught in lecture and complement the lecture material in many ways. Students will conduct actual experiments, analyze the results and write lab reports as well. Prereq: BIOL 411 and BIOL 412 and CHEM 403 and CHEM 404. Special fee.

Co-requisite: NSB 500**NSB 502 - Fundamentals of Neuroscience and Behavior II/Systems Neuroscience****Credits:** 3

This course is an introduction to the questions addressed by scientists who aim to understand the biological basis of behavior and cognition. This semester we will review the major organization of the central nervous system and how these systems interact with each other to produce behavior and cognition. Major topics will include: the development and emergence of behavior; movement; the neural basis of cognition, and language, thought, affect and learning. Prereq: BIOL 411 and BIOL 412 CHEM 403 and CHEM 404, NSB 500 and NSB 501.

Co-requisite: NSB 503

NSB 503 - Fundamentals of Neuroscience and Behavior II Laboratory**Credits:** 2

This laboratory class will complement the material being taught in NSB 502. The laboratory will focus on behavioral and cognitive neuroscience experiments. Students will learn about neuroanatomy and neuroscience research methods, including experimental design, data collection, statistical analysis, data interpretation, and manuscript preparation through conducting actual experiments. Students will write research reports describing their experiments and will receive some basic computer programming and research ethics training. Prereq: NSB 500, NSB 501.

Co-requisite: NSB 502**NSB 600 - Field Experience****Credits:** 1-4

A supervised experience providing the opportunity to apply academic experience to settings associated with future professional employment or graduate opportunities. Must be approved by supervising faculty. 1-4 credits for a maximum of 8 credits. Cr/F.

NSB 705 - Molecular and Cellular Neurobiology**Credits:** 4

The overarching goal of this course is to examine the molecular and cellular mechanisms underlying neuronal function. This course builds on fundamental knowledge in neuroscience. Students will be exposed to primary literature regarding how different model organisms have been used to understand neurons. Prereq: BIOL 411 and BIOL 412. CHEM 403 and CHEM 404. NSB 500 and NSB 502.

NSB 727 - Animal Communication**Credits:** 4

This course examines the principles underlying how animals communicate with each other and why they communicate the way they do by using perspectives drawn from a broad range of disciplines including physics, chemistry, ecology, psychology, economics, and behavioral ecology. Students will explore the primary literature, and work in teams to conduct independent research. The course is intended for advanced undergraduate or graduate students interested in neuroscience and behavior, evolution, wildlife and conservation biology, or zoology. Prereq: BIOL 412.

NSB 728 - Research Methods in Animal Behavior**Credits:** 4

This course provides hands-on experience with modern methods for studying animal behavior in the field and laboratory, and immersion in the primary literature. Animal behavior research projects will be complemented with a sequence of technical training sessions, the goals of which are to provide students with practical expertise in modern ethological techniques. The course takes a 'learn by doing' approach, with student research teams building relevant methodological proficiencies in the context of an investigation of their own design. Special fee. Prereq: BIOL 412 Pre- or Coreq: ZOOL 613.

NSB 795 - Special Investigations**Credits:** 1-4

Independent research with any member of the NSB faculty in various areas including, but not limited to, neuroscience, neuroendocrinology, animal behavior. Prereq: Permission of faculty concerned. Credits 1-4. May be repeated for up to 8 credits. 795W is writing intensive.

NSB 795W - Special Investigations**Credits:** 1-4

Independent research with any member of the NSB faculty in various areas including but not limited to neuroscience, neuroendocrinology, animal behavior. Prereq: Permission of faculty concerned. Writing intensive.

Attributes: Writing Intensive Course**NSB 798 - Capstone****Credits:** 0

This is a 0 credit course to indicate on the transcript that capstone requirement is fulfilled. Permission required.

NSB 799 - NSB Senior Thesis**Credits:** 2-4

Working under the direction of a faculty sponsor, the student plans and executes independent research resulting in a written thesis and public presentation. Limited to students entering their senior year. Prereq: permission. A two-semester sequence 2-4 credits each semester, 8 credits maximum. IA (continuous grading) given first semester.

NSB 799H - Honors Senior Thesis**Credits:** 2-4

Working under the direction of a faculty sponsor, the student plans and executes independent research resulting in a written thesis and public presentation. Limited to student entering their senior year or under exceptional circumstances their junior year. Required for students working toward University Honors or Honors-in-Major. Prereq: permission. A two-semester sequence 2-4 credits each semester, 8 credits maximum. IA (continuous grading) given first semester. Writing intensive.

Attributes: Writing Intensive Course

Nursing (NURS)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

NURS #400 - Nursing Continuing Enrollment**Credits:** 0

RN-BS students are required to maintain continuous enrollment each semester of the academic year until their degree is formally awarded by registering for course credit at the University of New Hampshire Durham or Manchester or registering for NURS #400, Continuing Enrollment. Students registering to NURS #400 will pay a continuing enrollment fee. No credit. Special fee. Nursing majors only.

NURS 450 - Making Babies: Technology, Nature, and Social Context**Credits:** 4

Examines the process of human birth focusing on the emergent technologies of human genetics, assisted fertility technologies, prenatal diagnosis and treatment, as well as the appropriate and inappropriate use of technology through the labor, delivery, and post-partum experience. The social, cultural, political, and historical context for the development and application of these technologies is explored.

Attributes: Environment, TechSociety(Disc)

NURS 500 - Introduction to Professional Nursing**Credits:** 2

The course provides an overview of professional nursing with a focus on reflective thinking. A synthesis of current and projected trends in nursing practice and education, with an introduction to topics on ethical, social, and legislative issues, are explored. This course is divided into five modules: nursing as a career, nursing as a profession, nursing as art and science, nursing as communication, and nursing and relationship-centered care. Prereq: BMS 507-508; majors only. Pre- or Coreq: BMS 501. Special fee.

Co-requisite: NURS 504**NURS 504 - Disease and Drugs I****Credits:** 4

The two semester course advances knowledge of human physiology and the pathophysiological variations in selected global disease states in adults and children. Student explore how the human body uses its adaptive powers to maintain a steady state and how alterations affect normal processes. Pharmacological agents used on these alterations are examined. Prereq: BMS 507 and BMS 508; majors only. Pre- or Coreq: BMS 501.

Co-requisite: NURS 500**NURS 505 - Diseases and Drugs II****Credits:** 4

The two semester course advances knowledge of human physiology and the pathopsychological variations in selected global disease states in adults and children. Students explore how the human body uses its adaptive powers to maintain a steady state and how alterations affect normal processes. Pharmacological agents used on these alterations are examined. Prereq: NURS 500; majors only.

Co-requisite: NURS 506, NURS 601**NURS 506 - Human Development, Interaction and Learning Across the Lifespan****Credits:** 4

The course emphasizes human development, interaction and learning across the lifespan as essential to safe, effective relationship-centered care. An exploration of selected theoretical perspectives on human development, education and learning and group development prepares students to engage in professional practice. Prereq: NURS 500; or by permission.

Co-requisite: NURS 505, NURS 601**NURS 516 - Health Assessment and Nursing Fundamentals****Credits:** 4

Focuses on the acquisition of psychomotor and assessment skills required for the delivery of safe nursing care. Students begin by learning clinical skills in the simulation setting and then using those skills with supervision in the clinical setting. An additional focus of this course is understanding fundamental nursing concepts as they pertain to providing safe, effective care. Prereq: majors only.

Co-requisite: NURS 516C**NURS 516C - Health Assessment and Nursing Fundamentals Clinical****Credits:** 2

This clinical course is designed to provide experiences to apply the knowledge to the skills required to perform a systematic examination of a healthy adult, to perform basic psychomotor skills and to record findings appropriately. Students implement the nursing process by obtaining health histories, performing physical and psychosocial assessments, establishing a database, and formulating initial nursing plans. Students become familiar with the nursing simulation lab. Prereq: majors only. Special fee.

Co-requisite: NURS 516**NURS 517C - Clinical Integration****Credits:** 2

This course focuses on continued development of nursing skills necessary for promoting health in adults. Clinical practicum focuses on restorative care by providing supervised professional nursing practice for development of multidimensional assessment skills, decision-making processes, and evidence-based strategies and interventions for patients transitioning across the health care continuum. Application of evidence-based practice may include rehabilitative, end of life and palliative care. Prereq: majors only. Special fee.

NURS 535 - Death and Dying**Credits:** 4

Encompasses peoples' responses to death throughout the lifecycle. Theories of death, dying, and grieving discussed. Students explore cultural influences, legal, and ethical dilemmas; the biopsychosocial needs of people facing life-threatening situations; resources for care of the dying; death rituals; and surviving a major loss. Writing intensive. **Attributes:** Social Science (Discovery); Inquiry (Discovery); Writing Intensive Course

NURS #595 - Women's Health**Credits:** 4

Examines women's health and women's health care from historical, political, and social perspectives. Discussion of societal and health-care constraints that hinder women from achieving their full health potential. Also presents information on women's health care practices, including the concept of self-care, and relates this to development of educated consumerism in the health-care system. Writing intensive.

Attributes: Writing Intensive Course**NURS 601 - Function and Wellbeing of Older Adults****Credits:** 2

This course focuses on developing knowledge necessary for promoting healthy aging and wellness across the lifespan. Multidimensional assessment skills are utilized to develop appropriate evidence-based interventions to assist individuals and families to maintain wellness and promote healthy lifestyles, and enhance the quality of life for older adults with acute and chronic conditions. Students will explore nursing issues and principles of promoting wellness across the health care continuum including end of life and palliative care. Prereq: majors only.

NURS 611 - Care of the Adult with Acute Illness I**Credits:** 4

The first of two courses focused on adult health nursing of clients with commonly occurring disease states in the acute care setting. Course builds on previously learned knowledge of physical assessment and technical skills to focus on key components of acute care nursing. Special emphasis placed on the etiology, clinical evaluation and use of evidence-based nursing interventions to manage specific health problems related to cardiovascular, hematologic, pulmonary, endocrine and renal systems. The advanced skills and techniques required to care for clients with commonly occurring disease states is included. Prereq: majors only. **Co-requisite:** NURS 611C

NURS 611C - Care of the Adult with Acute Illness I Clinical**Credits:** 2

Designed to provide the student with opportunities to apply the nursing process and clinical judgment within an acute care setting to clients with commonly occurring disease states. The experience focuses on the application of knowledge and skills, evidence-based practice, clinical judgment and relationship-centered care. Prereq: NURS 505; majors only. Special fee.

Co-requisite: NURS 611, NURS 641

NURS 612 - Care of the Adult with Acute Illness II**Credits:** 4

This is the second of two courses focused on adult health nursing of clients with commonly occurring disease states in acute care nursing. The course builds on previously learned knowledge of physical assessment and technical skills to focus on key components of acute care nursing. Special emphasis is placed on the etiology, clinical evaluation and use of evidence-based nursing interventions to manage specific health problems related to gastrointestinal, neurological, musculoskeletal systems and clients undergoing surgery. Complex client issues related to oncologic, immunologic and shock states are introduced. The advanced skills and interventions required to care for clients with commonly occurring disease states and those undergoing surgery are included. Prereq: NURS 611; majors only.

Co-requisite: NURS 612C, NURS 627**NURS 612C - Care of the Adult with Acute Illness II Clinical****Credits:** 2

Course is designed to provide the student with opportunities to apply the nursing process and clinical judgment within an acute care setting to clients with commonly occurring disease states and those undergoing surgery. The experience focuses on the application of knowledge and skills, evidence-based practice, clinical judgment and relationship-centered care. Prereq: NURS 611; majors only. Special fee.

Co-requisite: NURS 612, NURS 627**NURS 616 - Living with Mental Illness****Credits:** 2

This course is designed to provide an understanding of the concepts of mental health and major factors affecting human behavior and interaction. Specific theoretical concepts guiding nurse-client interactions are utilized as a vehicle for supporting the person's and family's optimum state of well-being. Prereq: majors only.

Co-requisite: NURS 616C**NURS 616C - Living with Mental Illness Clinical****Credits:** 2

In this psychiatric nursing clinical course the nursing process and a situation-based interpretive approach serve as framework for professional nursing action. A special focus is placed on the integration of personal knowledge, therapeutic use of self and communication skills inherent in nurse-client relationships. Through a variety of clinical experiences, the student applies mental health concepts and principles of therapeutic communication in caring for people and families with alterations in mental health. Prereq: majors only.

Co-requisite: NURS 616**NURS 621 - Maternal and Newborn Nursing****Credits:** 2

The course allows students an opportunity to develop necessary knowledge, attitudes and skills required for the provision of safe care to child bearing women and their families. Childbirth is viewed as part of the life cycle with emphasis on women and family-centered care, normal physiological childbirth, client advocacy and the provision of therapeutic nursing practice. Prereq: majors only.

Co-requisite: NURS 621C**NURS 621C - Maternal Newborn Nurs Clin****Credits:** 2

This clinical component of NURS 621, a course that has family as the focus for nursing practice, introducing the student to the care of young families throughout pregnancy, birth, and child-rearing periods. The health needs of the young family are discussed in terms of major morbidity/mortality and contemporary issues. This clinical course offers students experiences in various clinical settings in order to provide opportunities for the development of professional practice roles in maternal health.

Prereq: majors only. Special fee.

Co-requisite: NURS 621**NURS 627 - Clinical Judgment in Nursing****Credits:** 4

This course is designed to apply and analyze clinical reasoning and judgement in a variety of situations, focusing on the ability to prioritize and individualize evidence-based nursing interventions. Prereq: majors only. Writing intensive.

Co-requisite: NURS 612, NURS 612C**Attributes:** Writing Intensive Course**NURS 641 - Translating Research for Practice****Credits:** 4

The course focuses on the translation of current evidence into nursing practice through the identification of practice issues, appraisal and application of evidence, and the evaluation of outcomes. Development of evidence is examined using the research process. Concepts explored include research ethics and legal precepts, clinical judgment in knowledge development and application, and the integration of client values and preferences. Students learn to use reliable evidence to inform practice and make clinical judgments to promote nursing best practice. Prereq: majors only.

Co-requisite: NURS 611, NURS 611C**NURS 694 - Special Topics****Credits:** 1-4

Specialized courses covering information not normally presented in regular course offerings. Description of topics will vary. May be repeated but not duplicate areas of content. Prereq: permission. (Not offered every year.)

NURS 695 - Independent Study**Credits:** 2-4

In-depth study with faculty supervision. Prereq: junior standing and approval of adviser and faculty of the area concerned. May be repeated for different topics.

NURS 702 - Child Health Nursing**Credits:** 2

The course considers the child in the context of family as the focus for nursing practice, introducing the student to the care of children using a developmental approach. Commonly occurring health transitions and alterations occurring from infancy through adolescence are examined. A survey of child health explores both professional practice roles of the pediatric nurse in health promotion and illness as well as acute and chronic conditions that impact children at various stages of development. Prereq: majors only.

NURS 702C - Child Health in the Community Clinical**Credits:** 2

Semester long clinical course focused on the practice of pediatric nursing in the community. Prereq: majors only.

Co-requisite: NURS 702

NURS 704 - Public Health Nursing**Credits:** 4

This course prepares the student for population-focused practice. Emphasis is placed on the synthesis of concepts, theories, knowledge and practice from nursing and public health sciences. Students explore the concepts of: community as client, community assessment, health promotion, health protection, illness prevention and vulnerability from a public health nursing perspective. Prereq: majors only.

NURS 704P - Public Health Nursing Project**Credits:** 2

Semester long experience working in teams with a community organization to address a current public health issue. Learning focuses on working in teams to develop a strategic understanding of the identified public health issue and to design, implement, and evaluate a targeted intervention project. Prereq: majors only.

NURS 705 - Contemporary Leadership within Health Care Systems**Credits:** 4

The course explores the dynamic nature of the healthcare system and practice environments that impact nursing. Emphasis is placed on relationship of ethics, power, change, conflict, communication and politics in health care systems. Focus is placed on the use of models of leadership and management to effectively negotiate change, provide safe quality care, and promote professional practice in the delivery of relationship-centered care. Prereq: majors only.

Co-requisite: NURS 721**NURS 711 - Clinical Judgment in Complex Illness****Credits:** 2

This course further develops and refines critical thinking skills by student participation in clinical scenarios and de-briefings. Students prepare for the care of patients with complex illness and engage in health assessment, psychomotor skills, and implementing the nursing process to develop a plan of care. May be waived with special circumstances. Prereq: majors only. Special fee.

NURS 721 - Integrating Professional Nursing Practice**Credits:** 2

Weekly seminar provides an opportunity for the analysis, synthesis, refinement and integration of nursing knowledge. Standardized testing provides timely feedback to facilitate transition to professional practice. Prereq: majors only.

Co-requisite: NURS 721C**NURS 721C - Integrating Professional Nursing Practice Clinical****Credits:** 6

Clinical synthesis experience to refine and integrate previously learned knowledge and skills into professional practice through a cooperatively designed learning experience. Students plan, deliver and manage care under the supervision of a licensed preceptor. Prereq: majors only.

Co-requisite: NURS 721**NURS 794 - Special Topics****Credits:** 1-4

Specialized courses covering information not normally presented in regular course offerings. Description of topics varies. May be repeated but not in duplicate areas of content. Prereq: permission. Special fee on some sections.

NURS 794T - Special Topics/Study Away**Credits:** 1-4

Study Away course. Special fees. Permission required.

Co-requisite: INCO 589**NURS 794W - Special Topics****Credits:** 1-4

Specialized courses covering information not normally presented in regular course offerings. Description of topics varies. May be repeated but not in duplicate areas of content. Prereq: permission. Special fee on some sections. Writing intensive.

Attributes: Writing Intensive Course**NURS 797 - Honors Thesis****Credits:** 1-4

Honors seminar designed to expand the knowledge and skills presented in previous honors in major courses. Focuses on a project relevant to the discipline of nursing under the direction of a faculty adviser. Open to honors-in-major and senior nursing majors. Students must complete two semesters of work 1cr. in fall, and 4cr. in spring.

NURS 797W - Honors Thesis**Credits:** 1-4

Honors seminar designed to expand the knowledge and skills presented in previous honors in major courses. Focuses on a project relevant to the discipline of nursing under the direction of a faculty adviser. Open to honors-in-major and senior nursing majors. Students must complete two semesters of work 1cr. in fall, and 4cr. in spring. Writing intensive.

Attributes: Writing Intensive Course

Nutrition (NUTR)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

NUTR 400 - Nutrition in Health and Well Being**Credits:** 4

Addresses scientific principles of human nutrition to promote health and well-being. Overview of the biological significance of food and nutrition, specific nutrient functions, and how the supply and demand of food impacts physical health and well-being. Emphasis on scientific literacy and an appreciation of the ways in which we gain scientific knowledge and understanding. Special fee. Lab.

Attributes: Biological Science(Discovery); Discovery Lab Course**NUTR 400H - Honors/Nutrition in Health and Well Being****Credits:** 4

This course is designed to teach the scientific principles of human biology using nutritional concepts to promote personal health and well being. Special fee. Students cannot earn credit for this course if they have taken ANSC 400 or NUTR 475.

Attributes: Biological Science(Discovery); Discovery Lab Course**NUTR 401 - Professional Perspectives on Nutrition****Credits:** 1

Examines the many opportunities for dietitians and nutrition science professionals, from farm to fork, to health and nutrition outcomes. Students meet and interact with faculty and explore career paths and nutrition strategies in the food and nutrition science fields. Legal and ethical considerations for these professionals are discussed. Content areas for specialization in nutritional sciences, dietetics, health and wellness are reviewed, as well as the Ecogastronomy dual major. Cr/F. Prereq: freshmen, sophomore standing or permission.

NUTR 405 - Food and Society**Credits:** 4

Consideration of the cultural significance of food, emphasizing historical, psychological, social, political, and economic aspects. (Spring semester only.)

Attributes: Social Science (Discovery)**NUTR 405W - Food and Society****Credits:** 4

Consideration of the cultural significance of food, emphasizing historical, psychological, social, political, and economic aspects. (Spring semester only.) Writing intensive.

Attributes: Social Science (Discovery); Writing Intensive Course**NUTR 476 - Nutritional Assessment****Credits:** 4

Designed for the student who plans to enter the health care profession. Introduces the concepts of nutritional assessment and the practical application of these concepts in the nutritional care of clients in clinical, community, and research settings. Prereq: NUTR 400. Special fee.

NUTR 504 - Managerial Skills in Dietetics**Credits:** 4

Emphasis on the basic principles of managing clinical, community, and food service operations, including personnel management, in-service and on-the-job training, policy and procedure development, negotiation techniques, facilities, equipment selection, and financial management.

NUTR 505 - ServSafe**Credits:** 1

Food safety training and certificate program administered by the National Restaurant Association. SevSafe certification required when working in a variety of food service establishments. Special fee.

NUTR 506 - Nutrition and Wellness**Credits:** 4

Course assists students in making informed decisions affecting personal and societal wellness. Emphasis on the dimensions of wellness, including the impact of psychological, emotional and physical health, as well as environmental influences that affect behavior. Prereq: NUTR 400 or equivalent.

NUTR 525 - Food and Culture in Italy**Credits:** 4

Students will be introduced to the Italian culture and its traditions, with a special focus on food. Part of the course will involve out-of-class activities and tasting experiences in the city of Ascoli Piceno, Italy. Only open to students studying abroad in the UNH-in-Italy Program. Permission required.

Attributes: World Cultures(Discovery)**NUTR 530 - Critical Analysis in Food Studies****Credits:** 4

The course aims to investigate concepts and ideas that are essential to food studies. The philosophical aspects of the course are complemented by the experiential components that emphasize the particularity of the Italian environment. Only open to students studying abroad in the UNH-in-Italy Program. Permission required.

Attributes: Humanities(Disc)**NUTR 535 - History of Food in Italy****Credits:** 4

Students will examine the history of food in Italy and explore the interconnected sociological, cultural, political and environmental histories. Only open to students studying abroad in the UNH-in-Italy Program. Permission required.

Attributes: Historical Perspectives(Disc)**NUTR 546 - Nutrition in Exercise and Sports****Credits:** 4

Advanced nutritional strategies to optimize health, fitness, and athletic performance. Emphasis is on nutrition before, during, and after exercise for fitness, training, and competitions. Topics include healthy strategies for building muscle and losing body fat, as well as dietary manipulation in an effort to gain a competitive advantage. Prereq: NUTR 400 or equivalent.

NUTR 550 - Food Science: Principle and Practice**Credits:** 4

Application of scientific principles associated with the study of foods. Topics include: food composition, food additives and regulations, food safety, food biotechnology, product development and sensory evaluation. Principles of scientific inquiry as food ingredients are manipulated in a kitchen lab environment. Prereq: HMG 403; NUTR 400; CHEM 411 or CHEM 403 and CHEM 404. Special fee. Lab.

NUTR 560 - Introduction to Research in Nutrition**Credits:** 2

Introduction to research methods in nutritional assessment. Students gain both conceptual knowledge and hands-on experience in a collaborative setting while working with the College Health and Nutrition Assessment Project. Prereq: NUTR 400 or equivalent.

NUTR 595 - Mediterranean Diet and Culture**Credits:** 4

Is there a diet that allows one to eat, drink, and still be healthy? While Americans struggle with rising rates of obesity and related health conditions, inhabitants of the Mediterranean region enjoy relatively low rates of heart disease, cancer, and obesity. Offers a unique on-site experience in Ascoli Piceno, Italy to investigate the cultural and scientific importance of the Mediterranean Diet. Students review basic nutrition concepts as well as the history and evolution of the Mediterranean diet. Combining lecture, discussion, and experiential activities, NUTR 595 is offered through the UNH Italy Study Abroad Program during the summer session.

Co-requisite: INCO 589**NUTR 600 - Field Experience in Nutrition****Credits:** 1-4

Supervised field experience in public and private agencies with planned learning objectives related to clinical and community nutrition and food service management. Students are responsible for their own transportation; faculty member coordinates arrangements with fieldwork sites. Prereq: NUTR 400 or equivalent. May be repeated for a maximum of 6 credits. Cr/F.

NUTR 610 - Nutrition Education and Counseling**Credits:** 4

The principles, methods and materials needed to provide nutrition education and counseling services. Emphasis on motivational interviewing, behavior change and developing skills needed to be an effective nutrition educator and counselor. Prereq: NUTR 400 and NUTR 476.

NUTR 625 - From Farm to the Italian Table**Credits:** 4

Students will gain an appreciation for food production (harvesting, processing), culinary preparation, and tasting. Hands-on experience will be emphasized through field trips and will provide a broad, informed perspective on farming and sustainable agriculture. Only open to students studying abroad in the UNH-in-Italy Program. Permission required.

NUTR 650 - Life Cycle Nutrition**Credits:** 4

Comprehensive review of the nutritional issues related to the life cycle. Nutrient requirements of each life cycle stage are analyzed in the context of their metabolic functions. Practical application of theory at each stage of the life cycle through projects and discussion. Prereq: NUTR 400 or equivalent. Recommended BMS 507 and BMS 508.

NUTR 686 - UNH-in-Italy Study Abroad**Credits:** 0

Provides a unique opportunity to study abroad in Ascoli Piceno, Italy during the semester. Open only to students studying abroad in the UNH-in-Italy Program. Permission required. Cr/F. Special fee.

NUTR 699 - Independent Study**Credits:** 1-4

Scholarly research project in an area of the nutritional sciences under the guidance of a faculty adviser. May be repeated. Prereq: permission. Cr/F.

NUTR 700 - Career Development in Dietetics**Credits:** 1

Preparation for applying to dietetic internship programs and/or graduate school. Topics include writing resumes and personal statements, interviewing, professional skills, and navigating the online internship application.

NUTR 709 - Nutritional Epidemiology**Credits:** 4

This course introduces basic concepts and methods in key areas of nutritional epidemiology, and discusses practical considerations related to designing, analyzing, and evaluating population-based nutrition studies. Research methods used in nutritional epidemiology will be taught to provide students with the ability to critically evaluate the nutritional epidemiological evidence. Learning will be enhanced by practical experiences in the collection, management, and analysis of nutritional epidemiological data during lab and in-class activities. Prereq: an introductory nutrition course and statistics course. Permission required.

NUTR 720 - Community Nutrition**Credits:** 4

Identification of causes of complex public health nutrition problems (such as food insecurity and escalating obesity rates) and cost-effective community-based interventions required to solve them. Provides skills and tools needed to assess design, and evaluate community nutrition and wellness interventions. Prereq: NUTR 400 or equivalent. Writing intensive. **Attributes:** Writing Intensive Course

NUTR 730 - From Seed to Sea: Examining Sustainable Food Systems**Credits:** 4

Integration of diverse human and natural system interactions in a seminar-based course to understand issues in food system sustainability. Examination of food system structure and function from coupled human and natural systems perspectives. Current and topical issues of food and agriculture include: exploration of using natural resources to meeting growing population demands; conflicting views on meeting food and nutrition requirements; impacts of increased stress on natural resources; inequities and discrimination in the food system; impact on dietary guidelines on the environment. Prereq: NUTR 400 or NUTR 405 or by permission.

NUTR #733 - Inv Diet Supplements & Herbs**Credits:** 4

Investigations into the potential benefits to human health of medicinal herbs and other dietary supplements. Students critically evaluate the potential effectiveness of dietary supplements by relying on peer-reviewed nutrition and medical journals. Safety, efficacy, and legality of dietary supplements are critically evaluated, as well as governmental regulations and industry marketing approaches. Several exemplary dietary supplements are examined in detail. Recommended for students in the health sciences (nutrition, nursing, biomedical sciences). Students are expected to attend live sessions of this synchronous online course at the regularly scheduled class times, and all exams will take place in a UNH classroom at the regularly-scheduled class times on the dates indicated in the syllabus. Prereq: NUTR 400. **Attributes:** Online with some campus visits, EUNH.

NUTR 740 - Nutrition for Children with Special Needs**Credits:** 4

Nutritional assessment and care of children with special needs resulting in feeding difficulties requiring medical nutrition therapy. Prereq: NUTR 400.

NUTR 750 - Nutritional Biochemistry**Credits:** 4

Digestion, absorption, transport, and utilization of food nutrients. Role of macro- and micro-nutrients as substrates and catalysts for metabolic pathways, and the role of these pathways in maintaining human health at the cellular, organ, and whole body levels. Prereq: BMS 507 and BMS 508 or ANSC 511 and ANSC 512; BMCB 658 or equivalents. Writing intensive. **Attributes:** Writing Intensive Course

NUTR 751 - Nutritional Biochemistry of Micronutrients**Credits:** 4

Investigation of the nutritional and biochemical aspects of micronutrient metabolism. All essential vitamins and minerals, as well as some phytonutrients and quasi-nutrients, are explored in depth. Nutrients are examined for their molecular, cellular, metabolic and biomedical functions, as well as the biochemical and clinical consequences of their deficiency or excess. Prereq: NUTR 750 or equivalent.

NUTR 755 - Treatment of Adult Obesity**Credits:** 3

Overview of the risk factors associated with obesity; evidence-based recommendations for assessment and treatment of obesity. Counseling skills important to successful weight management and non-diet approaches are also explored. Prereq: NUTR 400, 476, and NUTR 610. **Co-requisite:** NUTR 758

NUTR 758 - Practicum in Weight Management**Credits:** 2

Assist clients in making lifestyle and dietary changes over a 10-week period and develop skills in marketing, advertising, counseling, an oral communication related to weight management. Prereq: NUTR 400 or equivalent; NUTR 476; and NUTR 610. Special fee.

Co-requisite: NUTR 755**NUTR 760 - Research Experience Nutrition I****Credits:** 2

Review scientific literature, formulation of research questions, testing hypotheses, analysis and interpretation of research data, and formal presentation of findings. Students gain conceptual knowledge and hands-on experience while working with established research projects. NUTR 760 focuses on the review of scientific literature and the development and testing of a research question. Prereq: NUTR 560.

NUTR 761 - Research Experience Nutrition II**Credits:** 2

Review scientific literature, formulation of research questions, testing hypotheses, analysis and interpretation of research data, and formal presentation of findings. Students gain conceptual knowledge and hands-on experience while working with established research projects. NUTR 761 focuses on understanding and communicating research findings in a collaborative setting. Prereq: NUTR 760.

NUTR 765 - Geriatric Nutrition**Credits:** 4

Overview of the physiological changes associated with aging and their impact on preparing, consuming, digesting, absorbing, and metabolizing food. Role of routine nutritional assessment in the promotion of health to prevent and manage chronic disease, with a social focus on the influence of polypharmacy on nutritional status. Prereq: NUTR 400 or equivalent; NUTR 650.

NUTR 773 - Clinical Nutrition**Credits:** 4

Principles and mechanisms of disease that result in altered nutrient requirements in humans. Prereq: NUTR 400; BMS 507 and BMS 508; BMS 658.

NUTR 775 - Practical Applications in Medical Nutrition Therapy**Credits:** 4

Combination of lecture and supervised practical experience in medical nutrition therapy in a New England hospital. Emphasizes nutritional counseling, assessment, and instruction of patients with nutrition-related disorders. Prereq: NUTR 400; BMS 507 and BMS 508 or ANSC 511 and ANSC 512; BMS 658. Special fee.

NUTR 780 - Critical Issues in Nutrition**Credits:** 4

Critical review and analysis of controversial topics in nutrition; emphasis on developing oral and written communication skills and critical thinking skills. Writing intensive. Prereq: NUTR 773 or permission.

Attributes: Writing Intensive Course**NUTR 790 - Undergraduate Teaching Experience****Credits:** 1-2

Assist graduate teaching assistants or faculty in preparing, presenting, and executing NUTR courses/laboratories. May be repeated up to a maximum of 4 credits.

NUTR 795 - Investigations**Credits:** 1-4

Prereq: permission.

NUTR 795W - Investigations**Credits:** 1-4

Prereq: permission. Writing intensive.

Attributes: Writing Intensive Course**NUTR 799 - Senior Thesis****Credits:** 1-4

A special project conducted under faculty supervision and resulting in a written honors thesis. Students must initiate discussion of the project with an appropriate faculty member. Offered both semesters. Prereq: Junior or Senior major with cum. GPA of 3.20; permission. Writing intensive.

Attributes: Writing Intensive Course**NUTR 799H - Honors Senior Thesis****Credits:** 1-4

A special project conducted under faculty supervision and resulting in a written honors thesis. Students must initiate discussion of the project with an appropriate faculty member. Prereq: Senior major with cum. GPA of 3.50; permission. Writing intensive.

Attributes: Writing Intensive Course

Occupational Therapy (OT)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

OT 444 - Living and Doing with Technology**Credits:** 4

This course draws upon the knowledge from emerging product design concepts and principals and advocates for inclusiveness of all consumers regardless of their age, abilities, disabilities, and personal affinities. Students will apply critical thinking and hands-on learning to evaluate day-to-day technologies by use of various design criteria, identify usability problems, and design technology solutions. Course work will include readings, interactive activities, discussions, quizzes, and group projects.

Attributes: Environment, TechSociety(Disc); Inquiry (Discovery)**OT 500 - Behavior and Development of Children****Credits:** 4

Introduces the biological, psychosocial, and cultural aspects of human development from birth through adolescence. Emphasizes theories that help explain human behavior; discusses implications of developmental research.

OT 501 - Developmental Tasks of Adulthood**Credits:** 4

Includes the biological and psychosocial context of development for adults. Developmental tasks relate to the accomplishment of prior tasks, physiological change, socioeconomic status, and psychosocial development. Prereq: child development course or permission.

OT 510 - Exploring Occupational Therapy and Occupation**Credits:** 4

Occupational therapy is introduced as a human service profession through experiential and academic activities, which illustrate the personal and professional skills required to practice in a variety of settings and roles. Basic concepts of human occupation and the therapeutic use of occupation are explored. Comparisons are made to related human service careers. Students are encouraged to do a personal assessment of their interest and potential for further study of occupational therapy.

OT 513 - Stressed Out: The Science and Nature of Human Stress**Credits:** 4

The human stress response system, research investigating the sequelae of stress on health, protective strategies for stress, managing personal stress effectively, and strategizing stress modulation as an intervention technique. Course format includes two hours of weekly lecture/discussion followed by one hour of experiential laboratory in which students research and/or apply new information. Special fee.

Attributes: Biological Science(Discovery); Discovery Lab Course**OT 595 - Special Topics****Credits:** 4

Explores areas related to occupational therapy theory, practice, and/or research. Special fee on topic: College as Transition.

OT 598 - Happy and Healthy at Work/Promoting Wellness, Diversity and Inclusion**Credits:** 4

Offers an improved understanding and ability to effectively manage a diverse and healthy workplace. Addresses key diversity, inclusion and wellness issues in the workplace of a general, technical and social nature with an emphasis on disability and health promotion. (Also listed as HMG 598.) Special fee.

Attributes: Social Science (Discovery); Inquiry (Discovery)**OT 610 - Occupation, Identity, Disability****Credits:** 4

Students develop skills and knowledge for analyzing daily existence, patterns of activity and the occupational choices pursued by humans. Students explore how the self-identity of individuals with and without disability is influenced by participation in everyday activities, and contextual factors: Through reading, reflective writing and collecting personal narratives of individuals with disability, students examine the relations among engagement in daily occupations and the orchestration of routines and social participation with self identity and well-being. Majors only. Writing intensive.

Attributes: Writing Intensive Course**OT 685 - Psychosocial Disorders and Everyday Life****Credits:** 4

The study of abnormal behavior in the context of its effect on everyday function. Provides background information on adult psychosocial disorders commonly seen by service providers in the mental health system. Students learn to observe and describe behavior in terms of functional impairment, diagnostic criteria, and causative factors. General psychosocial and biological treatments are studied. This course or its equivalent is a prerequisite for entry to the professional masters degree program in occupational therapy. Students are expected to bring to this course a basic knowledge of psychosocial aspects of human development. Prereq: PSYC 401. Majors only.

OT 695 - Independent Study**Credits:** 2-4

In-depth study with faculty supervision. Prereq: junior standing in OT major; approval of major adviser and faculty of area concerned. May be repeated for a maximum of 8 credits.

OT 710 - OT Practice and Professional Roles**Credits:** 4

Students are introduced to foundation knowledge, values and philosophy of occupational therapy practice. Students learn skills to apply professional behaviors and skills required to be ethical practitioners. They learn about various practice settings and systems within which occupational therapists practice to prepare them to begin to make decisions regarding their fieldwork site selections. They are introduced to models of OT practice. Only open to OT majors. Special fee.

OT 722 - Introduction to Assistive Technology**Credits:** 4

Hands on course provides participants with an overview of the application of assistive technology in all life settings for individuals affected by physical, sensory, or cognitive limitations. Methods, materials, and resources for obtaining and providing assistive technology services will also be discussed. Special fee.

OT 724 - Assistive Technology and Physical Disabilities**Credits:** 4

An advanced course that focuses on the specialized assistive technology needs of persons with physical impairments. Topics include seating and positioning needs, prosthetic devices, manual powered mobility devices, ergonomics and computer access. Special fee.

OT 726 - Assistive Technology and Sensory, Communicative, and Cognitive Disabilities**Credits:** 4

Explores the application of various technologies for individuals with visual, auditory, cognitive and communication impairments. Included are: blind and low vision aides, assistive listening devices, alternative and augmentative communication devices, memory aides, and prompting aides. Special fee.

OT 730 - Assistive Technology for Enhancing Occupational Performance**Credits:** 3

This course provides instruction on how occupational therapy practitioners use and apply assistive technology in the context of client evaluation and intervention, to improve quality of life and functional capacities. Students learn and apply clinical reasoning skills related to the selection, procurement, modification and training in the use of assistive technology solutions. OT majors only.

Co-requisite: OT 730L**OT 730L - Assistive Technology for Enhancing Occupational Performance Lab****Credits:** 2

Co-Requisite Laboratory for OT 730 and OT 830 Assistive Technology for Enhancing Occupational Performance. Students are provided hands-on learning experiences regarding the fabrication, identification, adaptation and training in the use of assistive technology for individuals with functional problems associated with disability or impairment. OT evaluation and interventions related to the application of assistive technology are addressed. OT majors only.

Co-requisite: OT 730**OT 731 - Introduction to Assistive Technology Principles****Credits:** 2

This course presents an overview of the various assistive technology service delivery models, assessment tools, legislation, funding, and assistive technology across the lifespan.

OT 732 - Introduction to Assistive Technology Practices**Credits:** 2

This course presents an overview of the various service delivery models, assessment tools and teaches students how to create and modify devices. Students will conduct device demonstrations, training, reuse, and repair while acquiring skills using various fabrication tools, materials and techniques. Students will receive a materials kit they will use to fabricate eight assistive technology solutions. They will also be required to submit video clips and photos demonstrating their skills providing device demonstrations, loans and customer training. Special Fee.

OT 733 - Assistive Technology and Physical Disabilities for Electronic Devices**Credits:** 2

This course focuses on switch and computer access solutions; programming switch interfaces for computers and iPads; alternative mice and keyboards; switch access recipes; iPad mounting solutions; electronic aids for daily living, voice controlled solutions for the phone, computer, and activation of household appliances. Students will learn how to make, modify, and mount various switches an electronic devices. Intensive hands-on AT exploration will be completed on campus or virtual evidence provided will be accepted.

OT 734 - Assistive Technology and Physical Disabilities for the Home, Community and Employment**Credits:** 2

This course focuses on assistive technology solutions to maximize independence at home, in the community, and on the job for individuals who experience physical disabilities. Students will acquire skills in conducting accessibility assessments, Topics explored include wheelchair seating and mobility; ergonomic hand tools, independent living aids; ramps and lifts; vehicle modifications; and modifications for canes, crutches, walkers, and wheelchairs. Intensive hands-on AT exploration will be completed on campus or virtual evidence provided will be accepted.

OT 735 - Assistive Technology for Communication and Cognitive Impairments**Credits:** 2

This course focuses on alternative and augmentative communication devices and devices that benefit individuals who experience cognitive impairments. This course explores assistive technology solutions for note taking, devices and apps for self-regulation, organization, and reminders. Students will learn how to conduct cognitive demand analysis for devices and apps to help users select appropriate accommodations and assistive technology solutions. Intensive hands-on AT exploration will be completed on campus or virtual evidence provided will be accepted.

OT 736 - Assistive Technology and Vision and Hearing Impairments**Credits:** 2

This course focuses on assistive technology for blind and low vision; deaf and hard of hearing; and deaf/blindness. Students will use an assortment of magnification devices; amplification systems; and assistive listening devices as well as learn how to create a variety of approaches to accommodate for vision and hearing impairments. Intensive hands-on AT exploration will be completed on campus or virtual evidence provided will be accepted.

OT 741 - Human Occupation**Credits:** 4

This course introduces students to the broad concept of occupation by exploring ways people acquire skills for occupational performance. Students develop an understanding of the relations between health and occupation, disability and occupation, and explore how humans find meaning in their lives through occupational engagement. Writing intensive.

Attributes: Writing Intensive Course**OT 744 - Fieldwork and Professionalism - Level 1****Credits:** 1

This course prepares students to enter level 1 fieldwork with confidence and working knowledge of expectations for a full-time two-week level 1 fieldwork experience. Cr/F.

OT 745 - Administration and Management for Occupational Therapy Practice**Credits:** 4

This course aims to increase the student's understanding of systems of practice, and to business fundamentals associated with occupational therapy service delivery. Specific topics covered include and analysis of practice settings, reimbursement, supervision of professional and non-professional staff, program evaluation methods, ethics, OT management practices, marketing, health policy including medicare, Human Rights and Education Legislation, and the impact of policy decisions for the delivery of OT services. OT majors only.

OT 751 - Mind Body Systems/Neurologically Based Function and Dysfunction**Credits:** 4

Students study most significant occupational-related disorders commonly seen by occupational therapists. A self-directed method is used to examine the perceptual, cognitive, biopsychosocial basis of these disorders. A basic overview of human body-mind systems is provided with an emphasis on pathology, the recognition of symptoms, their causes and the occupational implications of the disorders. The course is a prerequisites for courses in specific occupational therapy assessment and intervention. OT majors only.

OT 752 - Human Movement and Environmental Effects on Everyday Occupations**Credits:** 4

Integrates the student's prerequisite knowledge of occupation. Develops skills required for interpretation of biomechanical analysis for creating successful occupational performance for individuals with varied musculoskeletal, cardiac and respiratory dysfunction. Integration of the occupational therapy clinical reasoning process and the use of occupations as a therapeutic mechanism for change are emphasized. The analysis of environment as it relates to human movement and participation in desired occupations is explored. Special fee.

Co-requisite: OT 752L**OT 752L - Human Movement Lab****Credits:** 1

OT majors only. Cr/F.

Co-requisite: OT 752

OT 753 - Mind Body Systems: Neurologically-based Function and Dysfunction--Pediatric Conditions**Credits: 4**

This course applies an occupational science perspective to study disease, illness, medical conditions, and impairments to human body structures and functions that typically emerge and/or present themselves in childhood. The emphasis is on how disease, and impairments in physical and mental functioning interact with the human condition, the uniqueness of individuals, and the environments within which they live to impact occupational performance, and one's overall health, well-being, and life quality. This course is a prerequisite for all occupational therapy assessment and intervention courses including OT 762/OT 862, OT 763/OT 863, and OT 760/OT 860.

OT 757 - Mind Body Systems: Neurologically-based Function and Dysfunction--Adult Conditions**Credits: 4**

This course is the second course in a two-part course sequence that uses a life span approach, drawing on occupational science perspectives to study conditions typically diagnosed during adulthood (ages 21 and up). The emphasis is on the interaction of the individual (the mind), the body and the psychosocial environment as related to occupational performance. Students will work in pairs to examine selected disorders, and will further develop their presentation skills. This course is a prerequisite for courses in occupational therapy assessment and intervention for adults. Prereq: KIN 706; OT 753/OT 853.

OT 760 - Psychosocial Evaluation and Intervention**Credits: 4**

Examines the evaluation of psychosocial and psycho-emotional areas of occupational performance and the planning and implementation of occupation-based interventions across domains of practice and client populations. Course addresses developing a client's occupational profile, narrative reasoning and therapeutic use of self, behavioral change, illness representation, and adjustment to chronic disorders. A specific focus of the course is evaluation of and intervention for clients' presenting with mental health disorders. Open to OT majors only.

Co-requisite: OT 760L**OT 760L - Psychosocial Evaluation and Intervention Lab****Credits: 1**

This is the co-requisite lab for OT 760. Lab provides hands-on experiences regarding the evaluation and intervention of psychological and psycho-emotional areas of occupational performance. Course focuses on the evaluation and intervention for clients presenting with mental health disorders and also addresses narrative reasoning, therapeutic use of self, behavioral change, illness representation and adjustment to chronic disorders. Special fee. OT majors only. Cr/F.

Co-requisite: OT 760**OT 762 - Occupational Therapy Evaluation and Intervention for Children****Credits: 3**

In this course, students will develop entry-level practice skills for conducting occupational therapy (OT) evaluations and interventions for children. Organized around the OT Practice Framework, students will learn how to collaborate with families and other professionals, develop clinical observation skills, and learn frequently used standardized assessments. Additionally, students will use primary OT frames of reference to plan and implement interventions. Students will apply their understanding of typical and atypical child development, and extend their clinical reasoning skills in order to develop competencies for providing OT services for children and with a variety of conditions across common practice settings.

Co-requisite: OT 762L, OT 762R**OT 762L - Occupational Therapy Evaluation and Intervention for Children Lab****Credits: 1**

The co-requisite labs provide hands-on experiences to compliment lecture material from OT 762, and to provide opportunities for the practical application of knowledge. Special fee. Cr/F.

Co-requisite: OT 762**OT 762R - Occupational Therapy Evaluation and Intervention for Children Recitation****Credits: 0**

The recitation provides hands-on experiences to compliment lecture material from OT 762 and OT 762L, and to provide opportunities for the practical application of knowledge. Cr/F.

OT 763 - Occupational Therapy Evaluation and Intervention for Adults**Credits: 3**

Students will develop entry-level practice skills related to the synthesis of evaluation, intervention planning and goal writing. The student will be introduced to a variety of standardized evaluation tools and implement OT interventions within various contexts of practice through case studies. Specific intervention techniques based on accepted frames of reference and research evidence that helps clients engage successfully in the daily occupations will be emphasized. Prereq: OT 752, OT 757.

Co-requisite: OT 763L**OT 763L - Occupational Therapy Evaluation and Intervention for Adults Lab****Credits: 2**

This lab is a co-requisite course to accompany OT 863 Occupational Therapy Evaluation and Intervention for Adult Dysfunction. The lab course provides opportunity for the students to engage in experiential learning and application of principles and techniques learned in the lecture course. Special fee. Cr/F.

Co-requisite: OT 763**OT 763R - Occupational Therapy Evaluation and Intervention for Adults Recitation****Credits: 0**

The recitation provides hands-on experiences to compliment lecture material from OT 763 and OT 763L, and to provide opportunities for the practical application of knowledge. Cr/F.

Co-requisite: OT 763, OT 763L**OT 766 - AMPS Training****Credits: 4**

The Assessment of Motor and Process Skills (AMPS) provides a client-centered, occupation-based assessment of a person's ADL ability. The course supports occupation-based intervention. Students learn to reliably administer the AMPS and use it in the context of occupational therapy practice. Cr/F.

OT 771 - Enabling Participation in Community Groups**Credits: 2 or 3**

Students will work in an organization, learn about the people served by this organization, and conduct therapeutic groups within the organization. Emphasis of content includes group process, clinical documentation, intervention planning and OT services with adults with cognitive impairments.

OT 771L - Enabling Participation in Community Groups Lab**Credits: 2**

Students will work in an organization, learn about the people served by this organization and conduct therapeutic groups. This lab serves as a Level I Fieldwork placement. OT majors only. Special fee.

OT 785 - Research Methods and Application to Practice**Credits: 4**

Qualitative, quantitative, and mixed methods types of research are introduced and applied to relevant occupational therapy questions. Students acquire the fundamental skills of conducting research such as formulating research questions and identifying appropriate research designs and/or methods. Students also develop the ability to critically analyze research studies and apply the outcome to evidence-based practice in occupational therapy. OT majors only.

OT 789 - Using iPads to Support Children with Disabilities**Credits: 3**

The iPad is changing the way we teach and learn. This technology embraces Universal design principles (UDL) and enables children with significant disabilities to learn in ways never thought possible five years ago. It is a tool for delivering multimedia content and embraces the use of Multi modal learning. This technology finally levels the playing field to support all students including students with disabilities.

OT 791 - Senior Honors Thesis**Credits: 4**

Completion of a research proposal based on a topic of relevance to the occupational therapy profession. Development of knowledge and skills in receiving and critiquing research and professional literature; research design and methodology; and the development of a research proposal. Required for graduation with honors in the major. Prereq: Completion of OT 741. Open to OT majors only.

OT 792 - Level I Fieldwork**Credits: 1**

Provides occupational therapy students an opportunity to experience occupational therapy in a clinical setting. Students attend a seminar prior to beginning their placement. The Level I placement is scheduled between the fall and spring semesters of the senior year. During fieldwork, students observe an occupational therapist as well as participate in the planning and implementing of the occupational therapy assessment or intervention process for a client. OT majors only. Cr/F.

OT 795 - Special Topics**Credits: 2-4**

Explores areas related to occupational therapy theory, practice, and/or research. May repeat to 12 credits but not in duplicate subject areas. Prereq: permission. Special fee on some sections. Cr/F.

Ocean Engineering (OE)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

OE 400 - Ocean Engineering Seminar**Credits: 1**

A seminar based course considering contemporary topics involved in ocean exploration. Faculty and guest speakers will describe thematic ocean engineering subareas through weekly presentations. The presentations will provide examples of engineering applications and ocean exploration. Class participation credit can be earned through oral discussions, presentation of contemporary OE topics, or hands on projects.

OE 401 - Ocean Engineering Seminar**Credits: 1**

A seminar based course considering contemporary topics involved in ocean exploration. Faculty and guest speakers will describe thematic ocean engineering subareas through weekly presentations. The presentations will provide examples of engineering applications and ocean exploration. Class participation credit can be earned through oral discussions, presentation of contemporary OE topics, or hands on projects.

OE 521 - Power of the Sea: Scientific Discovery in the Ocean**Credits: 4**

This course considers the struggle to understand the physics of the sea to help predict when the sea will unleash its fury. The scientific discovery of ocean engineering topics such as tides, waves, and tsunamis are introduced through their human historical introduction. The historical significance and preliminary resolution of each physical mechanism provide context for the fundamental formulations and contemporary predictive models. The course also considers the role of ocean disasters and geopolitical conflict in motivating scientific exploration of the oceans.

Attributes: Physical Science(Discovery)**OE 610 - Ocean Instrumentation Lab****Credits: 4**

An investigation of the discrete and integrated electronics typically used in the design and implementation of ocean instruments. Topics include both passive and active analog electronic elements typically used for signal conditioning of common oceanographic sensors (e.g., thermistors, pressure sensors, acoustic transducers); A/D and D/A conversion, sensor sampling criteria and rules, with examples from contemporary ocean instruments; embedded micro-controller/microcomputer modules for autonomous or remote sensing in ocean environments; inter-instrument communications methods typically used in ocean instruments (e.g., serial and network communications). Laboratory time will be used to develop practical experience in specification, design, development and testing of various ocean instrument components based on the material presented. Prereq: MATH 527; MATH 528; ECE 537 ; IAM 550.

OE 677 - Seamanship and Marine Weather for Ocean Engineers and Scientists**Credits: 2**

A survey of basic principles of seamanship and marine weather intended for ocean engineers and ocean scientists. Reviews ship and vessel nomenclature, shipboard safety, techniques for equipment handling and instrument deployment, common shipboard evolutions associated with scientific cruises, navigation principles, and marine weather phenomena and products. Includes field trips and practical applications.

OE 690 - Introduction to Ocean Engineering**Credits: 4**

Survey of engineering applications in the ocean environment. Topics vary and include hydrodynamics, waves, tides, underwater sound, instrumentation, marine geomechanics, and naval architecture. Includes guest lectures by faculty members from the Engineering departments. Prereq" PHYS 408 Pre- or Coreq: MATH 527.

OE 710 - Ocean Measurements Lab**Credits: 4**

Measurements of fundamental ocean processes and parameters. Emphasizes understanding typical offshore measurements, their applications, and the use of acquired data, in terms of the effects on structures and processes in the ocean.

OE 744 - Corrosion**Credits: 4**

Three-part course. First part reviews and develops basic concepts of electrochemistry, kinetics, and measurement methods. Second part covers details of specific corrosion mechanisms and phenomena including passivity, galvanic corrosion, concentration cell corrosion, pitting and crevice corrosion, and environmentally induced cracking. Third part focuses on the effects of metallurgical structure on corrosion, corrosion in selected environments, corrosion prevention methods, and materials selection and design. Prereq: CHEM 404 or 405; ME 561 or permission. Special fee. Lab. (Also listed as CHE 744 and ME 744.)

OE 753 - Ocean Hydrodynamics**Credits: 3**

Fundamental concepts of fluid mechanics as applied to the ocean, continuity, Euler and Navier-Stokes equations, Bernoulli equation, stream function, potential function, moment theorem, turbulence and boundary layers are developed with ocean applications. Prereq: MATH 527; CIE 642 or ME 608.

OE 754 - Ocean Waves and Tides**Credits: 4**

Small amplitude, linear wave theory, standing and propagating waves, wave energy, refraction, diffraction, transformation in shallow water, statistics of random seas, spectral energy density, generating wave time series using the random phase methods forces on structures, Froude scaling of wave tank experiments, nonlinear effects. Description of tides as long waves, equilibrium tide, mathematical modeling including friction, nonlinear effects, and Coriolis forces, tidal analysis, the Great Bay Estuarine System as a case study. Prereq: PHYS 407; MATH 527, and MATH 528.

OE #756 - Principles of Naval Architecture and Model Testing**Credits: 4**

Fundamentals of naval architecture presented, including hydrostatics, basics of resistance and propulsion, sea keeping and scaling. Concepts applied in experiments utilizing the tow/wave tank and associated instrumentation. Prereq: ME 608 or equivalent; ME 627 or equivalent.

OE 757 - Coastal Engineering and Processes**Credits: 3**

Introduces small amplitude and finite amplitude wave theories. Wave forecasting by significant wave method and wave spectrum method. Coastal processes and shoreline protection. Wave forces and wave structure interaction. Introduction to mathematical and physical modeling. (Also offered as CIE 757; ME 757.) Prereq: fluid dynamics or permission.

OE 758 - Design of Ocean Structures**Credits: 3**

The foundational information necessary for the design of ocean structures. Topics include analysis and design of floating body, fixed body and moored line hydrostatics; wave forces on small and large bodies; dynamic response of floating bodies; and pile and gravity foundation geotechnics. Prereq: ME 526; ME 608; ME 627, OE 754; MATH 527; or permission.

OE 759 - Estuarine and Coastal Modeling**Credits: 4**

Theory and application of coastal and estuarine numerical models for hydrodynamics and transport/fate of natural and pollutant substances. The course will be organized around the development/addition to a numerical model applied to the Great Bay Estuarine System. Theory and course organization will be covered in the lecture component. The full set of steps required to apply, test, use and document a numerical model will be completed in the laboratory component. Prereq: MATH 527; MATH 528, OE 754 or permission.

OE 764 - Spectral Analysis of Geophysical Time Series Data**Credits: 4**

This course considers basic exploratory techniques and in-depth spectral analysis for estimation with geophysical time series data, including calculations of confidence intervals and significance testing. This course prepares students for interpreting time series data with science and engineering applications. Topics include sampling theory, filtering, statistics, probability, spectral analysis, and empirical orthogonal functions. Students gain experience in code-writing for the analysis of time series data. Prereq: MATH 426.

OE 765 - Underwater Acoustics**Credits: 3**

An introduction to acoustics in the ocean. Fundamental acoustic concepts including the simple harmonic oscillator, waves on strings, and the acoustic wave equation; the sonar equation; sound generation and reception by underwater acoustic transducers and arrays; basics of sound propagation; reflection and scattering from ocean boundaries. Spring semester offered every year; satisfies core course requirement in Ocean Engineering. Prereq: PHYS 407/408, MATH 527 or equivalent.

OE 771 - Geodesy and Positioning for Ocean Mapping**Credits: 4**

The science and technology of acquiring, managing, and displaying geographically-referenced information; the size and shape of the earth, datums and projections; determination of precise positioning of points on the earth and the sea, including classical terrestrial-based methods and satellite-based methods; shoreline mapping, nautical charting and electronic charts. Prereq: MATH 426, PHYS 408. (Also listed as ESCI 771.)

OE 774 - Integrated Seabed Mapping Systems**Credits: 4**

Overview of typical applications that involve mapping the sediment-water interface in the ocean and adjacent waters. Emphasis on defining the task-specific resolution and accuracy requirements. Fundamentals of acoustics relevant to seabed mapping. Progression through typical configurations involving single beam, sidescan, phase differing and multibeam systems. Integration of asynchronous 3D position, orientation and sound speed measurements with sonar-relative acoustic travel time and angles. Analysis of impact of offsets, mis-alignments and latency in all integrated sensors.

OE 795 - Special Topics**Credits: 2-4**

New or specialized courses and/or independent study. May be repeated for credit.

OE 797 - Honors Seminar**Credits: 1**

Course enrichment and/or additional independent study in subject matter pertaining to 600- or 700-level OE courses.

Paul College Business & Economics (PAUL)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

PAUL 405 - Freshman Academic Experience I

Credits: 1

This course is an introduction to the nature of academic knowledge, academic standards and academic management skills essential for success in the University and the Paul College. This course, along with PAUL 406 which follows in the spring term, provides academic foundation for the FIRE (First-year Innovation and Research Experience Program). PAUL 405 and 406 are required of all first-year students in Paul College.

PAUL 406 - Freshman Academic Experience II

Credits: 1

This course is the second part of Freshman Academic Experience for all first-year students in Paul College. The second part of the course reviews academic skills and begins to focus on the student's academic career as a student in Paul College including: major choices, opportunities for enrichment, networking, internships and career paths as well as grand challenge research and presentations. This course, along with PAUL 405 which follows the spring term, provides the academic foundation for the FIRE (First-year Innovation and Research Experience Program). PAUL 405 and 406 are required of all first-year students in Paul College.

PAUL 440A - Honors/Design Thinking for Social Justice, Change, and Innovation

Credits: 4

Utilizing the powerful, application-oriented methodology of human-centered design (design thinking), the course will enable students to become change makers and transformational leaders, by helping them understand the context and develop creative solutions to problems characterized by multiple forms of inequality (economic, social, racial, and gender-based), thus working toward social justice, change, and innovation.

Attributes: Social Science (Discovery)

PAUL 450 - Personal Finance

Credits: 4

This course will provide an overview of the personal financial planning process, including the establishment of goals and objectives, forecasting of lifetime income and expenditures, evaluation of investment options, money management, and understanding of all the many ways a person can achieve their financial goals through various strategies. The course covers the concepts, theories and analytical methods used in professional personal financial planning. Students analyze the effects of inflation, changing interest rates and taxation (high level taxation) on their investment decisions. The course is designed to expose students to all of the directly applicable mathematical formulas involved in the finance world that we utilize on a daily basis.

Attributes: Quantitative Reasoning(Disc)

PAUL 535A - Professional Culture in the European Union - Case Study: Germany

Credits: 4

This English-language course will provide an introduction to doing business with the countries of the European Union, with an emphasis not only on political and economic issues of Europe, but also on the varied professional values that constitute it. Professional culture will be the primary focus of this course. The second half of the course will take Germany as a case study for an in-depth analysis of professional culture. We will compare German and American business practices, and will investigate various aspects of the German professional world. Of primary importance will be a study of communication with potential German business partners, employers, and customers. Also listed as LLC 535A.

Attributes: World Cultures(Discovery)

PAUL 535C - Professional Culture in Asia - Case Study: China and Japan

Credits: 4

This course, taught in English, will provide students with an introduction to doing business in Asia, with an emphasis not only on political and economic issues of the region, but also on the varied professional value systems and interactional styles that characterize it. This course will take China and Japan as case studies for an in-depth analysis of professional culture. We will compare Chinese, Japanese, and American business practices, and will investigate various aspects of the Asian professional world. Of primary importance will be a study of communication with potential Asian business partners, employers, and customers. In addition, the growing influence of Asian companies in the U.S. and the so-called Asian Market will be examined.

Attributes: World Cultures(Discovery)

PAUL 598 - Topics

Credits: 1-4

Special topics course. Cr/F.

PAUL 660 - BiP-Social Intelligence Topics

Credits: 2

Business in Practice: Social Intelligence develops students' abilities to navigate complex social relationships and environments. An emphasis is placed on experiential learning and instruction from business professionals. Rotating topic courses are offered to meet the needs of the ever-changing business environment. Cr/F.

PAUL 670 - BiP-Analytical Intelligence Topics

Credits: 2

Business in Practice: Analytical Intelligence develops students' abilities to analyze ideas, solve problems and make decisions. An emphasis is placed on experiential learning and instruction from business professionals. Rotating topic courses are offered to meet the needs of the ever-changing business environment. Cr/F.

PAUL 680 - BiP-Competitive Intelligence Topics

Credits: 2

Business in Practice: Competitive Intelligence develops students' abilities to gather, analyze, and distribute information and ideas about products, customers, competitors or the external environment. An emphasis is placed on experiential learning and instruction from business professionals. Rotating topic courses are offered to meet the needs of the ever-changing business environment. Cr/F.

PAUL 690 - BiP-Professional Intelligence Topics**Credits:** 2

Business in Practice: Professional Intelligence develops students' abilities to achieve professional success. An emphasis is placed on experiential learning and instruction from business professionals. Rotating topic courses are offered to meet the needs of the ever-changing business environment. Cr/F.

PAUL 695 - Independent Study**Credits:** 1-4

Individual research projects that are student designed. Initial sponsorship of a Paul College faculty member must be obtained followed by approval of Paul advisor and Dean's Office. Special permission required to earn more than 4 credits in one semester. For Paul College Juniors and Seniors with 3.0 or better cumulative GPA.

PAUL 695W - Independent Study**Credits:** 1-4

Individual research projects that are student designed. Initial sponsorship of a Paul College faculty member must be obtained followed by approval of Paul advisor and Dean's Office. Special permission required to earn more than 4 credits in one semester. For Paul College Juniors and Seniors with 3.0 or better cumulative GPA. Writing intensive.

Attributes: Writing Intensive Course**PAUL 696 - Supervised Student Teaching Experience****Credits:** 2-4

Participants are expected to perform such functions as leading discussion groups, assisting faculty in undergraduate courses that they have successfully completed or serving as peer advisors through the Undergraduate Programs Office. For Paul College juniors and seniors with 3.0 or better cumulative GPA. No more than four credits may be earned as a teaching assistant in any one course. May be repeated for a maximum of 16 credits. Prereq: permission of instructor, department chair, undergraduate programs office or dean's office.

PAUL 697 - Supervised Student Teaching: Peer Advisor**Credits:** 2

Training course for peer advisors to prepare for leading student FIRE Teams. For Paul College juniors and seniors with 3.0 or better cumulative GPA. May be repeated for a maximum of 12 credits. Prereq: permission from Undergraduate Programs Office. Cr/F.

PAUL 698 - Paul Topics**Credits:** 4

Special topics course. May be repeated.

PAUL 790 - Honors/The Workshop**Credits:** 2

Open to students enrolled in the Paul Honors Program, this workshop is specifically designed for honors students starting the program in their junior year. It is designed to enable students to share the work they are doing for the honors designated course. The workshop will also include guest speakers and other programming of interest to Paul Honors Students. Permission required. Cr/F.

PAUL 792 - Honors/The Consulting Project**Credits:** 2

Open to students enrolled in the Paul Honors Program, this course is designed to broaden perspectives and build bridges to the external business community. Students will work across all of the disciplines offered by Paul College on consulting projects developed in conjunction with the NH SBDC (Small Business Development Center). Permission required. Cr/F.

PAUL 794 - Honors/The Research Process**Credits:** 2

Open to students enrolled in the Paul Honors Program, this course is designed to help students formulate a thesis topic, learn the skills needed to write a thesis and serve as a mechanism for pairing students with a faculty thesis advisor. In addition, students will be expected to attend several research seminars. Permission required. Cr/F.

PAUL 795 - Internship**Credits:** 1-4

The internship is designed to provide practical experience in a major related field (organizations may include: business, industry, health, public service, non-profit). Supervision to be provided by a qualified individual in the organization, with student consultation by a faculty sponsor. Written report required. Initial sponsorship of an Paul College faculty member must be obtained followed by approval of PAUL advisor and Dean's Office. Special permission required to earn more than 4 credits in one semester. For Paul College Juniors and Seniors with 3.0 or better cumulative GPA.

PAUL 796 - International Internship**Credits:** 1-4

The International Internship is designed to provide practical experience in a major related field (organizations may include: business, industry, health, public service, non-profit). Supervision to be provided by a qualified individual/program in the organization, with student consultation by a faculty sponsor. Written report required. Initial sponsorship of an Paul College faculty member must be obtained followed by approval of PAUL advisor and Dean's Office. Special permission required to earn more than 4 credits in one semester. Must also register for INCO 588 (co-requisite). For Paul College Juniors and Seniors with 3.0 or better cumulative GPA.

Co-requisite: INCO 588**PAUL 798 - Paul Topics****Credits:** 4

Special topics course. May be repeated.

Philosophy (PHIL)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

PHIL 401 - Introduction to Philosophy**Credits:** 4

This course gives a basic grounding in Philosophy. We explore enduring questions that we have all grappled with: Does God exist? Do we have free will? How can we lead fulfilling lives? No background in philosophy is needed, only an open and inquiring mind.

Attributes: Humanities(Disc)**PHIL 401H - Honors/Introduction to Philosophy****Credits:** 4

This course gives a basic grounding in Philosophy. We explore enduring questions that we have all grappled with: Does God exist? Do we have free will? How can we lead fulfilling lives? No background in philosophy is needed, only an open and inquiring mind.

Attributes: Humanities(Disc); Writing Intensive Course

PHIL 401W - Introduction to Philosophy**Credits:** 4

This course gives a basic grounding in Philosophy. We explore enduring questions that we have all grappled with: Does God exist? Do we have free will? How can we lead fulfilling lives? No background in philosophy is needed, only an open and inquiring mind. Writing intensive.

Attributes: Humanities(Disc); Writing Intensive Course**PHIL 410 - Happiness, Well-Being , and a Good Life****Credits:** 4

A sustained exploration of happiness, well-being, and a good life. Are they the same? If not, do any include the others, and can they conflict? What sorts of things might contribute to or detract from happiness, well-being, and having a good life? Comparing work on these topics in philosophy and psychology will be a key theme in the course.

Attributes: Humanities(Disc); Inquiry (Discovery)**PHIL 412 - Beginning Logic****Credits:** 4

Principles of reasoning and development of symbolic techniques for evaluating arguments.

Attributes: Quantitative Reasoning(Disc)**PHIL 412H - Honors/Beginning Logic****Credits:** 4

Principles of reasoning and development of symbolic techniques for evaluating arguments.

Attributes: Quantitative Reasoning(Disc)**PHIL 417 - God, Religion, and the Meaning of Life****Credits:** 4

An introductory philosophical exploration of the relationship between reason and religious experience, particularly as this relationship has developed in and in response to, the great world religions.

Attributes: Humanities(Disc); Writing Intensive Course**PHIL 421 - Philosophy and the Arts****Credits:** 4

Contemporary philosophic concerns and perspectives as reflected in one or more of the arts (literature, theatre, film, music, plastic art). Writing intensive.

Attributes: FinePerformingArts(Discovery); Inquiry (Discovery); Writing Intensive Course**PHIL 421H - Honors/Philosophy and the Arts****Credits:** 4

Contemporary philosophic concerns and perspectives as reflected in one or more of the arts (literature, theatre, film, music, plastic art). Writing intensive.

Attributes: FinePerformingArts(Discovery); Inquiry (Discovery); Writing Intensive Course**PHIL 424 - Science, Technology, and Society****Credits:** 4

Consideration of the scientific endeavor and its social import from a philosophical perspective.

Attributes: Environment,TechSociety(Disc)**PHIL 424H - Honors/Science, Technology and Society****Credits:** 4

Consideration of the scientific endeavor and its social import from a philosophical perspective.

Attributes: Environment,TechSociety(Disc)**PHIL 430 - Ethics and Society****Credits:** 4

Critical study of principles and arguments advanced in discussion of current moral and social issues. Possible topics: violence, rules of warfare, sexual morality, human rights, punishment, abortion.

Attributes: Humanities(Disc)**PHIL 430H - Honors/Ethics and Society****Credits:** 4

Critical study of principles and arguments advanced in discussion of current moral and social issues. Possible topics: violence, rules of warfare, sexual morality, human rights, punishment, abortion. Writing intensive.

Attributes: Humanities(Disc); Writing Intensive Course**PHIL 430W - Ethics and Society****Credits:** 4

Critical study of principles and arguments advanced in discussion of current moral and social issues. Possible topics: violence, rules of warfare, sexual morality, human rights, punishment, abortion. Writing intensive.

Attributes: Humanities(Disc); Writing Intensive Course**PHIL 431 - Business Ethics****Credits:** 4

An interdisciplinary study of ethical issues in business. This course, taught collaboratively by business school and philosophy department faculty, applies philosophical perspectives, critical thinking, and analysis to ethical decision-making and implementation in the workplace as well as the broader context of other businesses, customers, society, and the environment.

Attributes: Humanities(Disc)**PHIL 435 - Human Nature and Evolution****Credits:** 4

Philosophy of biology and the evolutionary process. Readings of scientists and philosophers' commentary on scientists. Examination of the differences between scientific debate and philosophic debate. Philosophical study of scientific theory stressing humans' place in the natural world and the ethical implication of humans as natural beings in the evolutionary process.

Attributes: Environment,TechSociety(Disc)**PHIL 435H - Honors\Human Nature and Evolution****Credits:** 4

Philosophy of biology and the evolutionary process. Readings of scientists and philosophers' commentary on scientists. Examination of the differences between scientific debate and philosophic debate. Philosophical study of scientific theory stressing humans' place in the natural world and the ethical implication of humans as natural beings in the evolutionary process.

Attributes: Environment,TechSociety(Disc)

PHIL 436 - Social and Political Philosophy**Credits: 4**

Examines social and political thought that may include texts from ancient through contemporary times, addressing topics such as natural rights, revolution, law, freedom, justice, power. Questions may include: What is a community, and how are individuals related to communities? Can any particular form of government be morally justified, and if so, what kind of government? Can anarchism work? Is there something wrong with a society in which there is private ownership of property? What is oppressive? What is freedom, and are we free? What roles should different forms of power play in a society? Could and should there be a genderless society? Is ethnic diversity valuable?.

Attributes: Humanities(Disc); Inquiry (Discovery)

PHIL 436H - Honors/Social and Political Philosophy**Credits: 4**

Examines social and political thought that may include texts from ancient through contemporary times, addressing topics such as natural rights, revolution, law, freedom, justice, power. Questions may include: What is a community, and how are individuals related to communities? Can any particular form of government be morally justified, and if so, what kind of government? Can anarchism work? Is there something wrong with a society in which there is private ownership of property? What is oppressive? What is freedom, and are we free? What roles should different forms of power play in a society? Could and should there be a genderless society? Is ethnic diversity valuable? Writing intensive.

Attributes: Humanities(Disc); Inquiry (Discovery); Writing Intensive Course

PHIL 436W - Social and Political Philosophy**Credits: 4**

Examines social and political thought that may include texts from ancient through contemporary times, addressing topics such as natural rights, revolution, law, freedom, justice, power. Questions may include: What is a community, and how are individuals related to communities? Can any particular form of government be morally justified, and if so, what kind of government? Can anarchism work? Is there something wrong with a society in which there is private ownership of property? What is oppressive? What is freedom, and are we free? What roles should different forms of power play in a society? Could and should there be a genderless society? Is ethnic diversity valuable? Writing intensive.

Attributes: Humanities(Disc); Inquiry (Discovery); Writing Intensive Course

PHIL #437 - Social and Political Philosophy**Credits: 4**

This course is the same as PHIL 436 Social and Political Philosophy but without the Inquiry designation. Examines social and political thought that may include texts from ancient through contemporary times, addressing topics such as natural rights, revolution, law, freedom, justice, power. Questions may include: What is a community, and how are individuals related to communities? Can any particular form of government be morally justified, and if so, what kind of government? Can anarchism work? Is there something wrong with a society in which there is private ownership of property? What is oppressive? What is freedom, and are we free? What roles should different forms of power play in a society? Could and should there be a genderless society? Is ethnic diversity valuable?.

Attributes: Humanities(Disc)

PHIL 440 - Just Business: The Ethics of Markets and Money**Credits: 4**

Critical study of business ethics and scandals. Questions may include: Is ethics irrelevant in the cutthroat world of money making? How can one be a good person - for example honest, loyal, and caring - while attempting to maximize profits? Must employers treat workers with dignity? Does anything have more value than money? Is money closer to the "root of all evil" or the "root of all good"? Should everything be for sale? To what extent are unregulated markets fair? How should we punish corporate wrongdoers?.

Attributes: Humanities(Disc)

PHIL 440A - Honors/Who Are You? Personal Identity and Humanity**Credits: 4**

What makes you you? Are you the same person over time? What does it mean to be a person? How is being a person related to being a human being? This course is part of an Honors Symposium on the nature of personhood and humanity. We will explore a number of philosophical questions related to personal identity over time, the social construction of the self, and the relationship between being a member of homo sapiens and being a person.

Attributes: Humanities(Disc)

PHIL 440B - Honors/Humanism and Dehumanization**Credits: 4**

When we call someone human or a person, what do we mean, and what are we trying to do? How has the concept of personhood expanded or contracted to include more or fewer beings and why? Are fetuses persons? Are corporations persons? Are chimps persons? Who counts as a person now, and who will count as a person in the future? How and why are human persons subject to dehumanization? Readings and texts will draw from historical sources and contemporary philosophy. No credit if credit earned for PHIL 780.

Attributes: Humanities(Disc)

PHIL 444 - Remaking Nature/The Ethics and Politics of Genetic Engineering**Credits: 4**

Examines the biological, ethical, social, and political issues raised by genetic engineering and by human enhancement techniques. Issues may include: cloning humans, selection of embryos on the basis of lack of genetic defects, genetic modification of plants and animals for food, gene therapy on humans, cognitive and athletic enhancement. Depending on instructor other topics may include human modification of the environment and engineering responses to global warming. Writing intensive.

Attributes: Environment,TechSociety(Disc); Inquiry (Discovery); Writing Intensive Course

PHIL 444A - Who Am I? Concepts of Self**Credits: 4**

An inquiry into the nature of the self and into the conditions under which it may best flourish. Is the self fundamentally biological, spiritual, or social?. Draws on a variety of perspectives in an attempt to answer these questions, including East Asian as well as Western philosophical ideas, feminist theory, Existentialism, and others. Writing intensive.

Attributes: Humanities(Disc); Inquiry (Discovery); Writing Intensive Course

PHIL 447 - Artificial Intelligence, Robots, and People**Credits:** 4

The historical origins of the science of computation. The implications of the nature of information-processing for understanding the mind-body relation. Examines the possible social, economic, and educational consequences of the computer revolution.

Attributes: Environment,TechSociety(Disc)**PHIL 447H - Honors/Artificial Intelligence, Robots, and People****Credits:** 4

The historical origins of the science of computation. The implications of the nature of information-processing for understanding the mind-body relation. Examines the possible social, economic, and educational consequences of the computer revolution.

Attributes: Environment,TechSociety(Disc)**PHIL 450 - Environmental Ethics****Credits:** 4

Thoughtful people cannot help escape considering hard questions about our relationship to the natural world and what it means for the future of life on earth. In this course we think philosophically about these crucial concerns. We try to answer questions about our responsibilities to the environment and to future generations.

Attributes: Environment,TechSociety(Disc)**PHIL 450H - Honors/Environmental Ethics****Credits:** 4

Thoughtful people cannot help escape considering hard questions about our relationship to the natural world and what it means for the future of life on earth. In this course we think philosophically about these crucial concerns. We try to answer questions about our responsibilities to the environment and to future generations.

Attributes: Environment,TechSociety(Disc)**PHIL 495 - Tutorial Reading****Credits:** 1-4

Basic introductory reading under faculty direction on topics of philosophical importance. Books offered for tutorial reading may be in any area the instructor chooses or on independent study basis. May be repeated, but total credits of repetition cannot exceed 8 credits. Prereq: permission.

PHIL 496 - Topics**Credits:** 4

Introductory-level seminar in specific topics or problems considered from a philosophic point of view.

PHIL 500 - Workshop**Credits:** 4

Introduces methods of studying philosophical texts. Emphasizes reading philosophical texts and arguments for comprehension, and on writing philosophically with accuracy and clarity. Open to PHIL majors (PHIL minors may enroll if they receive permission). Writing intensive.

Attributes: Writing Intensive Course**PHIL 510 - Philosophy and Feminism****Credits:** 4

Focuses on philosophical issues in feminism primarily through the work of historical and contemporary philosophers. Topics include the question of the nature of women, feminism as an ethical and political theory, feminism as an exploration and transformation of the self, feminism as a philosophical methodology, and the institutions of marriage and motherhood. Writing intensive.

Attributes: Humanities(Disc); Writing Intensive Course**PHIL 520 - Introduction to Eastern Philosophy****Credits:** 4

Major Eastern traditions of philosophy. Concentration on Indian, Chinese, and Japanese systems may vary from semester to semester.

Attributes: World Cultures(Discovery)**PHIL 525 - Existentialism****Credits:** 4

Readings from existential philosophy and literature. Selections may be drawn from the works of Kierkegaard, Nietzsche, Heidegger, Sartre, Camus, de Beauvoir, Buber, Bultman, Merleau-Ponty, Tillich, Kafka, and others.

Attributes: Humanities(Disc); Inquiry (Discovery)**PHIL 525H - Honors/Existentialism****Credits:** 4

Readings from existential philosophy and literature. Selections may be drawn from the works of Kierkegaard, Nietzsche, Heidegger, Sartre, Camus, de Beauvoir, Buber, Bultman, Merleau-Ponty, Tillich, Kafka, and others.

Attributes: Humanities(Disc); Inquiry (Discovery)**PHIL 530 - Ethics****Credits:** 4

Critical examination of the development of philosophical thinking regarding human values, rights, and duties.

Attributes: Writing Intensive Course**PHIL 560 - Philosophy Through Fiction****Credits:** 4

Philosophical implications of representative literary works, read in tandem with philosophical literature. The content will vary. The literary works explored may be drawn from ancient times through modern times. For examples, the classic Greek tragedy "Antigone" might be explored for its implications regarding moral, political, and feminist philosophy, or the philosophical implications of an anti-utopian contemporary work like "Brave New World" might be explored, or short stories drawn from science fiction and other speculative fiction might be used to explore the possibility of time travel or of machines with mental lives. Writing intensive.

Attributes: Inquiry (Discovery); Writing Intensive Course**PHIL 565 - Philosophy Through Film****Credits:** 4

Philosophical exploration of film as a medium for developing philosophical ideas and for stimulating philosophical thinking about various issues reflected in film, from traditional philosophical issues to the pressing social and cultural issues of our time. The content will vary. Philosophical texts are read in tandem with screenings of a range of movies from Hollywood blockbusters and art house films to films made for TV. Philosophical issues such as the nature of consciousness, appearance and reality, God and evil, the good life, and time and memory might be explored. Film might also be used to examine representations of race and gender or violence in society; and the power of movies to influence society might be explored through documentaries and propaganda films. Required evening film screenings in addition to regular class meetings. Writing intensive.

Attributes: Writing Intensive Course

PHIL 570 - Ancient Philosophy**Credits:** 4

Development of Western philosophy from its beginnings in Greece to the Roman period, with particular emphasis on the thought of Plato and Aristotle. Attention is paid to the historical context and the development of ideas in culture.

Attributes: Humanities(Disc)**PHIL 570H - Honors/Ancient Philosophy****Credits:** 4

Development of Western philosophy from its beginnings in Greece to the Roman period, with particular emphasis on the thought of Plato and Aristotle.

PHIL 580 - Modern Philosophy from Descartes to Kant**Credits:** 4

The birth and development of distinctively modern philosophy in the thought of such creative minds as Galileo, Descartes, Hobbes, Leibniz, Spinoza, Locke, Berkeley, Hume, Rousseau, Reid, Kant, and others. Prereq: PHIL 570 or permission.

PHIL 610 - Topics in History of Philosophy**Credits:** 4

In-depth examination of a major figure or philosophical movement in the history of philosophy. Content will vary. Consult the Time and Room Schedule for topics. Prereq: one course in history of philosophy or permission. Writing intensive.

Attributes: Writing Intensive Course**PHIL 620 - 20th Century European Philosophy****Credits:** 4

Major figures or philosophical movements such as phenomenology, existentialism, critical social theory, and post-modernism. Content will vary. Consult Time and Room Schedule for topics. Writing intensive.

Attributes: Writing Intensive Course**PHIL 630 - Neuroscience and Philosophy****Credits:** 4

This course has a double focus. It investigates theories concerning the nature of the mind/brain relation, especially in light of recent work in the neurosciences. It also considers the particular presuppositions of and methodological challenges endemic to the neurosciences, along with the relations neuroscience bears to neighboring disciplines. Prereq: Sophomore standing or better. Writing intensive.

Attributes: Writing Intensive Course**PHIL 631 - Topics in the Philosophy of Science****Credits:** 4

Philosophical problems raised by the physical, biological, and social sciences. Content will vary. Topics may include the nature of scientific explanation, the role of mathematics in science, the relations of science to common sense, the relation of theory to observation, the nature of historical changes in scientific world view, claim to objectivity in the natural and social sciences, the role of values in scientific research, the relation of the logic of science to the philosophy and history of science. Prereq: Sophomore standing or better or permission. Writing intensive.

Attributes: Writing Intensive Course**PHIL 635 - Philosophy of Law****Credits:** 4

Systematic study of salient features of legal systems. Possible topics: nature of law; concept of legal validity; law and morality; individual liberty and the law; legal punishment; legal responsibility and related concepts (for example, legal cause, harm, mens rea, negligence, strict liability, legal insanity). Writing intensive.

Attributes: Writing Intensive Course**PHIL 660 - Law, Medicine, and Ethics****Credits:** 4

Critical examination of the diverse legal and moral issues facing the profession of health care. Variable topics may include: duty to provide care; nature of informed consent to treatment; problems of allocating limited health-care resources (e.g., withdrawal of life-support systems, quality-of-life decisions, etc.); patient's right to confidentiality. Problems relating to involuntary preventive care (e.g., involuntary sterilization, psycho-surgery, etc.). Writing intensive.

Attributes: Writing Intensive Course**PHIL 701 - Topics in Value Theory****Credits:** 4

Philosophical inquiry into the nature of value. Topics may include the grounds of right and wrong, various conceptions of morality, the nature of good and evil, theories about the meaning of life, the nature of the beautiful. Content will vary. Consult the Time and Room Schedule for topics. Course may be taken twice for credit (a third time with permission of the chair of the department) so long as the topic is different. May not be repeated to improve grade without approval from the department chair. Prereq: PHIL 500 one course in history of philosophy, or permission. Writing intensive. Repeatable with permission.

Attributes: Writing Intensive Course**PHIL 702 - Topics in Metaphysics and Epistemology****Credits:** 4

Advanced study in one or more of the following topics: nature of reality, relationship of thought and reality, nature of knowledge and perception, theories of truth. Content will vary. Consult the Time and Room Schedule for topics. Course may be taken twice for credit (a third time with permission of the chair of the department) so long as the topic is different. May not be repeated to improve grade without approval of the chair of the department. Prereq: PHIL 500 and one course in history of philosophy, or permission. Writing intensive. Repeatable with permission.

Attributes: Writing Intensive Course**PHIL 740 - Advanced Topics in the Philosophy of Law****Credits:** 4

Content variable. In-depth examination of special topics (constitutional law, crime and punishment, international human rights and gender, sexual orientation, race and class in the law) or a major figure in the philosophy of law (Dworkin, Habermas and Rawls). Prereq: PHIL 635 or permission. Writing intensive. Repeatable with permission.

Attributes: Writing Intensive Course**PHIL 780 - Special Topics****Credits:** 4

Advanced study of special topics: a problem, figure, or movement in the history of philosophy, or selected issues, thinkers, or developments in contemporary philosophy. Prereq: PHIL 500 and one course in the history of philosophy, or permission. Writing intensive. Repeatable with permission.

Attributes: Writing Intensive Course

PHIL 795 - Independent Study**Credits:** 1-8

For students who are adequately prepared to do independent, advanced philosophical work; extensive reading and writing. Before registering, students must formulate a project and secure the consent of a department member who will supervise the work. Conferences and/or written work as required by the supervisor. Prereq: permission. May be repeated to a total of 8 credits. Writing intensive.

Attributes: Writing Intensive Course**PHIL 798 - Senior Thesis****Credits:** 4

Two-course sequence (798, then 799) open only to senior philosophy majors in the University Honors Program, the philosophy department honors-in-major program, or by special permission from the department. All senior thesis candidates must have a proposal approved in the spring of their junior year and a thesis adviser assigned by the chair of the department before registering for 798. Students must orally defend their theses before the department. (See department guidelines for further details.) Prereq: PHIL 500. Writing intensive.

Attributes: Writing Intensive Course**PHIL 799 - Senior Thesis****Credits:** 4

Two-course sequence (798, then 799) open only to senior philosophy majors in the University Honors Program, the philosophy department honors-in-major program, or by special permission from the department. All senior thesis candidates must have a proposal approved in the spring of their junior year and a thesis adviser assigned by the chair of the department before registering for 799. Students must orally defend their theses before the department. (See department guidelines for further details.) Prereq: B- or above in PHIL 798. Writing intensive.

Attributes: Writing Intensive Course

Physics (PHYS)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

PHYS 400 - Freshman Seminar**Credits:** 1

An informal reading and discussion course to introduce students to the general culture of physics, including career possibilities, historical and philosophical aspects of physics, current research at UNH and elsewhere, and physics in the news. Topics vary based on interests of the class. Students in their first year as physics majors (either as freshmen or transfers) are strongly encouraged to take this class. May be repeated once for a total of 2 credits. Cr/F.

PHYS 401 - Introduction to Physics I**Credits:** 4

Broad survey of classical and modern physics. Designed to enable students to appreciate the role of physics in today's society and technology. Emphasizes the fundamental laws of nature on which all science is based, with some examples of interest to biologists. Knowledge of high school algebra, geometry, and trigonometry essential. Lab.

Attributes: Discovery Lab Course; Physical Science(Discovery)**PHYS 402 - Introduction to Physics II****Credits:** 4

Broad survey of classical and modern physics. Designed to enable students to appreciate the role of physics in today's society and technology. Emphasizes the fundamental laws of nature on which all science is based, with some examples of interest to biologists. Knowledge of high school algebra, geometry, and trigonometry essential. Prereq: PHYS 401 or the equivalent. Special fee. Lab.

Attributes: Discovery Lab Course; Physical Science(Discovery)**PHYS 405 - Intro to Modern Astronomy****Credits:** 4

Starting with a survey of the night sky and the daily motions of the stars and planets, this course surveys our current understanding of the Universe. It traces the development of the tools of the modern astronomer and how those tools have led to our theories of the solar system, the life cycle of stars, the formation of elements, the formation of galaxies and the evolution of the universe. Students explore in depth an astronomical topic of their choice through a term paper. The course includes direct experience with astronomical techniques and concepts through the use of the UNH Observatory and Small Radio Telescope, and a visit to a planetarium. Recommended for liberal arts and beginning science students. Knowledge of high school algebra is assumed. Note that this is the same course as PHYS 406, except for the substitution of a term paper instead of a lab. Cannot be taken for credit if credit received for PHYS 406. Special fee.

Attributes: Physical Science(Discovery)**PHYS 406 - Introduction to Modern Astronomy****Credits:** 4

Descriptive coverage of contemporary astronomical and astrophysical techniques with a review of current knowledge and theories concerning the solar system, galaxies, and the universe. Recommended for liberal arts and beginning science students. Knowledge of high school algebra is assumed. Note that this is the same course as PHYS 405, except for the substitution of a lab instead of a term paper. Cannot be taken for credit if credit received for PHYS 405. Lab.

Attributes: Discovery Lab Course; Physical Science(Discovery)**PHYS 406H - Introduction to Modern Astronomy/Honors****Credits:** 4

Descriptive coverage of contemporary astronomical and astrophysical techniques with a review of current knowledge and theories concerning the solar system, galaxies, and the universe. Recommended for liberal arts and beginning science students. Knowledge of high school algebra is assumed. Note that this is the same course as PHYS 405, except for the substitution of a lab instead of a term paper. Cannot be taken for credit if credit received for PHYS 405. Special fee. Lab. Permission required.

Attributes: Discovery Lab Course; Physical Science(Discovery)**PHYS 407 - General Physics I****Credits:** 4

Introductory course emphasizing motion, forces, energy, momentum, rotation, and oscillations. Recommended for the student specializing in science and engineering. This version is the traditional format with three lectures, one recitation (problem solving section), and one lab each week. Students in this version must also register for a particular recitation and lab. Prereq: thorough knowledge of algebra, geometry, and trigonometry; May not receive credit for both PHYS 401 and PHYS 407. Pre- or Coreq: MATH 425. Special fee. Lab.

Attributes: Discovery Lab Course; Physical Science(Discovery)

PHYS 407H - Honors/General Physics I**Credits: 4**

Introductory course emphasizing motion, forces, energy, momentum, rotation, and oscillations. Recommended for the student specializing in science and engineering. The honors version covers the same material as the traditional lecture course, but with three two-hour classes per week, most of which is spent working on activities in groups (rather than lecture). Students in the Honors section must be co-enrolled in MATH 425H so that strong connections can be made between math and physics. 407H students work in groups in every class meeting. Students in this version do not register for a recitation or lab, since these activities are integrated into the regular class meetings. Prereq: thorough knowledge of algebra, geometry, and trigonometry; May not receive credit for both PHYS 401 and PHYS 407. Pre- or Coreq: MATH 425. Special fee. Lab.

Co-requisite: MATH 425H

Attributes: Discovery Lab Course; Physical Science(Discovery)

PHYS 407S - General Physics I Studio**Credits: 4**

Introductory course emphasizing motion, forces, energy, momentum, rotation, and oscillations. Recommended for the student specializing in science and engineering. The Studio version covers the same material as the traditional lecture course, but with three two-hour classes per week, most of which is spent working on activities in groups (rather than lecture). Students in this version do not register for a recitation or lab since these activities are integrated into the regular class meetings. Prereq: thorough knowledge of algebra, geometry, and trigonometry. May not receive credit for both PHYS 401 and PHYS 407. Pre- or coreq: MATH 425. Special fee. Lab.

Attributes: Discovery Lab Course; Physical Science(Discovery)

PHYS 408 - General Physics II**Credits: 4**

Introductory course emphasizing waves, sound, heat, electricity and magnetism. Recommended for students specializing in science and engineering. This version is the traditional format with three lectures, one recitation (problem solving section), and one lab each week. Students in this version must also register for a particular recitation and lab. Prereq: PHYS 407. May not receive credit for both PHYS 402 and PHYS 408. Pre- or Coreq: MATH 426. Special fee. Lab.

Attributes: Discovery Lab Course; Physical Science(Discovery)

PHYS 408H - Honors/General Physics II**Credits: 4**

Introductory course emphasizing waves, sound, heat, electricity and magnetism. Recommended for students specializing in science and engineering. The honors version covers the same material as the traditional lecture course, but with three two-hour classes per week, most of which is spent working on activities in groups (rather than lecture). Students in the Honors section must be co-enrolled in MATH 426H so that strong connections can be made between math and physics. 408H students work in groups in every class meeting. Students in this version do not register for a recitation or lab, since these activities are integrated into the regular class meetings. Prereq: PHYS 407H, MATH 425H. May not receive credit for both PHYS 402 and PHYS 408. Special fee. Lab.

Co-requisite: MATH 426H

Attributes: Discovery Lab Course; Physical Science(Discovery)

PHYS 408S - General Physics II Studio**Credits: 4**

Introductory course emphasizing waves, sound, heat, electricity and magnetism. Recommended for students specializing in science and engineering. The Studio version covers the same materials as the traditional lecture course, but with three two-hour classes per week, most of which is spent working on activities in groups (rather than lecture). Students in this version do not register for a recitation or lab since these activities are integrated into the regular class meetings. Prereq: PHYS 407. May not receive credit for both PHYS 402 and PHYS 408. Pre- or coreq: MATH 426. Special fee. Lab.

Attributes: Discovery Lab Course; Physical Science(Discovery)

PHYS 409 - Investigating Physics**Credits: 4**

Elementary physics course where students develop a conceptual understanding of topics such as the solar system, phases of the moon, seasons, electrical circuits, electromagnets, light and color, sound and simple machines. The course is based on hands-on-activities, small groups, and discussions. This course is intended for students with little or no previous experience in physics who do not intend to take any other physics course. Cannot be taken for credit if credit received for PHYS 401, 402, 407 or 408. Not open to Physics majors.

Attributes: Discovery Lab Course; Physical Science(Discovery); Inquiry (Discovery)

PHYS 444 - Myths and Misconceptions about Nuclear Science**Credits: 4**

The discoveries of nuclear physics have spawned the nuclear power plant and bomb, but also many far reaching, though less recognized applications of nuclear science in medicine, research, and our everyday lives. This course examines the underlying physics of nuclear science, the resulting technological applications and dangers, and some of the implications for public policy. In the process, we dispel many of the popular myths and misconceptions that surround nuclear science and radiation in the public's mind and the media. You may be surprised! Topics are wide ranging and inherently interdisciplinary. They include nuclear stability and radioactivity, natural sources of radioactivity, the effects of radiation on living things, particularly people, nuclear medicine, nuclear science in fields such as biology, archeology, geology and engineering, nuclear chain reactions, nuclear reactors and energy, nuclear accidents, radioactive waste, nuclear weapons and proliferation, nuclear energy in stars, and the origin of the elements. Be prepared to actively participate.

Attributes: Environment,TechSociety(Disc); Inquiry (Discovery); Writing Intensive Course

PHYS 444B - Into the Final Frontier: America's Journey into Space**Credits: 4**

One of the greatest accomplishments of the twentieth century is the human advance into space. For the first time ever, travel beyond the Earth is more than just the subject of adventurous science fiction tales - it is a reality. The purpose of this course is to trace the development of space flight from the late 1800's to the present time and to discuss the future of the United States human space flight program.

Attributes: Environment,TechSociety(Disc); Inquiry (Discovery); Writing Intensive Course

PHYS 501 - Peer-Led Team Learning in Physics**Credits: 1**

This course provides students with their initial experience as a peer instruction leader. In this course peer leaders will deepen their knowledge of introductory physics, be introduced to pedagogical theories.

Pedagogical topics covered include questioning techniques, learning theory, cooperative learning, student epistemologies, and the nature of science. Students in this course are asked to reflect on their work as peer leaders through the lens of the required readings. Prereq: PHYS 401/PHYS 402 or PHYS 407/PHYS 408. Permission required. Cr/F.

PHYS 502 - Advanced Peer-Led Team Leadership in Physics**Credits: 1**

This course provides students with their second experience as a peer instruction leader. In this course peer leaders read more deeply about issues in teaching and learning science in general, and physics in particular. Topics include naive conceptions in physics, cooperative learning strategies, theories of cognition, and classroom assessment. Prereq: PHYS 501. Permission required. Cr/F.

PHYS 505 - General Physics III**Credits: 3**

Electromagnetic waves, geometrical and physical optics, relativity, atomic physics, elementary quantum mechanics, molecular physics, and nuclear physics. Prereq: PHYS 408.

PHYS 506 - General Physics III Laboratory**Credits: 1**

Structured laboratory experience in optics and modern physics. Coreq: PHYS 505. Special fee. Lab.

Co-requisite: PHYS 505

PHYS 508 - Thermodynamics and Statistical Mechanics**Credits: 4**

Classical and statistical approach to thermodynamics, kinetic theory. Pre- or Coreq: PHYS 505. MATH 525 or MATH 527.

PHYS 601 - Computational Physics Recitation I**Credits: 1**

This course bridges students' computer science class and their physics classes by applying computational tools to basic physics problems. Students will write, check, and document two physics codes. This course focuses on solving differential equations. The course will support students as they work on computational assignments from their core physics courses. Prereq: CS 410 or IAM 550. Coreq: PHYS 505 or PHYS 508.

PHYS 602 - Computational Physics Recitation II**Credits: 1**

This course bridges students' computer science class and their physics classes by applying computational tools to basic physics problems. Students will write, check, and document two physics codes. This course focuses on data processing. The course will support students as they work on computational assignments from their core physics courses. Prereq: CS 410 or IAM 550; PHYS 601. Coreq: PHYS 605 or PHYS 615.

PHYS 605 - Experimental Physics I**Credits: 5**

Circuit design with passive and active elements including transistors and operational amplifiers; electrical measurements for experimental physics; digital electronics, microprocessors, and interfacing techniques. Prereq: PHYS 408. MATH 525 or 527. Lab. Special fee.

PHYS 615 - Classical Mechanics and Mathematical Physics I**Credits: 4**

Analytical treatment of classical mechanics covering the dynamics of particles and rigid bodies at an intermediate level. Advanced mathematical analysis (complex numbers, differential equations, Fourier series, multiple integrals) are reviewed or introduced as needed to analyze physical situations. Prereq: PHYS 407. Pre- or Coreq: MATH 527.

PHYS 616 - Classical Mechanics and Mathematical Physics II**Credits: 4**

Analytical treatment of classical mechanics covering the dynamics of particles and rigid bodies, at an intermediate level. Advanced mathematical analysis (complex numbers, differential equations, Fourier series, multiple integrals) are reviewed or introduced as needed to analyze physical situations. Prereq: PHYS 615.

PHYS 701 - Quantum Mechanics I**Credits: 4**

Non-relativistic Schrodinger equation, the hydrogen atom, applications to atomic and nuclear structure. Prereq: PHYS 505, PHYS 615, PHYS 616.

PHYS 702 - Quantum Mechanics II**Credits: 4**

Non-relativistic Schrodinger equation, the hydrogen atom, applications to atomic and nuclear structure. Prereq: PHYS 505, PHYS 615, PHYS 616.

PHYS 703 - Electricity and Magnetism I**Credits: 4**

Foundation of electromagnetic theory; electrostatics, dielectric theory, electromagnetism, magnetic properties of matter, alternating currents, Maxwell's field theory. Prereq: PHYS 408, PHYS 615, PHYS 616.

PHYS 704 - Electricity and Magnetism II**Credits: 4**

Foundation of electromagnetic theory; electrostatics, dielectric theory, electromagnetism, magnetic properties of matter, alternating currents, Maxwell's field theory. Prereq: PHYS 408, PHYS 615, PHYS 616.

PHYS 705 - Experimental Physics II**Credits: 4**

Modern physics experiments and special project problems assigned to individual students. Prereq: PHYS 605; senior standing in physics. Lab. Writing intensive.

Attributes: Writing Intensive Course

PHYS 708 - Optics**Credits: 4**

Geometrical optics, electromagnetic theory of light, interference, diffraction, polarization, related phenomena and nonlinear optics. Prereq: PHYS 505, PHYS 615, PHYS 616. Lab.

PHYS 710 - Modern Astrophysics**Credits: 4**

Reviews the sun, stars, Milky Way, external galaxies, and expansion of the universe. Recent discoveries of radio galaxies, quasi-stellar objects, cosmic black-body radiation, x rays, and gamma rays precede a discussion of Newtonian and general relativistic cosmological models, steady-state/big-bang theories, and matter-antimatter models. Prereq: PHYS 505, PHYS 615, PHYS 616.

PHYS 712 - Space Plasma Physics**Credits: 4**

Introduces space plasma physics, including solar physics, heliospheric physics, magnetospheric physics, and ionospheric physics. An overview of the basic phenomena and processes (e.g., particle acceleration and transport, shock formation, magnetic structures and reconnection, wave propagation, wave-particle interactions, instabilities), theoretical techniques (e.g., single-particle orbits, kinetic and fluid descriptions), and experimental techniques. (Alternate years only.)

PHYS 718 - Condensed Matter Physics**Credits: 4**

Theory and experiment underlying the behavior of solids. Transport theory, surface studies, and the interaction of radiation and matter. Operation of semiconducting and superconducting devices and lasers. Prereq: PHYS 508.

Co-requisite: PHYS 701

PHYS 720 - Nuclear Physics**Credits: 4**

Nuclear phenomenology, reactions, models, radiation, interaction of radiation with matter; accelerators; properties and interactions of elementary particles; symmetries and symmetry breaking; standard model. Prereq: PHYS 702, PHYS 704.

PHYS 764 - General Relativity and Cosmology**Credits: 4**

Review of special relativity, and the motivation for considering gravity in terms of curvature of space time. Introduction to Riemannian geometry, general relativity and Einstein's equations. Application of general relativity in the study of black holes, gravitational waves, cosmology, as well as recent results on inflation and quantum gravity. (Alternate years only.)

PHYS 791 - Special Topics**Credits: 4**

Any selected topics not covered sufficiently in a general course may be studied. May be repeated to a maximum of 8 credits.

PHYS 795 - Independent Study**Credits: 1-8**

Individual project under direction of a faculty adviser. Prereq: department permission.

PHYS 797 - Senior Design Project**Credits: 2**

Four credits of this course is the required Senior Design Project for BSEP majors and fulfills their capstone requirement; the course is taken for two credits in each of the last two semesters before graduation. Students work under the direction of a faculty sponsor on the design aspect of a specific project, which might include trade studies, design reviews, cost-benefit analyses, etc. all leading to an optimal design solution. Acceptable designs can include detailed hardware aspects of a system or sub-system, numerical modeling of a system, or paper studies of a system concept. Students are required to submit a final report and to present their work at a public forum. Restricted to BSEP seniors. Writing intensive.

Attributes: Writing Intensive Course

PHYS 798 - Senior Project**Credits: 2-4**

Students complete an independent project and submit a written report. Students can choose from a range of projects, including (but not limited to) a research or numerical project, and extensive literature review on an advanced physics topic, building an apparatus, or developing a new or existing experiment in Physics 705. A student intending to take Physics 798 must arrange to have a faculty advisor for the project and should work with this advisor to develop a one-page project proposal. The student must submit this proposal to the Physics Undergraduate Curriculum Committee by the tenth week of the semester preceding the semester in which the student takes Physics 798. This course satisfies the capstone requirement in Physics.

PHYS 799 - Thesis**Credits: 4**

Students work under the direction of a faculty sponsor to plan and carry out independent research resulting in a written thesis. Required for honors-in-major. Restricted to seniors. Prereq: permission; Physics majors only. May be repeated to 8 credits. Writing intensive.

Attributes: Writing Intensive Course

Political Science (POLT)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

POLT 401 - Politics and Society**Credits: 4**

Introduces the nature of politics and political institutions. Emphasizes political behavior and continuing issues of modern politics, such as power, authority, legitimacy, freedom, and order.

Attributes: Humanities(Disc)

POLT 401H - Honors/Politics and Society**Credits: 4**

Introduces the nature of politics and political institutions. Emphasizes political behavior and continuing issues of modern politics, such as power, authority, legitimacy, freedom, and order.

Attributes: Humanities(Disc)

POLT 402 - American Politics and Government**Credits: 4**

Foundational course to help students understand the institutions and actors of American politics and government, the decision-making process of government, and the political considerations that drive American government.

Attributes: Social Science (Discovery)

POLT 402H - Honors\American Politics and Government**Credits: 4**

Foundational course to help students understand the institutions and actors of American politics and government, the decision-making process of government, and the political considerations that drive American government.

Attributes: Social Science (Discovery)

POLT 402W - American Politics and Government**Credits:** 4

Foundational course to help students understand the institutions and actors of American politics and government, the decision-making process of government, and the political considerations that drive American government. Writing intensive.

Attributes: Social Science (Discovery); Writing Intensive Course**POLT 403 - United States in World Affairs****Credits:** 4

Introduces students to key concepts, actors, and events in U.S. foreign policy. After examining the early foundations of American foreign policy, this course concentrates on the United States' international engagement from the Cold War to the present. Students develop the analytical skills they need to form their own opinions on contemporary issues in U.S. foreign policy, and defend these opinions articulately based on a solid knowledge of historic and current events.

Attributes: Historical Perspectives(Disc)**POLT 403H - Honors/United States in World Affairs****Credits:** 4

Introduces students to key concepts, actors, and events in U.S. foreign policy. After examining the early foundations of American foreign policy, this course concentrates on the United States' international engagement from the Cold War to the present. Students develop the analytical skills they need to form their own opinions on contemporary issues in U.S. foreign policy, and defend these opinions articulately based on a solid knowledge of historic and current events. Writing intensive.

Attributes: Historical Perspectives(Disc); Writing Intensive Course**POLT 403W - United States in World Affairs****Credits:** 4

Introduces students to key concepts, actors, and events in U.S. foreign policy. After examining the early foundations of American foreign policy, this course concentrates on the United States' international engagement from the Cold War to the present. Students develop the analytical skills they need to form their own opinions on contemporary issues in U.S. foreign policy, and defend these opinions articulately based on a solid knowledge of historic and current events. Writing intensive.

Attributes: Historical Perspectives(Disc); Writing Intensive Course**POLT 407 - Law and Society****Credits:** 4

Introduces the ways in which law operates in modern society: its forms, functions, underlying values, and the consequences of its application in particular regimes. Topics include the psychological bases for legal obligation, the evolution of particular legal doctrines, the philosophical underpinnings of legal responsibility, the relationship of law to social structures, the relationship of law to morality, the nature of legal reasoning, and critiques of law.

POLT 407H - Honors/Law and Society**Credits:** 4

Introduces the ways in which law operates in modern society: its forms, functions, underlying values, and the consequences of its application in particular regimes. Topics include the psychological bases for legal obligation, the evolution of particular legal doctrines, the philosophical underpinnings of legal responsibility, the relationship of law to social structures, the relationship of law to morality, the nature of legal reasoning, and critiques of law.

POLT 440A - Honors/Global Justice**Credits:** 4

The course exposes students to different understandings of global justice and the institutions and approaches used to address genocide and mass human suffering. Students explore several modern conflicts and different cultural understandings of these conflicts and views on justice. The class also examines the political dynamics of international and domestic institutions, power politics, and international activism. Students also examine the globalization of accountability and post-conflict transitions from violence to peace.

Attributes: World Cultures(Discovery)**POLT 444 - Politics and Policy in a Warming World****Credits:** 4

Uses the issue of climate change to explore the relationships between scientific and technical research and debate, policymaking at the international and domestic (U.S.) levels, and public understanding and interpretation of complex technical issues. The course is interdisciplinary. Writing intensive.

Attributes: Environment,TechSociety(Disc); Inquiry (Discovery); Writing Intensive Course**POLT #444A - Democracy: Its Character and Its Characters****Credits:** 4

An examination of the spirit of a modern democracy and its influence on the thoughts and actions of those who live within it. Includes selections from Tocquevilles' Democracy in America and an examination of characters in the works of major and contemporary authors. Writing intensive.

Attributes: Humanities(Disc); Inquiry (Discovery); Writing Intensive Course**POLT 444B - Cruel and Unusual in a Federal System****Credits:** 4

This course is an exploration of the US/state constitutional language of 'cruel and unusual' as an important limitation on governmental power. Students study its historical origins, interpretations, and applications across time periods and types of regimes. Particular attention will be paid to its association with the death penalty in the contemporary United States. Writing intensive.

Attributes: Social Science (Discovery); Inquiry (Discovery); Writing Intensive Course**POLT 500 - American Public Policy****Credits:** 4

Foundational public policy course examining policy choices and conflicts, how policy decisions are made, how policies are assessed, the development of potential policy solutions, and the politics of policy making. Students engage in a task force project that simulates public policy processes and culminates in a policy recommendation at the end of the semester. Writing intensive.

Attributes: Writing Intensive Course**POLT 502 - State and Local Government****Credits:** 4

Examines power, policies, political culture, and constitutional settings of state and local governments in the United States. Students study how state legislatures, governors, courts, political parties, and interest groups interact to shape political outcomes at the state and local levels.

POLT 504 - American Presidency**Credits:** 4

The President as administrator, policy maker, and political leader. The relationship between the President and the public, the media, and other governmental institutions. Historical and constitutional background of the Presidency, role, and powers of the President in domestic and foreign affairs.

POLT 505 - American Congress**Credits:** 4

Role and powers of Congress as national lawmaker and check on the executive branch: committee structure, concepts of representation, legislative oversight and party cleavage, federal budget control, and foreign policy involvement.

POLT 506 - Parties, Interest Groups, and Voters**Credits:** 4

Role of political parties as organizers and managers of social conflict. Role of voters in controlling parties and government. Influence of interest groups in the electoral process and in governmental decision making.

POLT 507 - Politics of Crime and Justice**Credits:** 4

Criminal justice in theory and practice; contemporary role of police, prosecutors, judges, juries, counsel, and interest groups in the administration of criminal justice. Writing intensive.

Attributes: Writing Intensive Course**POLT 508 - Supreme Court and the Constitution****Credits:** 4

Supreme Court treated as a political institution whose historic mission is to decide all controversies arising under the Constitution between the nation and the states, the President and Congress; the role of the judiciary in defining its own powers, rights, and duties. Writing intensive.

Attributes: Writing Intensive Course**POLT 509 - Managing Bureaucracy in America****Credits:** 4

Growth and development of the bureaucratic state. Roles and powers of administrative officials, decision making in bureaucratic settings, citizen participation, and the influence of interest groups on bureaucratic policymaking.

POLT 510 - Media and Politics**Credits:** 4

Contemporary review of media in politics; major roles of media today in providing news, setting public agenda, influencing public opinion; government regulations vs. media responsibility; future developments and consequences for American democracy.

POLT 512 - Public Opinion in American Politics**Credits:** 4

Relationship of mass and elite opinion within the context of American political culture. Impact of public opinion on American governmental policies, especially with respect to major issues facing the President and Congress. Appraisal of responsiveness to influence and responsibility to lead.

Attributes: Social Science (Discovery)**POLT 513 - Civil Rights and Liberties****Credits:** 4

Analysis of four major areas of constitutional rights and liberties, political freedom, equal protection of the laws, and due process with particular attention to their impact on such problems as political protest, discrimination, school segregation, students' rights and the relationship between government and religion.

POLT 520 - Politics, Justice, and Morality**Credits:** 4

Origin of the idea of justice; relationship between politics, justice, and morality; selections from Plato, Aristotle, Roman, Islamic, and Christian political philosophers.

POLT 521 - Rights and the Political Community**Credits:** 4

Human rights and the quality of communities as expressed in Hobbes, Locke, Mandeville, Rousseau, and others.

POLT #522 - Dissent and the Political Community**Credits:** 4

Current political ideologies and controversies in America and abroad; liberal democracy and its critics since the 19th century.

POLT 523 - American Political Thought**Credits:** 4

Introduces the student to the key questions about politics and government asked and answered by American thinkers and actors, as well as the ways in which those "answers" have shaped our institutions and political processes. Emphasizes the idea of property. Writing intensive.

Attributes: Writing Intensive Course**POLT 524 - Politics and Literature****Credits:** 4

This course examines classical and contemporary works of literature to explore perennial issues in the study of politics, such as: exceptionalism, individualism, justice, and equality.

Attributes: Humanities(Disc)**POLT 524W - Politics and Literature****Credits:** 4

This course examines classical and contemporary works of literature to explore perennial issues in the study of politics, such as: exceptionalism, individualism, justice, and equality. Writing intensive.

Attributes: Humanities(Disc); Writing Intensive Course**POLT #525 - Multicultural Theory****Credits:** 4

Issues of concern generated from an attention to and appreciation of our diverse cultural identities. As a theory course in political framework, we approach multiculturalism as a new attempt to respond to the challenges that difference poses in democratic theory.

POLT #543 - The Politics of Costa Rica**Credits:** 4

While the rest of the Central American region has struggled to overcome authoritarian legacies, Costa Rica has been a trailblazer on the path to democracy. The successful establishment of democratic political institutions and political culture have been coupled with other innovations including the abolition of the military, investments in human capital, and eco-friendly economic development. This course is designed to explore the many facets of Costa Rican exceptionalism onsite in Costa Rica during the J term. Special fee.

Attributes: World Cultures(Discovery)

POLT 544 - Of Dictators and Democrats**Credits:** 4

Why are some countries democratic, while others are ruled by dictators? This course answers this question by examining leading theories of democratization, then testing these theories empirically through case studies of ancient Greece, the United States, Germany, Chile, and South Africa. The course concludes with an overview of contemporary political change in the Middle East, and the potential for popular protest to culminate into democratic practices. Writing intensive.

Attributes: Writing Intensive Course**POLT 545 - People and Politics in Asia****Credits:** 4

This course is an introduction to Northeast Asia, with special emphasis on the politics of the region's major actors. Will China be the next global hegemon? Is Japan moribund? Is Taiwan an independent country? Is Hong Kong a democratic bastion? Why does Kim Jong-un keep threatening to attack the United States? It's a mid-level, writing intensive course that will prepare students for more advanced courses on the nations and issues of the Asia-Pacific rim. Writing intensive.

Attributes: Writing Intensive Course**POLT 546 - Wealth and Politics in Asia****Credits:** 4

Different paths to modernization, industrialization, and development in nations of the Asia-Pacific Rim. In-depth examinations of the challenges faced by Japan, China, Hong Kong/Macao, Taiwan, and the Koreans in their search for the correct path to economic growth and prosperity, with special emphasis on each nation's distinct society and history. Companion course to POLT 545, but either may be taken separately. Writing intensive.

Attributes: Writing Intensive Course**POLT #547 - Race and Justice in the Americas: Insights from Film, Literature, and Politics****Credits:** 4

Throughout the Americas many democracies have been built on foundations of racial and ethnic inequality, yet have managed to transcend these imperfect foundations. To understand how democracy has thrived despite the challenges of racial and ethnic inequality, this course examines how the justice system has addressed inequality in select cases throughout the Americas. Through comparative analysis of film, literature, and politics, students improve their knowledge and understanding of other cultures while exploring the evolution of similar issues in the United States.

Attributes: World Cultures(Discovery)**POLT 548 - Drug Wars****Credits:** 4

The Americas have hosted several wars against drugs, but these militarized campaigns have not curtailed the global consumption of opiates, cocaine, and cannabis. Perhaps even more sobering, the drug wars have coincided with spiraling rates of violent crime. Given this track record, policymakers have begun to reevaluate drug policies in the US and abroad. This course evaluates these contemporary changes, particularly in light of the successes and failures of past drug control policies.

POLT 549 - The Politics of Markets**Credits:** 4

This course surveys some major debates in comparative political economy, focusing especially on the creation, evolution, and reform of market institutions. The course emphasizes the ways in which the market is embedded in social and political institutions. Main topics include: 1) Theoretical foundations of political economy, 2) Patterns of industrialization, 3) Capitalist institutions in contemporary industrialized countries, 4) Challenges of development, 5) Transitions from communism to a market economy, and current challenges facing capitalism.

POLT 550 - Comparative Government and Society**Credits:** 4

Introduces students to key concepts and themes in comparative politics through the study of revolutions, ideologies, institutions, and/or social movements. This course compares interactions between citizens and their governments in various types of democracies as well as authoritarian regimes, and spans industrialized and developing countries.

Attributes: World Cultures(Discovery)**POLT 551 - Comparative Identity Politics: Ethnic Diversity, Democracy, and Conflict****Credits:** 4

What is ethnic identity and why do ethnic differences result in violence? Are diverse societies prone to conflict? The course provides a broad perspective to these questions by examining diversity and conflict in the Middle East, Europe, Africa, Asia, Latin America and the US. Racial and ethnic politics in the US, while not a primary focus, are compared to identity and conflict in other countries. Students will understand how identity evolves and shapes the world.

POLT 552 - Contemporary European Politics**Credits:** 4

Analyzes politics, governments, and societies in contemporary Europe; focuses on basic characteristics of political life in different countries as well as pressing economic, political, and social issues. Writing intensive.

Attributes: Writing Intensive Course**POLT 554 - Revolution and Protest in Latin America****Credits:** 4

Throughout Latin American history, economic and political models have been heavily contested. Advocates of state intervention in the economy have clashed with free market forces, and these clashes have often spilled into the political arena where they have been further complicated by divisions between dictators and democrats. This course examines these twin processes in Latin American politics, tracing economic and political development from the time of independence to the present. Writing intensive.

Attributes: Writing Intensive Course**POLT #555W - Politics in Russia****Credits:** 4

Russia provides an ideal case study for learning comparative political concepts - a developed state that continues to undergo a political and economic revolution, if not yet a social revolution. Additionally, it remains a major force in international relations. Beginning with a survey of its history and geography, the course provides a basis for understanding the behavior of the Russian Federation domestically and in international affairs. Writing intensive.

Attributes: Writing Intensive Course

POLT 556 - Politics in China**Credits:** 4

Dynamics of China's domestic political and economic policy processes - from massive starvation of the Great Leap Forward and the ideological upheavals of the Great Proletarian Cultural Revolution to the "Opening of China to the Outside World." Writing intensive.

Attributes: Writing Intensive Course**POLT 558 - Government and Politics of Canada****Credits:** 4

This course examines the political culture, partisan dynamics, political institutions and processes of modern Canada. Selected policy issues as well as U.S. - Canadian relations are also discussed. Writing intensive.

Attributes: Writing Intensive Course**POLT 559 - Comparative Politics of the Middle East****Credits:** 4

Examines the dynamics of political and economic change in states and societies of the Middle East. Covers state formation, nationalism and colonialism, authoritarianism and opposition movements, and the origins of the Israeli-Palestinian conflict.

POLT 560 - World Politics**Credits:** 4

The course explores the primary issues of world politics with a focus on conflict, cooperation and development. Students are introduced to the principal theories and concepts in the analysis of world politics and encouraged to apply these theories and concepts to contemporary global issues. Writing intensive.

Attributes: Social Science (Discovery); Writing Intensive Course**POLT 561 - Introduction to International Political Economy****Credits:** 4

Designed for students with little or no knowledge of economics; the course develops the relationships between political and economic policy and behavior in international affairs. A major focus is on the conflict between the primary values of the international economic system (efficiency and growth) and other societal and political values. Among the topics are: international trade and finance, economic and non-economic globalization, growth and human development, illicit trade, and economic governance.

Attributes: Writing Intensive Course**POLT 562 - Strategy and National Security Policy****Credits:** 4

This course develops an understanding of: 1) strategy and its relationship to national security policy and 2) American national security issues and the process of creating and implementing American national security policies. A primary theoretical and practical consideration is the relationship between the use of force and diplomacy. Among the specific issues are: the nuclear world, the U.S. defense posture, military interventions, and the broadening definition of security.

Attributes: Writing Intensive Course**POLT 563 - The Global Information Grid's Disruptive Impact on Government, Politics, and Society****Credits:** 4

Disruptive networking technologies, collectively called the Global Information Grid or GIG, are facilitating revolutionary changes in government, politics, and society. The course is designed to provide students with a framework for understanding and addressing issues that spring from the application of technology.

POLT #565 - United States Policy in Latin America**Credits:** 4

Frequently U.S. policymakers portray the United States as a benevolent neighbor, seeking to help the countries in their "backyard". Many Latin Americans disagree with this view, and think more critically about the motivations and legacies of U.S. intervention in the Western Hemisphere. To understand these disagreements, this course applies theories of international relations to analyze pivotal events in the history of U.S. - Latin American relations from the time of independence to the present, including Spanish-American War, creation of Panama Canal, Cuban Missile Crisis, Iran Contra Affair, War Against Drugs, Washington Consensus.

POLT 566 - Asian Challenge to Global Order**Credits:** 4

Asian international relations continue to challenge global power structures. As the world's most vital region, Asia is characterized by explosive economic growth, diverse political systems, modernizing militaries, and advanced technologies. This course explores the regional political and economic dilemmas, starting with the breakdown of the old imperialist order, Japan's expansion, the Asian Cold War, Korean and Chinese unification, China's post-1978 emergence, North Korea nuclear weapons, and the growing conflict over the Pacific Ocean's marginal seas. Writing intensive.

Attributes: Writing Intensive Course**POLT 567 - Politics of Global Resources****Credits:** 4

International politics from the perspective of the exhaustibility of global resources and the expansion of global demand. Concentrates on issues including population, food, energy, the environment, security, and human rights. Global interdependence and the appearance of new institutional frameworks of global public policymaking. Writing intensive.

Attributes: Writing Intensive Course**POLT 568 - Introduction to Intelligence****Credits:** 4

The purpose and practice of intelligence in the national security process. Concentration on the role of intelligence in the United States involving the C.I.A., military intelligence agencies, and the practice of intelligence in other countries.

POLT 568W - Introduction to Intelligence**Credits:** 4

The purpose and practice of intelligence in the national security process. Concentration on the role of intelligence in the United States involving the C.I.A., military intelligence agencies, and the practice of intelligence in other countries. Writing intensive.

Attributes: Writing Intensive Course**POLT 569 - The Rise of China****Credits:** 4

Analysis of China's struggle for political and economic power in Asia and the world. Examines the legacy of China's historical encounters with the outside world, interactions with the international system since 1949, domestic determinants of foreign political and economic policies, and theories of decision making. Writing intensive.

Attributes: Writing Intensive Course

POLT 570 - Counterterrorism: Nation states' responses to terrorist activity**Credits:** 4

This course explores nation states' responses to terrorism or "counterterrorism." Students learn to define terrorism and use models to understand responses. Case studies are used to highlight the challenges and successes resulting from different response strategies. Students analyze questions facing government counterterrorism decision makers. For example, what is the risk of a terrorist organization acquiring and detonating a nuclear weapon and what response could governments deliver following such an event?.

POLT 580 - Selected Topics Am Politics**Credits:** 4

Special topics such as politics and public affairs in New Hampshire, women in politics, and civil liberties. Not offered every semester. See departmental listings for semester offerings. Writing intensive. 4 cr.

Attributes: Writing Intensive Course**POLT 584 - Selected Topics in Political Thought****Credits:** 4

Special issues in political theory, such as liberalism and conservatism, radical political thought, the American character, and others. Not offered every semester. See departmental listings for semester offerings. Writing intensive. 4 cr.

Attributes: Writing Intensive Course**POLT 588 - Selected Topics in Comparative Politics****Credits:** 4**Attributes:** Writing Intensive Course**POLT 592 - Selected Topics in International Politics****Credits:** 4

Examines specialized issues in international politics. Topics may include ethnic conflict, non-proliferations and global security, economic and political globalization, etc. Not offered every semester. See departmental listings for semester offerings. Writing Intensive. 4 crs.

Attributes: Writing Intensive Course**POLT 595 - Smart Politics****Credits:** 4

An introduction to empirical research methods in political science, both qualitative and quantitative. Students study all aspects of the research process, including hypothesis-building, concepts and variables, measurement, research design, sampling, and empirical observations. Special attention paid to the use of statistical software. Writing intensive.

Attributes: Inquiry (Discovery); Writing Intensive Course**POLT 602A - Internship****Credits:** 4

Field experience in a governmental or nongovernmental organization at the local, state, national, or international level. Arrangements must be made through the political science department. Open to juniors and seniors with at least a 3.2 GPA. Permission of the undergraduate curriculum committee of the department is required prior to the internship.

POLT 602B - Washington Center Internship**Credits:** 4

A four-credit independent study designed to work in conjunction with the University's Washington Center Internship program. Requirements: major in political science. Junior or senior research component to be discussed with faculty sponsor. For details on the Washington Center Internship, please contact Paula DiNardo, Coordinator National Student Exchange and Washington Center Internships, 114 Hood House, 603-862-3485 (V/TTY 862-2607), email: paula.dinardo@unh.edu. Prereq: POLT 402.

POLT 602C - Concord Internship Program**Credits:** 12

Provides students with field experience in state government in Concord (State Senate, House of Representatives, Office of the Governor, etc.). Students will spend three days weekly in Concord and attend a weekly practicum in Durham. Open to juniors and seniors with a 3.2 or better GPA. Applications accepted in the fall semester and can be found on department's website. Permission required. Students may sign up any four (4) credit course along with 602C for a total of 16 credits. Cr/F.

POLT 602D - Internship**Credits:** 2-12

Field experience in governmental or nongovernmental organization at the local, state, national, or international level. Arrangements must be made through the political science department. Open to juniors and seniors with at least 3.2 GPA. Permission from the undergraduate curriculum committee of the department is required. From 2 to 12 credits maybe taken. Cr/F.

POLT 695 - Independent Study**Credits:** 2-4

Designed to meet special interests of students and instructors in exploring issues in political science. Upon satisfying eligibility requirements set forth by departmental guidelines (in departmental office and online), students must have the approval of a faculty sponsor. Students submit the form and all supporting evidence by mid-semester prior to the planned semester of independent study for departmental approval. Does not meet the major's four field-course requirement; maximum of eight (8) credits can be counted toward the non-field major requirements. Prereq: at least one upper-level course in field of independent study. Majors only.

POLT 696 - Independent Study**Credits:** 2-4

Designed to meet special interests of students and instructors in exploring issues in political science. Upon satisfying eligibility requirements set forth by departmental guidelines (in departmental office and online), students must have the approval of a faculty sponsor. Students submit the form and all supporting evidence by mid-semester prior to the planned semester of independent study for departmental approval. Does not meet the major's four field-course requirement; maximum of eight (8) credits can be counted toward the non-field major requirements. Prereq: at least one upper-level course in field of independent study. Only open to Political Science majors.

POLT 701 - Courts and Public Policy**Credits:** 4

Impact of judicial decisions on public policy and influences on judicial decision making at the federal, state, and local levels. Writing intensive.

Attributes: Writing Intensive Course

POLT #706 - State and Local Government**Credits:** 4

Advanced study of powers, politics, political cultures, and constitutional settings of American state and local government. Writing intensive.

Attributes: Writing Intensive Course**POLT 711 - Public Opinion and Survey Research****Credits:** 4

Examines the role of public opinion in democracy. Research, design, implementation, and analysis of a public opinion survey.

POLT 721 - Feminist Political Theory**Credits:** 4

Explores various strands of feminist political theory; taking a specifically political view of the challenges of feminist activism and philosophy.

Addresses issues of the public space, power, social transformation, and democracy. Writing intensive.

Attributes: Writing Intensive Course**POLT 725 - Politics and Literature****Credits:** 4

Seminar: Advanced work in exploring classical and contemporary works of literature to illustrate perennial issues in political philosophy. Writing intensive.

Attributes: Writing Intensive Course**POLT 740 - States and Societies in the Middle East****Credits:** 4

This seminar explores the comparative politics of selected countries and conflicts in the contemporary Middle East and North Africa. We focus on understanding the causes and consequences of popular uprisings, civil wars, and protracted conflicts. The class is taught through discussion, with students taking active, participatory roles. Themes include changing forms of governance, changing practices of warfare, gender and minority rights, economic and environmental problems, protest and activism, state-society relations, and migration and refugees. Students read memoir, journalistic accounts, and theoretical articles in comparative politics to understand important developments. Specific country and issue cases change each year; recent seminars have addressed Israel-Palestine, Syria, Egypt, Iran, and Iraq. Writing, reading, and discussion intensive class. Designed as follow-on course to POLT 559, Comparative Politics of the Middle East, counts as capstone course for the Middle East Minor. Writing intensive.

Attributes: Writing Intensive Course**POLT 742 - Politics of Afghanistan, Pakistan, and India****Credits:** 4

Afghanistan, Pakistan, and India are strategically important states and potential flashpoints of conflict. Nuclear neighbors, India and Pakistan have been in conflict for 70 years while Afghanistan remains internally unstable. The politics of these countries are also intimately involved with each other. The class will focus both on the internal politics of these states and their foreign relations with each other and the United States. Students will develop expertise in a crucial world region.

Attributes: Writing Intensive Course**POLT 748 - Food and Wine Politics****Credits:** 4

Food and wine politics provides a lens through which to analyze contrasting perspectives on production organization, market structures, quality constructs, consumer preferences, and health and safety regulation. This course draws upon texts from economic history, political economy, economic sociology, and public policy to shed light on comparative political and market organization across Europe, the United States, and emerging market economies. Writing intensive.

Attributes: Writing Intensive Course**POLT 750 - Politics of Poverty****Credits:** 4

Why are some countries rich while others are so poor? This course answers this question by examining several theories of economic development: political culture, modernization, dependency, regime types, urban bias, rent-seeking institutions, and international aid. The immediate goal of this course is for students to understand the causes of international inequality in the distribution of wealth. Students also improve their ability to evaluate theoretical arguments and empirical evidence critically, and develop reading and writing skills. Writing intensive.

Attributes: Writing Intensive Course**POLT 751 - Comparative Environmental Politics and Policy****Credits:** 4

Environmental politics and policy across national boundaries and at different levels of governance. Comparison of the U.S. and European Union environmental policies to build a foundation for comparisons across national boundaries and sub-national authorities. Students improve their understanding of how and why comparative methods are used to gain insight into politics and policymaking. Central concepts and debates addressed include the roles of expertise, sustainability, precautionary principle, the use of market mechanisms in policy, environmental justice, policy devolution and flexibility, environmental performance assessment, NGO roles, activism, and social movements. Using a range of theoretical approaches and historical and contemporary events and case studies, evaluating the claims and explanatory power of various concepts and theories. Includes ethical issues emerging from the theory and practice of environmental politics. Writing intensive.

Attributes: Writing Intensive Course**POLT 760 - Theories of International Relations****Credits:** 4

Theoretical approaches of international politics, international organization, and international political economy with particular emphasis on systems theories, domestic determinants of foreign policy and theories of decision making. Writing intensive.

Attributes: Writing Intensive Course**POLT 762 - International Political Economy****Credits:** 4

This course has been designed to introduce advanced undergraduates and graduate students to the current theoretical discussions in international political economy. The course analyzes the development of current international economic regimes, as well as looks at systemic theories (interdependence, hegemonic stability), domestic determinants (bureaucratic, interest group), and decision-making theories (rational choice). By monitoring current economic and political news, students are challenged to apply these ideas to explain the current problems in political economy. Writing intensive.

Attributes: Writing Intensive Course

POLT 765 - Security Intelligence Study**Credits:** 4

The goal of the Security Intelligence Study course is to provide an opportunity for students to apply research and analysis models used by intelligence professionals to a real world problem. Using unclassified public sources, students research and present an analytical product to help limit risk for a government decision maker. Participants learn about and use publicly available data and intelligence analysis models. Writing intensive.

Attributes: Writing Intensive Course**POLT 778 - International Organization****Credits:** 4

This course is about cooperation at the international level. With a focus on international organizations, we examine what roles international institutions (both IGOS and NGOS) play in global governance and their effects in various issue areas. We examine their historical origins, functions, and the international and domestic political forces that impact their effectiveness. The course also considers the role of international organizations on world order including conflict resolution, peacekeeping, development, and human rights. Writing intensive.

Attributes: Writing Intensive Course**POLT 780 - International Environmental Politics, Policy, and Law****Credits:** 4

Explores international/global environmental politics and policymaking, multilateral negotiations, the role of science and technology in policymaking, state capacity, the making of international law, implementation, and compliance. Other issues include climate change, marine pollution, long-range air pollution, United States leadership in the global political arena, North-South divisions in global politics, environmental justice, sustainable development, and the role of the United Nations and other international organizations. Writing intensive.

Attributes: Writing Intensive Course**POLT 795 - Advanced Study****Credits:** 1-4

Senior POLT majors, with a cumulative average of 3.20 or greater, may undertake advanced study (political science), in an area of their choice, in consultation with member(s) of the faculty. Normally, the result of the project is a significant written product of a quality comparable to that done at the 700 course level. Student must initiate the project discussion and obtain approval of the undergraduate curriculum committee of the department before undertaking the project. Writing intensive.

Attributes: Writing Intensive Course**POLT 796 - Advanced Study****Credits:** 4

Senior POLT majors, with a cumulative average of 3.20 or greater, may undertake advanced study (political science), in an area of their choice, in consultation with member(s) of the faculty. Normally, the result of the project is a significant written product of a quality comparable to that done at the 700 course level. Student must initiate the project discussion and obtain approval of the undergraduate curriculum committee of the department before undertaking the project. Writing intensive.

Attributes: Writing Intensive Course**POLT 797B - Seminar in American Politics****Credits:** 4

Advanced analysis and individual research. Prereq: senior standing. Writing intensive.

Attributes: Writing Intensive Course**POLT 797C - Seminar in Comparative Politics****Credits:** 4

Advanced analysis focusing on government and politics in foreign nations or regions. Areas of interest may include: constitutional structures, political parties and interest groups, legislatures, bureaucracy, and public policy. Topics address such concerns as religion and politics, patterns of economic development, ethnic strife, and political leadership. Prereq: senior standing. Writing intensive.

Attributes: Writing Intensive Course**POLT 797E - Seminar in International Politics****Credits:** 4

Advanced analysis focusing on problems of theory and contemporary issues in international politics. Areas of interest may include: democratic norms in international relations, NATO expansion and European security, the peace process in the Middle East, etc. See department listings for semester offerings. Prereq: senior standing. Writing intensive.

Attributes: Writing Intensive Course**POLT 797F - Seminar in Public Administration****Credits:** 4

Advanced analysis and individual research, including opportunities for direct observation of governmental administration. Prereq: senior standing. Writing intensive.

Attributes: Writing Intensive Course**POLT 797I - Seminar in Political Thought****Credits:** 4

Advanced treatment and individual research. Prereq: senior or graduate standing. Writing intensive.

Attributes: Writing Intensive Course**POLT 798B - Seminar in American Politics****Credits:** 4

Advanced analysis and individual research. Prereq: senior standing. Writing intensive.

Attributes: Writing Intensive Course**POLT 798C - Seminar in Comparative Politics****Credits:** 4

Advanced analysis focusing on government and politics in foreign nations or regions. Areas of interest may include constitutional structures, political parties and interest groups, legislatures, bureaucracy, and public policy. Topics address such concerns as religion and politics, patterns of economic development, ethnic strife, and political leadership. Prereq: senior standing. Writing intensive.

Attributes: Writing Intensive Course**POLT 798E - Seminar in International Politics****Credits:** 4

Advanced analysis focusing on problems of theory and contemporary issues in international politics. Areas of interest may include democratic norms in international relations, NATO and European security, the peace process in the Middle East, etc. See department listings for semester offerings. Prereq: senior standing. Writing intensive.

Attributes: Writing Intensive Course**POLT 798F - Seminar in Public Administration****Credits:** 4

Advanced analysis and individual research, including opportunities for direct observation of governmental administration. Prereq: senior standing. Writing intensive.

Attributes: Writing Intensive Course

POLT 798I - Seminar in Political Thought**Credits:** 4

Advanced treatment and individual research. Prereq: senior or graduate standing. Writing intensive.

Attributes: Writing Intensive Course**POLT 799 - Honors Thesis****Credits:** 4

Senior POLT honors-in-major students (see department for honors-in-major requirements), with a cumulative average of 3.20 or greater, may undertake a special honors project in an area of their choice. The result of this special project is a significant written product constituting an honors thesis, under the supervision of a faculty sponsor. Students must initiate the project discussion and obtain approval of the undergraduate curriculum committee before undertaking the project. The honors thesis constitutes the tenth course in the major. Writing intensive.

Attributes: Writing Intensive Course

Politics and Society (PS)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

PS 407 - Politics, Law and Contemporary Society**Credits:** 4

This course examines the foundation and structure of the American legal system and the complex relationship between law, politics, and contemporary social structures, including the philosophical and historical origins of law and the concept of sovereignty. Using case studies and United States Supreme Court decisions, the course considers the philosophical, historical, economic, environmental, and sociological underpinnings of contemporary legal and politics issues.

Attributes: Social Science (Discovery)**PS #501 - Social and Political-Economic Theory****Credits:** 4

Classics of sociological and political economic theory, as well as contemporary thinking in conservative, classical liberal, modern liberal, and radical political economy. Emphasis on the historical context in which these ideas emerge, and the links among them. Readings and discussions include such thinkers as Comte, Spencer, Weber, Durkheim, Locke, Marx, Smith, Riccardo, J.S. Mill, Shumpeter, Keynes, Hayek.

Attributes: Historical Perspectives(Disc)**PS 502 - Political Psychology****Credits:** 4

Political opinion, identity, and belief-formation and reinforcement. The roles of cognition and emotion in how political identities, opinions and beliefs form, change and resist change. The implications of idea-framing in the acceptance and rejection of political concepts and ideologies. The role of social contexts and the media in creating conceptual boundaries in contemporary politics. Writing intensive.

Attributes: Social Science (Discovery); Writing Intensive Course**PS #503 - Political Theory and Historical and Social Context****Credits:** 4

Course analyzes and evaluates the roles of political philosophy and historical circumstances in politics through the readings of selected works by political philosophers and political leaders whose writings combine political philosophy with historical analysis. Special attention given to the nature of argument, choice, and leadership in political behavior. Authors studied include Machiavelli, Madison, Marx, and Lincoln. Writing intensive.

Attributes: Historical Perspectives(Disc); Writing Intensive Course**PS #504 - Empire, Democracy and War****Credits:** 4

The United States, the worlds oldest and most prominent constitutional democracy, is frequently characterized as an American empire, and empire maintained not only by its political ideals and its economic strength, but also by war. Through the reading of selected ancient and modern works by major political philosophers, historians, and political leaders, this course examines empire, democracy, and war as recurrent political concerns and as the actual experience of different regimes throughout history, including the United States. Works by, among others, Aristotle, Thucydides, Machiavelli, Hobbes, Kant, Clausewitz, and Lincoln are supplemented by selected historical studies and by analyses of American policy since World War II.

Attributes: Humanities(Disc)**PS 505 - Political Violence and Terrorism****Credits:** 4

This course provides an interdisciplinary approach to the study of political violence and terrorism. It covers the psychological and sociological roots of terrorism, the organizational patterns of cells, groups and networks, and the role of ideology and identity in shaping goals, targets, and tactics. No credit for students who have previously taken PS 651 Special Topics: Political Violence and Terrorism.

Attributes: Social Science (Discovery)**PS #506 - Civil Society and Public Policy****Credits:** 4

Explores how grassroots advocacy organizations and social movements mobilize human and material resources in order to shape public policy and what tactics and organizational and communication strategies lead to success. Provides students with hand-on learning through service learning project at a local organization. Policy areas may include immigration, environmental conservation, women's issues and more. Instructor permission required.

PS 507 - Justice Law and Politics**Credits:** 4

This course examines the relationships among law, politics, and social structures and how much relationships shape our conceptions of justice. We explore philosophical and historical origins of US law and such concepts as due process and sovereignty. We examine the foundations and economic, environmental, and sociological underpinnings of contemporary legal and political issues.

Attributes: Social Science (Discovery)

PS 508 - Supreme Court in US Society**Credits:** 4

This course examines Supreme Court legal holdings from the creation of the American Republic to the present, with attention to the social and historical contexts in which holdings have been made. We examine Constitutional issues, the process by which the Court examines such issues, the ways in which political and social context has framed and influenced Court decisions, as well as how the Court has influenced politics and the broader society.

Attributes: Historical Perspectives(Disc)**PS 509 - Political and Social Change in Developing Countries****Credits:** 4

Overview of the pressing social, political, and economic issues in the developing world. Analysis includes: political development, including different forms of authoritarianism and democracy; international political economy and models of macro-economic development; international and national aid programs aimed at reducing poverty. Case studies include China, India, Iraq and more.

Attributes: World Cultures(Discovery)**PS 510 - Politics of Food****Credits:** 4

This course examines the politics of how food is produced, marketed and distributed in the United States, with attention to how the American food system has changed since World War II. The ethics and nutritional and public health implications of current agricultural policies and practices are looked at carefully, as are the environmental impacts of current practices. The impact on international food prices and markets and world hunger are also examined.

Attributes: Environment,TechSociety(Disc)**PS 511 - Women and War****Credits:** 4

Explores impact of war on women as both victims (i.e. refugees, rape victims) and participants (i.e. warriors). Covers issues such as women in combat as soldiers and terrorists, women's rights, sexual violence and rape during warfare, women's roles during peace-building etc. Case studies include Bosnia, Liberia, Afghanistan, USA, Colombia, and more.

Attributes: World Cultures(Discovery)**PS #512 - People on the Move: Immigration and Refugee Policy in Global Perspective****Credits:** 4

Migration affects nearly every country in the world. It is an important dimension of globalization and compels us to reflect on notions of state sovereignty, nationhood, citizenship, human rights, tolerance and international relations. This course offers a multi-disciplinary, comparative overview of current issues in the field of international migration, including refugee policy. It aims to help students develop the knowledge and analytical tools to participate in today's often contentious debates about people on the move.

PS 514 - Model United Nations**Credits:** 4

The highlight of this experiential learning course is a trip to participate in a Model United Nations conference. Students will develop solutions to contemporary global problems (including human rights, terrorism, climate change, etc.), and will learn the art of debate and compromise. The class will serve as a particular country's delegation during a simulation of the United Nations, where it will promote the UN, the issues before the UN, and the assigned country's role in global affairs. Open to students of all majors. Instructor permission required. Contact Prof. Negron-Gonzales, melinda.negron@unh.edu. Special fee.

PS 515 - New Hampshire Politics in Action**Credits:** 4

A hands-on course on New Hampshire politics and policymaking, in which students will identify a Bill currently active in the NH General Court and develop and execute a step-by-step plan for helping get it enacted or defeated. Periodic travel to the State Capitol in Concord will be required. Writing intensive.

Attributes: Inquiry (Discovery); Writing Intensive Course**PS 520 - Globalization: Politics, Economics and Culture****Credits:** 4

Globalization is a complex web of interwoven processes that affect virtually all facets of our daily lives, from pop culture to economics to politics and everything in between. But what exactly is globalization, anyway? And does increased interconnectedness and interdependence do more harm than good? What are the effects of globalization on our society and on others around the world? How can we solve problems, such as climate change, that transcend national boundaries? This course covers different dimensions of globalization, exploring everything from free trade and global supply chains in business to the global hip-hop phenomenon to the problem of international terrorism, and many other issues.

Attributes: World Cultures(Discovery)**PS 651 - Selected Topics Politics and Society****Credits:** 4

Interdisciplinary treatment of selected topics in politics and society. Topics may include democracy, empire and war, gender roles in electoral process, the sociology and psychology of terrorism, the political economy of hunger and poverty, the social origins of dictatorship and democracy, and others. May repeated for a maximum of 8 credits. Topic: Empire, Democracy, and War is Writing intensive.

PS 651W - Selected Topics Politics and Society**Credits:** 4

Interdisciplinary treatment of selected topics in politics and society. Topics may include democracy, empire and war, gender roles in electoral process, the sociology and psychology of terrorism, the political economy of hunger and poverty, the social origins of dictatorship and democracy, and others. May repeated for a maximum of 8 credits. Topic: Empire, Democracy, and War is Writing intensive. Writing intensive.

Attributes: Writing Intensive Course**PS 695 - Politics and Society Independent Study****Credits:** 1-4

Independent study on specific topics in Politics and Society. Project must be approved by the project supervisor Politics and Society Program.

PS 701 - Senior Project and Interdisciplinary Seminar in Politics and Society**Credits:** 4

Students undertake internships or other approved field projects with organizations such as political campaigns, media organizations, government offices, business or community groups. The seminar component enables students to share and analyze these experiences, employing readings, discussions, collective behavior games, and speakers. Permission required. Writing intensive.

Attributes: Writing Intensive Course**PS 702 - International Relations: Interdisciplinary Approach****Credits:** 4

This course explores International Relations Theory as developed by political scientists, subjected to critical insights from other disciplines, including psychology, anthropology, political economy and history. Course first surveys the historical development of International Relations Theory, beginning with Thucydides and Macchiavelli, and proceeding through 20th and 21st century realist, liberal, Marxist and constructivist theories.

These theories are then examined critically in the light of insights from psychology, anthropology and political economy. Pre or Coreq: PS #501 or PS 401 or permission of instructor. Special fee.

Attributes: Writing Intensive Course**PS #703 - Dictatorship and Democracy****Credits:** 4

This course examines the theoretical debates in comparative politics and political sociology regarding the social and economic bases of dictatorship and democracy, as well as the transition from authoritarianism to democracy. The course considers different conceptualizations of democracy, as well as competing theoretical arguments regarding the causes of democratization. Readings draw on case studies from different regions, including Europe, Latin America, Africa, and Asia.

Portuguese (PORT)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

PORT 401 - Elementary Portuguese I**Credits:** 4

Conducted in Portuguese. For students without previous knowledge of Portuguese. Aural-oral practice; fundamental speech patterns; reading and writing to achieve a firm basis for an active command of the language. Labs. No credit toward a major. (No credit for students who have had two or more years of Portuguese in secondary school; however, any such students whose studies of Portuguese have been interrupted for a significant period of time should consult the chairperson about possibly receiving credit.) Special fee.

PORT 402 - Elementary Portuguese II**Credits:** 4

Conducted in Portuguese. Aural-oral practice; fundamental speech patterns; reading and writing to achieve a firm basis for an active command of the language. Labs. No credit toward a major. (No credit for students who have had two or more years of Portuguese in secondary school; however, any such students whose studies of Portuguese have been interrupted for a significant period of time should consult the chairperson about possibly receiving credit.) Special fee. Prereq: PORT 401. (PORT 401 and PORT 402 together satisfies the foreign language requirement.)

Attributes: Foreign Language Requirement**PORT 500 - Selected Topics in World Literature****Credits:** 4

Topics are chosen that introduce students to major themes and genres. (Also offered as CLAS 500, FREN 500, GERM 500, ITAL 500, RUSS 500, SPAN 500.) May be repeated for credit. Cr/F. Writing intensive.

Attributes: Writing Intensive Course**PORT 503 - Intermediate Portuguese I****Credits:** 4

Conducted in Portuguese. Emphasizes the development of reading, writing, speaking, and listening skills. Review of grammar. Discussion and short papers in Portuguese on cultural and literary readings. Films. No credit toward the major. Special fee. Lab. Satisfies the foreign language requirement.

Attributes: World Cultures(Discovery)**PORT 504 - Intermediate Portuguese II****Credits:** 4

Conducted in Portuguese. Emphasizes the development of reading, writing, speaking, and listening skills. Review of grammar. Discussion and short papers in Portuguese on cultural and literary readings. Films. No credit toward the major. Special fee. Lab. Satisfies the foreign language requirement.

PORT 526 - Luso-Brazilian Culture and Civilization**Credits:** 4

This course provides a general overview of Brazil's culture and history from the arrival of the first Europeans, through its independence and consolidation as a nation-state in nineteenth-century, up to its present. Students will learn about the development of Brazilian cultural and intellectual life through literature, cinema, music, painting, architecture, and photography. No prior knowledge of the Portuguese language is required. The course will be taught in English. Special fee.

PORT 595 - Portuguese Practicum**Credits:** 2

Practical use of Portuguese language or cultural skills outside the classroom through special projects. Prereq: PORT 401 and PORT 402 and permission. May be repeated up to 4 credits.

PORT 795 - Independent Study in Portuguese**Credits:** 1 or 4

Guided individual study in language, literature, and culture from the Portuguese-speaking world. Topics selected by instructor and student in conference. Barring duplication of content, may be repeated for a maximum of 8 credits. Prereq: permission of instructor.

Psychology (PSYC)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

PSYC 401 - Introduction to Psychology**Credits: 4**

Psychology as a behavioral science; its theoretical and applied aspects. Includes research methods, behavioral neuroscience, sensation and perception, cognition, learning, development, personality, psychopathology, and social psychology. To experience actively the nature of psychological research students have an opportunity to participate in a variety of studies as part of a laboratory experience.

Attributes: Social Science (Discovery)

PSYC 401H - Honors/Introduction to Psychology**Credits: 4**

Psychology as a behavioral science; its theoretical and applied aspects. Includes research methods, behavioral neuroscience, sensation and perception, cognition, learning, development, personality, psychopathology, and social psychology. To experience actively the nature of psychological research students have an opportunity to participate in a variety of studies as part of a laboratory experience.

Attributes: Social Science (Discovery)

PSYC 402 - Statistics in Psychology**Credits: 4**

Design, statistical analysis, and decision making in psychological research. Probability, hypothesis-testing, and confidence intervals. Conceptualization, computation, interpretation, and typical applications for exploratory data analysis (including measures of central tendency, variability), t-tests, correlations, bivariate regression, one-way analysis of variance, and chi square. Introduction to computer methods of computation. No credit for students who have completed ADM 430; BIOL 528; ADMN 420; EREC 525; HHS #540; MATH 439; MATH 539; MATH 644; SOC 502. Special fee.

Attributes: Quantitative Reasoning(Disc)

PSYC 402H - Honors/Statistics in Psychology**Credits: 4**

Design, statistical analysis, and decision making in psychological research. Probability, hypothesis-testing, and confidence intervals. Conceptualization, computation, interpretation, and typical applications for exploratory data analysis (including measures of central tendency, variability), t-tests, correlations, bivariate regression, one-way analysis of variance, and chi square. Introduction to computer methods of computation. No credit for students who have completed ADM 430; BIOL 528; ADMN 420; EREC 525; HHS #540; MATH 439; MATH 539; MATH 644; SOC 502. Special fee.

Attributes: Quantitative Reasoning(Disc)

PSYC 440A - Honors/Understanding the Human Brain**Credits: 4**

First, we will examine the evolution of the brains of hominids to understand what are characteristics are uniquely human and what are conserved across species. We then explore selected topics in neuroscience that alter neural functioning, for example, the impact of neuro-prosthetics, cognitive enhancement, racial discrimination. Finally, we will discuss the benefit and limitations of using animal models to understand human neural functioning.

Attributes: Biological Science(Discovery)

PSYC 502 - Research Methods in Psychology**Credits: 4**

Research design, including experimental and correlation design; internal versus external validity; measurement; writing a research report; graphic and statistical methods for summarizing data; sampling; and special problems such as experimenter effects, reactivity of measurement, and others. The use of hypothesis testing and data analysis in research.

Prereq: PSYC 401 and PSYC 402. Special fee. Writing intensive.

Attributes: Inquiry (Discovery); Writing Intensive Course

PSYC 511 - Sensation and Perception**Credits: 4**

The study of how humans (and some other animals) sense and perceive their environment. Topics include seeing (vision), hearing (audition), tasting (gustation), smelling (olfaction), feeling (somatosensation), and the variety of state-of-the-art methods used by psychologists to study these senses. Illusions and other sensory and perceptual phenomena are treated. Prereq: PSYC 401.

PSYC 512 - Psychology of Primates**Credits: 4**

A comparative analysis of primate cognitive, linguistic, and social processes. The origins of human behavior are explored from the perspectives of history, evolution, and contemporary work in neuropsychology, linguistic, sociobiology, and related fields. Prereq: PSYC 401.

PSYC 513 - Cognitive Psychology**Credits: 4**

The study of human cognition, its basic concepts, methods, and major findings. Human knowledge acquisition and use. Attention, perception, memory, imagery, language, reading, problem solving, and decision making. Prereq: PSYC 401.

PSYC 521 - Behavior Analysis**Credits: 4**

Principles derived from the experimental study of human and animal learning and their theoretical integration. Respondent and operant conditioning. Reinforcement and punishment, stimulus control, choice and preference, conditioned reinforcement. Prereq: PSYC 401.

PSYC 522 - Behaviorism**Credits: 4**

Introduction to behaviorism as a philosophy of science. Some historical background, but concentration on modern behaviorism as exemplified in the works of B. F. Skinner. No credit for students who have completed PSYC 722. Offered only in Manchester. Prereq: PSYC 401.

PSYC 531 - Psychobiology**Credits: 4**

Introduces the behavioral neurosciences. Surveys research conducted by psychologists to learn about the biological basis of behavior: development, sensation, perception, movement, sleep, feeding, drinking, hormones, reproduction, stress, emotions, emotional disorders, learning, and memory. Prereq: PSYC 401.

PSYC 552 - Social Psychology**Credits: 4**

Behavior of individuals as affected by other individuals, groups, and society. Topics include attitude change and social influence, conformity, social interaction, interpersonal attraction, impression formation, research. Prereq: PSYC 401.

PSYC 553 - Personality**Credits: 4**

Major theories, methods of assessment, and research. Prereq: PSYC 401.

PSYC 561 - Abnormal Behavior**Credits:** 4

Causes, diagnosis, and treatment of abnormal behavior. Implications of varying theoretical viewpoints. Prereq: PSYC 401.

PSYC 571 - Pioneers of Psychology**Credits:** 4

An introduction to the development and evolution of psychology as an academic discipline and applied science. The lives and works of innovators in psychology are placed in socio-political context.

Attributes: Historical Perspectives(Disc)**PSYC 571H - Honors/Pioneers of Psychology****Credits:** 4

An introduction to the development and evolution of psychology as an academic discipline and applied science. The lives and works of innovators in psychology are placed in socio-political context.

Attributes: Historical Perspectives(Disc)**PSYC 581 - Child Development****Credits:** 4

The developing child in the context of his/her society. Current problems in, and influences on, development of the child. Personality and cognitive development; exceptional children. Prereq: PSYC 401.

PSYC #582 - Adult Development and Aging**Credits:** 4

A life-span developmental framework for the study of growth, decline, and stability on adult development. Developmental methods in adult development research; biological basis for aging; patterns of change and stability in diverse domains of psychological functioning, e.g., perception, cognition, intellectual performance, and personality organization. Prereq: PSYC 401. (Offered only in Manchester.)

PSYC 591 - Special Topics**Credits:** 4

New or specialized courses are presented under this listing. Staff present material not normally covered in regular course offerings. May repeat but not duplicate content. Prereq: PSYC 401.

PSYC 595 - Applications of Psychology**Credits:** 1-4

Arranged by the student or offered by psychology faculty for supervised field, academic, or research experience related to psychology. A) Field experience: supervised internship at a business or human services setting, B) Academic experience: specialized classroom experience or supervised teaching assistance, C) Research experience: supervised research experience or laboratory work. Psychology instructors sponsor academic credit for appropriate experience combined with a relevant academic component. Requires a signed learning agreement prior to registration. Prereq: permission. May be taken for 1-4 credits in a semester and repeated to a maximum of 8 credits total. Cr/F.

PSYC #702 - Advanced Statistics and Research Methodology**Credits:** 4

A review of basic statistics from Psychology 402 and 502. Covers partial correlation, factorial ANOVA, and other analyses that include multiple predictor variables. Appropriate for students who plan to apply to research-oriented graduate programs, those who use statistics in honors thesis research, and those who plan to work in areas such as marketing or survey research. Topics covered are appropriate for use in psychology, sociology, education, medicine, and other research areas. Prereq: PSYC 402; PSYC 502; or permission. (Not offered every year.) Writing intensive.

Attributes: Writing Intensive Course**PSYC 705 - Tests and Measurement****Credits:** 4

Testing intelligence, creativity, achievement, interests, and personality. Test construction; evaluation; relation to psychological theory, research, and practice. Prereq: PSYC 402; PSYC 502;/or permission.

PSYC 705H - Honors/Tests and Measurements**Credits:** 4

Testing intelligence, creativity, achievement, interests, and personality. Test construction; evaluation; relation to psychological theory, research, and practice. Prereq: PSYC 402; PSYC 502;/or permission.

PSYC 710 - Visual Perception**Credits:** 4

The study of how humans (and some other animals) see. Topics include color vision, depth perception, form and pattern vision, visual learning and development, eye movements, diseases of the visual system, illusions, and other visual phenomena. Prereq: PSYC 402, PSYC 502, PSYC 511, or PSYC 531; or permission. Special fee. Writing intensive.

Attributes: Writing Intensive Course**PSYC 712 - Psychology of Language****Credits:** 4

Theories of language structure, functions of human language, meaning, relationship of language to other mental processes, language acquisition, indices of language development, speech perception, reading. Prereq: PSYC 402; PSYC 502; PSYC 512; or PSYC 513; or permission. Special fee.

PSYC 712W - Psychology of Language**Credits:** 4

Theories of language structure, functions of human language, meaning, relationship of language to other mental processes, language acquisition, indices of language development, speech perception, reading. Prereq: PSYC 402; PSYC 502; PSYC 512; or PSYC 513; or permission. Special fee. Writing intensive.

Attributes: Writing Intensive Course**PSYC 713 - Psychology of Consciousness****Credits:** 4

Explores questions of consciousness What is it? How does it develop? Are infants and animals conscious? Why did consciousness evolve? Includes a review of historical background, including the ideas of Jaynes, Piaget, James, Freud, and others. Contemporary topics may include the role of language and other representational systems, blindsight, subliminal perception, priming and other implicit cognitive phenomena, hypnosis, confabulation and attribution, dreaming, multiple personality and conceptions of self and free will, from simultaneous perspectives of phenomenology, behavior, and neuroscience. Specific topics governed by class interests. Prereq: PSYC 402; PSYC 502; PSYC 512; or PSYC 513; or permission. Writing intensive.

Attributes: Writing Intensive Course

PSYC 716 - Cognitive Neuroscience**Credits:** 4

Cognitive Neuroscience is a rapidly expanding scientific discipline that probes classical questions of human cognitive psychology via a broad array of cutting-edge methodological approaches, which include but are not limited to brain imaging (e.g., functional MRI and electroencephalography), lesion studies, single-cell recording, and examinations of brain injuries and other neurological disorders. This course will survey the results of these approaches, which have thus far generated fundamental insights about how the brain supports motor control, attention, memory, emotion processing, social cognition, language, executive function and decision making. Prereq: PSYC 402, PSYC 502, PSYC 513, or PSYC 531; or permission. Writing intensive.

Attributes: Writing Intensive Course**PSYC 720 - Animal Cognition****Credits:** 4

Do animals use language or have a culture? Can birds count? Do animals use tools and understand how they function? How do ants navigate their environment to find food and then return to their nest? How animals perceive, attend to, process, store, and represent information from their environment. Research on animal learning and behavior as a framework for investigating cognitive processes in animal learning. Quantitative versus qualitative nature of differences between people and non-human animals. Multidisciplinary approach including the fields of anthropology, physiology, philosophy and biology. Prereq: PSYC 401; PSYC 402; PSYC 502; PSYC 513 or PSYC 521; or permission. Writing intensive.

Attributes: Writing Intensive Course**PSYC 722 - Behaviorism, Culture, and Contemporary Society****Credits:** 4

Introduces behaviorism as a philosophy of science. Concentration on modern behaviorism as exemplified in the works of B.F. Skinner. Implications of behaviorism for the development and evolution of cultures. Consideration of societal issues (for example pollution, overpopulation, conflict, drug abuse) from a behavioral framework. Prereq: PSYC 402; PSYC 502; PSYC 521; or permission. No credit for students who have completed PSYC 522. Writing intensive.

Attributes: Writing Intensive Course**PSYC 731 - Brain and Behavior****Credits:** 4

Neuropsychology, the study of brain/behavior relationships including clinical topics related to the analysis of neurological diseases in humans and more basic experimental topics related to integrative functions of the brain. The main focus is on cerebral cortex and functions related to perception, movement, attention, memory, and language. Prereq: PSYC 402; PSYC 502; PSYC 531; or permission. Special fee. Writing intensive.

Attributes: Writing Intensive Course**PSYC 733 - Drugs and Behavior****Credits:** 4

Introduces the principles of psychopharmacology and the effects of psychoactive substances on behavior. Focuses on the therapeutic and recreational use of drugs and the mechanisms of drug action, that is how the drugs affect the brain. Neuropsychiatric function and dysfunction are discussed as they relate to the use or abuse of particular drugs. Prereq: PSYC 402; PSYC 502; PSYC 531; or permission. Writing intensive.

Attributes: Writing Intensive Course**PSYC 735 - Neurobiology of Mood Disorders****Credits:** 4

Neurobiological and neurochemical substrates underlying various psychopathologies, using both animal models and human data. Study of disorders from the field of biological psychiatry including aggression, anxiety, panic disorder, obsessive-compulsive disorder, unipolar depression, bipolar affective disorder, schizophrenia, and post-traumatic stress disorder. The effectiveness of current behavioral and pharmacological therapy. Prereq: PSYC 402; PSYC 502; PSYC 531; or permission. Writing intensive.

Attributes: Writing Intensive Course**PSYC 736 - Attention Disorders****Credits:** 4

Attention encompasses several cognitive functions including, but not limited to, the ability to select relevant from irrelevant stimuli, to maintain goal-directed behavior over time, and to process multiple streams of information at once. This course explores how the normal brain "attends", and the consequences of dysfunction in neurochemical systems hypothesized to mediate these abilities including dementia, attention-deficit hyperactivity disorder (ADHD) and schizophrenia. Prereq: PSYC 402; PSYC 502; PSYC 531; or permission.

Attributes: Writing Intensive Course**PSYC 737 - Behavioral Medicine****Credits:** 4

Behavioral, physiological, and neurochemical alterations, associated with health-promoting behaviors (low-fat diet, exercise) as well as health-impairing behaviors (eating disorders, smoking, excessive alcohol consumption). Topics include stress, coping, type-A behavior, hypertension, and the interface of brain, behavior, and immunity (psychoimmunology, cancer, AIDS). Treatment/therapy are discussed from behavioral and pharmacological perspectives. Prereq: PSYC 402; PSYC 502; PSYC 531; or permission. Writing intensive.

Attributes: Writing Intensive Course**PSYC 741 - Advanced Topics****Credits:** 4

Advanced material in which instructor has specialized knowledge through research and study. May be repeated for different offerings. Topics under this listing may be used to fulfill a major requirement in category C1. A) Psychology as a Natural Science, B) Cognition, C) Behavior Analysis, D) Biological/Sensory. Prereq: PSYC 402; PSYC 502; plus other prerequisites when offered; or permission.

PSYC 741W - Advanced Topics**Credits:** 4

Advanced material in which instructor has specialized knowledge through research and study. May be repeated for different offerings. Topics include: Behavioral Neuroscience. Prereq: PSYC 402; PSYC 502; plus other prerequisites when offered; or permission. Writing intensive.

Attributes: Writing Intensive Course**PSYC 755 - Psychology and Law****Credits:** 4

Applications of psychology to the study of the law, including theories of legal and moral judgment, participants in the legal system (judges, police, victims, witnesses), the trial process, and plea bargaining. Special focus on the death penalty, the insanity plea, and child witnesses. Prereq: PSYC 402; PSYC 502; or permission. Writing intensive.

Attributes: Writing Intensive Course

PSYC 756 - Psychology of Crime and Justice**Credits: 4**

Examines the psychological aspects of crime and justice, including the following origins and causes of crime: developmental, biological, biopsychological, learning, and mental disorder. Focuses on issues related to homicide, profiling, and serial killers. Examines aggression and violence as well as causes and consequences of criminal homicides. Discussion of the future of crime. Prereq: PSYC 402; PSYC 502; or permission. Writing intensive.

Attributes: Writing Intensive Course

PSYC 757 - Psychology of Happiness**Credits: 4**

Overview of empirical research in Positive Psychology. We will discuss factors that may influence happiness and subjective well-being; and effects that well-being may have on other life outcomes such as physical health. Learning involves reading and writing about evidence from research and also experimental exercises (such as foing an act of kindness). Prereq: PSYC 402, PSYC 502 or permission. Writing intensive.

Attributes: Writing Intensive Course

PSYC 758 - Health Psychology**Credits: 4**

Survey of current topics in health psychology, including social stress and the etiology of disease, Type A and other personality factors related to health, modification of risk factors, the practitioner-patient relationship, chronic pain, and the emotional impact of life-threatening illness. Prereq: PSYC 402; PSYC 502; or permission. Writing intensive.

Attributes: Writing Intensive Course

PSYC 762 - Counseling**Credits: 4**

Theories of counseling, ethical considerations, professional and paraprofessional activities in a variety of work settings. Prereq: PSYC 402; PSYC 502; PSYC 553; or PSYC 561; or permission. Writing intensive.

Attributes: Writing Intensive Course

PSYC 763 - Community Psychology**Credits: 4**

Examines the sub-field of community psychology, which grew out of clinical psychology but is different from it. Theoretical and research perspectives on prevention, diversity, empowerment, resilience, community intervention, and ecological understandings of behavior. Causes of and interventions in social issues such as interpersonal and community violence and homelessness. Prereq: PSYC 401; PSYC 402; PSYC 502; PSYC 552, PSYC 553, or PSYC 561;/or permission. Writing intensive.

Attributes: Writing Intensive Course

PSYC 775 - Madness in America**Credits: 4**

Examines how popular and professional concepts of mental illness are shaped by historical events as well as scientific and medical research. Writings of former psychiatric patients, therapists, researchers, social critics, and historians of psychology and psychiatry. Cultural values, public attitudes, and popular views of mental health and illness as expressed through motion pictures, documentaries, novels, autobiographies, and biographies. The impact of WWI and WWII on how people thought about madness and how it was treated. The 1973 removal of homosexuality from the diagnostic manual of the American Psychological Association; the rise and fall of the lobotomy; feminist criticisms of psychiatry and psychology. Prereq: PSYC 402; PSYC 502; PSYC 561;/or permission. Writing intensive.

Attributes: Writing Intensive Course

PSYC 780 - Prenatal Development and Infancy**Credits: 4**

Psychological development of infants from conception through second year of life. Factors and potential influences on reproductive health and prenatal physical and behavioral development. Transition to parenthood, infant temperament and parent-infant relationships. Developmental patterns of specific capabilities. Prereq: PSYC 402; PSYC 502; PSYC 581 or FS 525; or permission. Writing intensive.

Attributes: Writing Intensive Course

PSYC 783 - Cognitive Development**Credits: 4**

Theories of cognitive development. Comparison among major theorists on how knowledge, thought, and development are defined and studied. Current research, including cognitive development; memory; perceptual processes; language. Prereq: PSYC 402; PSYC 502; PSYC 581; or permission. Writing intensive.

Attributes: Writing Intensive Course

PSYC 785 - Social Development**Credits: 4**

Examines development of social interactions. Emphasizes important social relationships for the child (e.g., attachment to parents and friendships with peers). Considers other topics of relevance to social developmentalists, such as temperament, aggression, social cognition, and sex roles. Prereq: PSYC 402; PSYC 502; PSYC 581; or permission. Writing intensive.

Attributes: Writing Intensive Course

PSYC 791 - Advanced Topics**Credits: 4**

Advanced material in which instructor has specialized knowledge through research and study. May be repeated for different offerings. Topics under this listing may be used to fulfill a major requirement in category CII. A) Psychology as a Social Science, B) Social Psychology, C) Personality, D) Abnormal/Counseling, E) History of Psychology, F) Child Development, G) Adult Development. Prereq: PSYC 402; PSYC 502; plus other prerequisites when offered, or permission. Special fee with some topics.

PSYC 791W - Advanced Topics**Credits: 4**

Advanced material in which instructor has specialized knowledge through research and study. May be repeated for different offerings. Topics include: Close Relationships. Prereq: PSYC 402; PSYC 502; plus other prerequisites when offered, or permission. Writing intensive.

Attributes: Writing Intensive Course

PSYC 793 - Internship**Credits:** 4-8

Supervised practicum in one of several cooperating New Hampshire mental health/rehabilitation facilities. Coursework knowledge applied to meaningful work and team experience. Commitment includes a negotiated number of weekly work hours and weekly seminars. Supervision by institution personnel and the instructor. A maximum of 4 credits may be applied to the Psychology major. Course applications accepted beginning in March for fall term and October for spring term. Prereq: permission; PSYC major; PSYC 402; 502; 561 Pre- or coreq: PSYC 762.

PSYC 794 - Advanced Internship**Credits:** 1-8

Supervised advanced practicum experience in co-operating New Hampshire mental health/rehabilitation facilities. Expands and builds on experiences and skills acquired in PSYC 793. Commitment includes a negotiated number of hours of work per week and participation in weekly seminars. Supervision done by institution personnel and instructor. Prereq: PSYC 793; permission. 1 to 8 credits.

PSYC 795 - Independent Study**Credits:** 1-4

A) Physiological, B) Perception, C) History and Theory, D) Behavioral Analysis, E) Social, F) Cognition, G) Statistics and Methods, H) Experimental, I) Personality, J) Developmental, K) Counseling, L) Psychotherapy, M) Research Apprenticeship, N) Teaching of Psychology, O) Advanced Externship (content area to be determined). Arranged by the student with a psychology faculty sponsor. Learner/sponsor contract required. Minimum time commitment: three hours per credit per week. Enrollment by permission only. Prereq: PSYC 402; 502; or permission.

PSYC 797 - Senior Honors Tutorial**Credits:** 4

For senior psychology honors students. Students propose honors theses under the supervision of psychology faculty. Theses proposed and begun in this course are completed in PSYC 799. Prereq: admission to psychology honors program. (Typically offered in fall.)

PSYC 798 - Capstone**Credits:** 0

This is a zero credit course to indicate on the transcript that the capstone requirement is fulfilled. PSYC majors only.

PSYC 799 - Senior Honors Thesis**Credits:** 4

Under supervision of psychology department faculty members, students complete the honors projects proposed and begun in PSYC 797. The honors project, which should be empirical in nature, culminates in an oral presentation at the end of the semester. Prereq: admission to psychology honors program; PSYC 797. Special fee. (Typically offered in spring.)

Race & Ethnic Studies (RES)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

RES 795 - Independent Study**Credits:** 1-8

Open to qualified sophomores, juniors, and seniors. May include research project or fieldwork. To be elected only with permission of the coordinator and with qualified supervision.

Recreation Management & Policy (RMP)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

RMP 400 - Recreation Management and Policy Continuing Enrollment**Credits:** 0

This course enables BS students to maintain continuous enrollment in RMP as part of their matriculation plan until after their degree is formally awarded. Students registering for RMP 400 will pay a continuous enrollment fee. No credit. Special fee. RMP majors only.

RMP #444 - Building a Culture of Peace**Credits:** 4

Peace is more than just the absence of war. A culture of peace incorporates respect and dignity for all persons, stewardship of natural resources, a striving toward justice and equality, the non-violent resolution of conflicts, non-hierarchical decision-making and participatory community life. Students in this course explore the origins and concepts of peace culture. Students experience the elements of a culture of peace as they are empowered to create a peace culture within the classroom and as they share peace culture with a broader community through service learning projects.

Attributes: Social Science (Discovery); Inquiry (Discovery)**RMP 444A - Taking the "Dis" out of Disability****Credits:** 4

In contrast to the traditional view of disability as a defect, students learn how disability provides a unique vantage point on our world and can be perceived as an ordinary part of the twists and turns of life. Examines the history of social responses to disability, with an emphasis on the present day concepts of inclusion and self-determination. Students explore expressions of the disability experience through print and visual media. Writing intensive.

Attributes: Social Science (Discovery); Inquiry (Discovery); Writing Intensive Course**RMP 490 - Recreation and Leisure in Society****Credits:** 4

Examines the historical and philosophical foundation of recreation and leisure. Emphasizes concepts, theories, and the interrelationships between factors (social, economic, political, and environmental), which influence people's leisure attitudes and behavior. Explores implications of leisure for holistic and balanced living. Classes not allowed in section: Senior.

Attributes: Social Science (Discovery)**RMP 500 - Therapeutic Recreation Methods in Physical Rehabilitation Settings****Credits:** 1

This course introduces students to a variety of assistive techniques, devices and equipment used in Therapeutic Recreation settings that allow individuals with illnesses and disabilities achieve maximum independence and functional capacity to maintain optimal health and leisure functioning. Students learn and apply skills in anatomical orientation and positioning, universal precautions, assistive technology and adapted equipment for recreation including manual, power, sports, and all-terrain wheelchairs, wheelchair mobility skills, proper body mechanics, transfer and lifting techniques, ambulation assists, and sighted guide techniques. Prereq: RMP 490, 501, 502, permission.

Co-requisite: RMP 503

RMP 501 - Recreation Services for Individuals with Disabilities**Credits: 4**

Presents and discusses issues that concern the delivery of quality leisure services to individuals with disabilities in community settings. Classroom activities provide opportunities for practical experience.

RMP 502 - Foundations of Therapeutic Recreation**Credits: 4**

History and professional concepts of therapeutic recreation and the roles and functions of the therapeutic recreation specialist.

RMP 503 - Therapeutic Recreation Rehabilitation Principles & Interventions**Credits: 4**

Introduces the rehabilitation principles and recreational therapy interventions used by therapeutic recreation specialists to improve functioning for people with physical and cognitive impairments. Students learn and apply fundamental processes of clinical reasoning and treatment program planning to improve quality of life. A lab provides students with the opportunity to use a variety of assistive techniques, adaptive devices, and equipment to support individuals and achieve maximum independence and promote a healthy leisure lifestyle. Special fee. Prereq: RMP 490, RMP 501, RMP 502.

Co-requisite: RMP 500

RMP 504 - Therapeutic Recreation Mental Health Principles and Interventions**Credits: 4**

Introduces mental health principles and recreational therapy interventions to improve functioning for people with emotional, social, and behavioral impairments. Students will learn and apply fundamental processes of clinical reasoning and treatment program planning to improve quality of life for persons with emotional, social, and behavioral impairments. Restricted to RMP majors.

RMP 511 - Issues of Wilderness and Nature in American Society**Credits: 4**

Provides students with an overview of the evolving relationship between wilderness/nature and American society. Examines the philosophy, ethics, and societal values in American society and its relationship to our natural wilderness. Recent issues are used as case studies in order for students to articulate, defend, and critique the ethical issues presented. Students are responsible for understanding and applying philosophical approaches developed by philosophers, writers, and activists associated with the wilderness, sustainability, biodiversity, hunting, suburban sprawl, environmental activism, endangered species, organic foods, and genetic engineering.

Attributes: Humanities(Disc)

RMP 515 - History of Outdoor Pursuits in North America**Credits: 4**

Voluntary pursuits in the outdoors have defined American culture since the early 17th century. Over the past 400 years, activities in outdoor recreation and education have reflected Americans' spiritual aspirations, imperial ambitions, social concerns, and demographic changes. This course will give students the opportunity to learn how Americans' experiences in the outdoors have influenced and been influenced by major historical developments of the 17th, 18th, 19th and 20th, and early 21st centuries. This course is cross-listed with KIN 515.

Attributes: Historical Perspectives(Disc)

RMP 557 - Program and Event Design**Credits: 4**

This course introduces students to a range of approaches to recreation program and event design, and focuses on providing leisure experiences for all populations. Course topics include foundations of programming, program theories, needs assessment techniques, vision, mission, goals, and objectives, processes of group planning, public relations, program promotion, and program evaluation. Students will design and deliver a recreation program using a team approach. Prereq: RMP 490. Permission required.

RMP 559 - Program and Event Marketing**Credits: 4**

This course prepares students to apply marketing principles and strategies to recreation programs and events, including procedures for developing marketing plans for recreation and event organizations. Course content includes planning the marketing mix, with a focus on the recreation or event product, price, place, and promotion. The course covers the application of marketing and communication strategies delivered through social and audio-visual media. The culminating project consists of a marketing and communication plan for a recreation/leisure service agency. Prereq: RMP 490. Permission required. RMP Majors Only.

RMP 560 - Recreational Sport Management**Credits: 4**

Explores and examines the theoretical foundations and basic skill methods, and techniques necessary for the effective and efficient delivery of recreational sport programs within a variety of collegiate, public, quasi-public, and private settings, agencies and/or organizations.

RMP 563 - Recreation Management and Policy Practicum**Credits: 2**

Designed to provide first and second year RMP majors the opportunity to observe and practice leadership skills in clinical and community-based settings. Students complete a 40-45 hour practicum at an approved site. Successful completion of a practicum is prerequisite to the professional internship, RMP 664. Students are responsible for transportation and housing. Prereq: RMP 490. Permission required. May be repeated for a total of 4 credits. Cr/F.

RMP 565 - Introduction to Child Life**Credits: 4**

When facing acute, chronic or life-threatening illness and traumatic injuries, children and families have unique needs within the medical system. The purpose of this course is to provide an introduction to the theory and practice of the child life profession and family centered care. Topics include children's emotional reactions to hospitalization, use of play, preparation, and family support, designing healing environments, and specializations within the field. Permission required. (Also listed as HDF5 565).

RMP 593 - Special Topics**Credits: 2-4**

A) Camping and Outdoor Education for Individuals with Disabilities, B) State Parks: Their Management and Role, C) Therapeutic Recreation in the School Setting, D) Social Psychology of Leisure, E) New Hampshire's Recreation/Ski Industry, F) Child Life Internship, J) Campus Recreation Applied Leadership, K-Z) Interdisciplinary. Specialized courses covering information not presented in regular course offerings. Description of topics available in department office during preregistration. Prereq: RMP majors or permission. May be repeated but not in duplicate areas. Special fee for RMP 593G. Cr/F.

RMP 593W - Special Topics**Credits:** 2-4

A) Camping and Outdoor Education for Individuals with Disabilities, B) State Parks: Their Management and Role, C) Therapeutic Recreation in the School Setting, D) Social Psychology of Leisure, E) New Hampshire's Recreation/Ski Industry, F) Child Life Internship, J) Campus Recreation Applied Leadership, K-Z) Interdisciplinary. Specialized courses covering information not presented in regular course offerings. Description of topics available in department office during preregistration. Prereq: RMP majors or permission. May be repeated but not in duplicate areas. Special fee for RMP 593G. Writing intensive.

Attributes: Writing Intensive Course**RMP 603 - New Hampshire Ski Industry Management****Credits:** 4

This course examines the New Hampshire ski and snowboard industry from several distinct but interrelated perspectives: social, technological, environmental, historical, economic, and operational. Students will explore skiing as a holistic and fulfilling segment of the outdoor recreation field, while gaining an understanding of its interdependence with the state's economy, the natural environment, and New Hampshire's unique cultural history. The influence of New Hampshire's ski industry on the history and growth of the American ski industry will be examined, and the impacts of climate change and other environmental issues will be investigated in light of ongoing societal shifts and relevant technological advancements.

RMP 612 - Therapeutic Communication and Facilitation Techniques in Therapeutic Recreation**Credits:** 4

Addresses specific clinical knowledge and skills essential to therapeutic recreation service delivery including clinical interviewing, group process, leisure education, treatment approaches, and intervention techniques. Prereq: RMP 490. Permission required.

RMP 613 - Interventions and Documentation in Therapeutic Recreation**Credits:** 3

This course emphasizes theory and concepts in clinical intervention within therapeutic recreation settings. Students learn to identify and select appropriate facilitation techniques for a variety of client needs. Students also learn to write and interpret practice-based documentation. Students are afforded the opportunity to practice and apply concepts learned. Prereq: RMP 490. Permission required. Only open to RMP. Therapeutic Recreation majors.

RMP 614 - Assessment and Treatment Planning in Therapeutic Recreation**Credits:** 4

Addresses the principles of activity analysis, client assessment, documentation, individualized program planning, selection of interventions, and collaboration with a treatment team. Prereq: RMP 612/RMP 613. Permission required. Writing intensive.

Attributes: Writing Intensive Course**RMP 615 - Clinical Lab in Therapeutic Recreation****Credits:** 2

A clinical lab that provides students with the opportunity to apply principles central to the effective delivery of therapeutic recreation individualized treatment planning, client assessment, documentation, and activity analysis with members of one of two community sites located in the Seacoast region. Students are required to participate in weekly sessions (five to six hours per week) for a total of 15 weeks. Prereq: RMP 612/RMP 613. Permission required. Cr/F.

RMP 654 - Professional Development and Ethics**Credits:** 2

Focuses on preparing students for the internship experience through the identification of career goals and the selection of an approved internship site. A portfolio emphasizing process skills in resume construction, interviewing techniques, establishing internship goals and objectives, and self-assessment is developed. Securing Certification in Basic First Aid and CPR (infant, child, adult) is a component of this course. Majors only. Prereq: permission. Letter Grade/IA (continuous grading).

RMP 661 - Recreation and Event Leadership**Credits:** 4

This course is designed to expose students to fundamental principles of leadership, communication, group facilitation, motivation, employee management, conflict resolution, and development of professional ethics. Students will develop techniques for the exercise of leadership in group and organizational settings associated with recreational programs and events. Students are expected to apply the leadership principles, theories, and techniques to small group exercises and activity leadership requirements. Prereq: RMP 490, RMP Majors only; permission required.

RMP 663 - Recreation and Event Management**Credits:** 4

This course introduces students to various management processes. These processes include fiscal and budget development and management; policy development and implementation; recreational facility design, operation, and functions. Students gain insight into key areas of management through visitation to recreation and event venues and facilities. RMP Majors Only. Prereq: RMP 490 permission required.

RMP 668 - Youth Culture and Programs**Credits:** 4

Emphasizes the identification of community and personal issues youth face in growing up as well as institutional and programmatic support available to assist youth. The course also examines the leadership, administrative, financial, and marketing tools necessary to develop successful youth programs and services. Service learning fieldwork and the completion of a background check are required. Prereq: RMP, RMP:PA or RMP:TR Majors Only or by permission of the instructor. Writing intensive.

Attributes: Writing Intensive Course**RMP 680 - Festival and Event Planning****Credits:** 4

Introduces the planning, marketing, management, and evaluation of festivals and special events. Explores the theories and practices relevant to successful event planning for host community residents and visitors. Prereq: RMP 557 (majors); or by instructor permission (non-majors). Sophomores, Juniors, and Seniors only.

RMP 700H - Senior Honors Project**Credits:** 4-6

Under the direction of an RMP faculty member, students complete either a supervised research or applied field study project that builds on their honors coursework. Students submit a written proposal for approval and present the results at the completion of their project. Applied studies address a specific need or problem of a local agency or organization. Prereq: permission required.

RMP 705 - Management and Policy in Therapeutic Recreation**Credits: 4**

Addresses National Council for Therapeutic Recreation Certification knowledge areas concerning management competency. Students acquire knowledge of current principles and procedures for assuming an administrative role in the therapeutic recreation profession. Issues and practices related to budgeting, reimbursement, quality improvement programs, and comprehensive program planning. Prereq: RMP 612, RMP 613. RMP.TR majors only.

RMP 711 - Recreation Resource Management**Credits: 4**

Examines the supply and demand of natural resources for outdoor recreation uses, with emphasis on relationships between public and private roles and responsibilities. Social, environmental, and economic impacts of outdoor recreation use are discussed. Current principles and techniques of recreation resource planning and management are outlined. Prereq: seniors or permission.

RMP 720 - Adaptive Sports and Recreation Facilitation**Credits: 4**

This course takes a strengths-based approach to examining adaptive sports and recreation, with a focus on best practices and risk management in community-based settings. This is an experiential learning course, whereby students will learn how to design, plan, and facilitate a variety of adaptive sports for people with disabilities. Students will learn and apply processes for selecting, fitting, and adjusting adaptive sports and recreation equipment for individuals with disabilities. A special course fee will apply.

RMP 724 - Grantsmanship, Evaluation, and Research**Credits: 4**

Emphasizes understanding and application of grantsmanship, research techniques, and research writing. Addresses the process of program planning and grant proposal development. Examines research methodologies and the evaluation processes as applied to recreation and allied health settings. Critical assessment of uses and limitations of research for recreation. Prereq: RMP 557, and junior or senior RMP major or permission. Writing intensive.

Attributes: Writing Intensive Course**RMP #730 - Camp Administration and Leadership****Credits: 4**

Provides students with an understanding of administrative and organizational practices in structured camp settings. Students are exposed to the theory, practice, and challenges of program planning for youth and adult development within the recreation context of camping. Explores current sociological, environmental, economical, and legislative trends influencing contemporary camp management. Permission required.

RMP 750 - Aging, Advocacy, and Active Learning**Credits: 4**

This course explores the impact of advocacy and social action programs for the aging adult. Course content is explored through the lens of active living emphasizing how leisure and recreation contribute to optimal experiences in later adulthood. Course content includes facilitating the learners' understanding of later life issues within the broader context of health and well-being at the local, state, and national levels. There is an applied action component to this course using a service learning framework.

RMP 760 - Program Administration in Recreational Sport**Credits: 4**

This course focuses on the administration and development of participant-based community sport and recreation programs. The course emphasizes the organizational, administrative, and planning competencies to effectively manage these programs. A focus on problems, and the development of research-oriented solutions related to the administration of community sport and recreation programs will also be emphasized.

RMP 764 - Internship**Credits: 10-16**

Supervised professional work experience in an approved recreation, park, tourism or health care agency. Students participate in a 10-16-week, 400-640 hour internship experience after receiving approval from their Professional Mentor and the Internship Coordinator. Prereq: majors only; permission. Cr/F.

RMP #768 - Theories and Philosophies of Youth Development**Credits: 4**

This course provides students with a foundation in the theories and philosophies associated with the field of youth development. In this course, students critically analyze the strengths, limitations, and potential applications of various theories, philosophies, and ideas. Examples include: Developmental Systems Theory, Ecological Systems Theory, protective factors, and developmental assets. Students work or volunteer with a youth program for the duration of the semester in order to facilitate application of course concepts.

RMP 770 - Management and Design of Recreation and Park Facilities**Credits: 4**

Provides students with an orientation to the theories, design, operation, and functions of recreational facilities. Topics include facility development, operational considerations, and auxiliary functions that impact the manager's role. Students gain insight into key areas of facility management through visitations to actual facilities. Special fee.

RMP 772 - Law and Public Policy in Leisure Services**Credits: 4**

Topics including the law of torts, contracts, property, civil rights, risk management, and legal research are addressed in the context of leisure services and recreation resources. Public policy and professional advocacy implications are examined in relation to legislative and judicial systems. Prereq: RMP 557, RMP 663, and senior RMP major or permission. Writing intensive.

Attributes: Writing Intensive Course**RMP 775 - Entrepreneurial and Commercial Recreation****Credits: 4**

Principles of business planning and development as applied to the private sector leisure services industry. Emphasizes knowledge of key commercial leisure services profiles and their intersection with allied professions such as hospitality and tourism. Course topics include entrepreneurship, business planning, needs assessment, product development, selling, financing, legal designations, and business operations leading to the development of a business plan for a new entrepreneurial recreation enterprise.

RMP 793 - Advanced Topics**Credits: 2-4**

A) Area and Site Planning, B) Concepts and Trends in Therapeutic Recreation, and C) Conference Planning. Topics presented by instructors with specialized knowledge gained through professional practice, research, and study. Descriptions of topics available in department office during preregistration. May be repeated but not in duplicate areas. 2 to.

RMP 796 - Independent Study**Credits:** 1-4Individual study and/or research relating to leisure-oriented topics.
Prereq: permission.**RMP 796W - Independent Study****Credits:** 1-4Individual study and/or research relating to leisure-oriented topics.
Prereq: permission. Writing intensive.**Attributes:** Writing Intensive Course

Religious Studies (RS)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

RS 483W - History of World Religions**Credits:** 4

Introduces the religions of the world in terms of historical development, relationship to society, belief system, central texts, and ritual practices. (Also offered as HIST 483.) Writing intensive.

Attributes: Historical Perspectives(Disc); Writing Intensive Course**RS 600 - Special Topics****Credits:** 4

Studies of particular religious traditions, or periods within those traditions, or special topics and issues of concern within religious studies such as mythology, ritual, mysticism, etc. May be repeated up to a maximum of 12 credits.

RS 601 - Seminar in Religious Texts**Credits:** 4

Close study of sacred text(s) from a particular religious tradition (Islam, Christianity, Buddhism, Judaism, etc.) or a thematic selection of texts across religions. (Also offered as HIST 601.)

RS 699 - Seminar in Religious Studies**Credits:** 4

Advanced discussion of a particular theme in religious studies, meant both to give students a solid foundation in classic theories of religion and to explore new authors and ideas. Past topics have included ritual, possession, magic, and apocalypticism. Classes are in seminar format and culminate in a final research paper. (Priority to minors in Religious Studies.) Prereq: permission.

RS 795 - Independent Study**Credits:** 2 or 4

Independent study of traditions, topics, or figures within the scope of religious studies. Before registration, student must formulate a project and secure consent of a cooperating program/faculty member who will supervise the independent study.

RS 796 - Independent Study**Credits:** 2 or 4

Independent study of traditions, topics, or figures within the scope of Religious Studies. Before registration, student must formulate a project and secure consent of a cooperating program/faculty member who will supervise the independent study.

Russian (RUSS)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

RUSS 401 - Elementary Russian I**Credits:** 4

For students without previous training in Russian. An introduction to contemporary standard Russian. Includes a cultural component. Topics include those which enable students to function in Russian in everyday situations (i.e. food, leisure activities, literature, transportation, music, sports, daily life.) Special fee.

RUSS 402 - Elementary Russian II**Credits:** 4

See description for RUSS 401.

Attributes: Foreign Language Requirement**RUSS #425 - Introduction to Russia: Contemporary Society and Culture****Credits:** 4

Introduction to contemporary Russian society and culture in English. Examines the "Russian mind" (as it was before 1917), the "Soviet mind," and how the two have clashed. A closer examination of how the Russians are adapting to the changes that have taken place in their country since the collapse of communism. Readings, films, realia. Themes to be discussed include leadership; authority and power; the Russian soul; family, women, youth, education, holidays and celebrations; and the new Russians. Special fee.

Attributes: World Cultures(Discovery)**RUSS 425M - Topics in Russian Culture and Society in Moscow****Credits:** 4

Introduction to contemporary Russian society and culture in English. Examines the "Russian mind" (as it was before 1917), the "Soviet mind" and how the two have clashed. A closer examination of how the Russians are adapting to the changes that have taken place in their country since the collapse of communism. Readings, film, realia. Themes to be discussed include leadership; authority and power; the Russian soul; family; women, youth, education, holidays and celebrations, and the new Russians. Through pre-departure readings and on location, each culture and historical topic is taught on site during field trips and after field trip discussions, lectures, and round tables. A focus topic is explored on location with pre- and post program research. Special fee. Permission required.

Attributes: World Cultures(Discovery)**RUSS 500 - Selected Topics in World Literature****Credits:** 4

Topics are chosen that introduce students to major themes and genres. (Also offered as CLAS 500, FREN 500, GERM 500, ITAL 500, PORT 500, SPAN 500.) May be repeated for credit. Special fee.

RUSS 500W - Topics in World Literature**Credits:** 4

Topics are chosen that introduce students to major themes and genres. (Also offered as CLAS 500, FREN 500, GERM 500, ITAL 500, PORT 500, SPAN 500.) May be repeated for credit. Special fee. Writing intensive.

Attributes: Writing Intensive Course**RUSS 503 - Intermediate Russian I****Credits:** 4

Continued work in grammar, and writing with cultural components. A review of the fundamentals of grammar and syntax. Readings and cultural material included. Topics include: university life, travel, cultural activities, cooking, politics. Special fee.

Attributes: World Cultures(Discovery)

RUSS 504 - Intermediate Russian II**Credits:** 4

Continued work in grammar, and writing with cultural components. A review of the fundamentals of grammar and syntax. Readings and cultural material included. Topics include: university life, travel, cultural activities, cooking, politics. Special fee.

Attributes: World Cultures(Discovery)**RUSS #521 - Devils, Deities, and Madness in Russian Literature****Credits:** 4

Introduces Russian literature from a variety of perspectives. Selected works by famous and lesser known Russian writers on the themes of devils, deities, and madness. Literary texts, as well as film versions of literary texts, are considered in their historical and cultural contexts. Lectures, readings, and discussions in English. Open to all students, including freshmen. No prerequisites. Special fee.

Attributes: Inquiry (Discovery)**RUSS 521W - Devils, Deities, and Madness in Russian Literature****Credits:** 4

Introduces Russian literature from a variety of perspectives. Selected works by famous and lesser known Russian writers on the themes of devils, deities, and madness. Literary texts, as well as film versions of literary texts, are considered in their historical and cultural contexts. Lectures, readings, and discussions in English. Open to all students, including freshmen. No prerequisites. Special fee. Writing intensive.

Attributes: Humanities(Disc); Inquiry (Discovery); Writing Intensive Course**RUSS #522W - Morality, Sex and Revolution in Russian Literature****Credits:** 4

Introduces Russian literature from a variety of perspectives. Selected works by famous and lesser known Russian writers on themes of morality, sex, and revolution. Literary texts, as well as film versions of literary texts, are considered in their historical and cultural contexts. Lectures, readings, and discussions in English. Open to all students, including freshmen. No prerequisites. Special fee. Writing intensive.

Attributes: Humanities(Disc); Inquiry (Discovery); Writing Intensive Course**RUSS 525 - Russia: Mythology and Propaganda****Credits:** 4

Exploration of the relationship between mythology and culture as a part of the cultural identity of the Russian people, before the 1917 Revolution, during the Communist period, and since the fall of the Soviet Union.

Focus on pre 1917 Slavic pagan, Christian, and folk mythology vis-a-vis Western mythology, on 20C propaganda and control of the "public mind" designed to reshape national identity and on the current deconstruction, reform, and rebirth of the old mythology. Special fee.

Attributes: Historical Perspectives(Disc)**RUSS 525M - Russia: Mythology and Propaganda in Moscow****Credits:** 4

Exploration of the relationship between mythology and culture as a part of the cultural identity of the Russian people, before the 1917 Revolution, during the Communist period, and since the fall of the Soviet Union.

Focus on pre 1917 Slavic pagan, Christian, and folk mythology vis-a-vis Western mythology, on 20C propaganda and control of the "public mind" designed to reshape national identity and on the current deconstruction, reform, and rebirth of the old mythology. Course conducted on location in Russia and on line. Special fee.

Co-requisite: INCO 589**Attributes:** Historical Perspectives(Disc)**RUSS 531 - Russian Language for Heritage Speakers****Credits:** 4

Intensive 5 week on-line course for Russian heritage speakers. Learn cursive Cyrillic; spelling rules, language structure. Build vocabulary to achieve a higher level of language expression. Grammar topics based on culture related text. Course is fully on line (quizzes, tests, video, supporting materials, on line meetings.) For students who can speak Russian, but who have not formally learned Russian. Special fee.

RUSS #593 - Myths, Visions and Issues in Russian Literature and Society**Credits:** 4

Discussion and analysis of topics and authors in Russian literature, film, and culture. A variety of different topics or authors is covered each semester. (A) the Giants of Russian Literature: Dostoevsky and Tolstoy, (B) Dostoevsky, (C) Tolstoy, (D) Jewish Voices in the Russian Empire, (E) The Devil in Russian Literature, (F) the Myth of St. Petersburg, (G) Death and Revolution, (H) Russian Fairy Tales, (I) Drama, (J) Women's Voices, etc. Lectures, readings, and films with English subtitles, and discussions in English. Open to all students. Special fee.

RUSS 595 - Russian Practicum**Credits:** 2

Participants earn credit for approved, uncompensated, pre-professional activities and special projects, including K-12 outreach, assisting in undergraduate courses, work with professional organizations, businesses, social services, non-profits, NGOs or educational organizations in a Russian context and with on-site supervision. Writing assignments are required and vary depending upon the project. Enrollment limited to sophomores, juniors and seniors who are Russian majors and have a B or above average in Russian language courses. Cr/F.

RUSS 601 - Russian Conversation and Phonetics**Credits:** 4

Practical application of fundamental phonetic theory of spoken Russian. Designed to increase fluency and accuracy in conversation. Prereq: RUSS 504 with a grade of C or better; permission. Special fee.

RUSS 631 - Advanced Russian Conversation and Composition**Credits:** 4

Advanced spoken and written Russian designed to include all four language skills (speaking, reading, writing, listening.) Readings on contemporary cultural topics and vocabulary building. Composition and conversation based on Russian-language media and literature. Special fee.

RUSS 632 - Advanced Russian Conversation and Composition**Credits:** 4

Advanced spoken and written Russian designed to include all four language skills (speaking, reading, writing, listening.) Readings on contemporary cultural topics and vocabulary building. Composition and conversation based on Russian-language media and literature. Special fee.

RUSS 685 - Study Abroad**Credits:** 16

Studies at a Russian institution of higher learning. Interested students should consult with a Russian advisor. Prereq: primarily for juniors and seniors who have completed RUSS 632 or equivalent with a grade of B (3.00) or better. Special fee. Cr/F. (IA grade will be assigned until official transcript is received from the foreign institution.)

RUSS 686 - Study Abroad**Credits:** 4-16

Studies at a Russian institution of higher learning. Interested students should consult with a Russian advisor. Prereq: primarily for juniors and seniors who have completed RUSS 632 or equivalent with a grade of B (3.00) or better. Special fee. Cr/F. (IA grade will be assigned until official transcript is received from the foreign institution.)

RUSS 691 - Readings in Russian Literature**Credits:** 1-4

Linguistic and stylistic characteristics of works of important authors of the 19th and 20th centuries. Readings, lectures, and papers entirely in Russian. Special fee. Writing intensive.

Attributes: Writing Intensive Course**RUSS #693 - Myths, Visions and Issues in Russian Literature and Society****Credits:** 4

Same as RUSS #593, except that in addition majors are required to do selected readings in Russian and/or conduct research assignments in English on a specified topic. Final project required. Writing intensive option. Special fee.

RUSS 721 - Topics in Contemporary Russian Literature: From Chekhov to Post-Modernism**Credits:** 4

Reading, discussion, and close analysis of works of prose fiction and/or poetry from post-19th-century Russian literature within various contexts (literary-historical, socio-political, cultural, artistic, etc.) of the given period. All readings, written assignments, and class discussion in Russian. Prereq: RUSS 691 or equivalent or by permission. Special fee. Writing intensive.

Attributes: Writing Intensive Course**RUSS 725 - Topics in Russian Culture and Society****Credits:** 4

Historical, geographical, social, political, intellectual and artistic developments in Russia that have influenced contemporary Russian society and culture. Readings, class discussions, and films. Conducted entirely in Russian. Special fee. Writing intensive.

Attributes: Writing Intensive Course**RUSS 725M - Topics in Russian Culture and Society in Moscow****Credits:** 4

Historical, social, political, intellectual and artistic developments in Russia that have influenced contemporary Russian society and culture. Designed to give a deeper introspection into Modern Russian and its society, and a firsthand dialogue with the most significant sites in Russian civilization. Through pre-departure readings and on location, each cultural and historical topic is taught on site during fieldtrips and after field trip discussions. Readings, class discussions and films. Conducted entirely in Russian. A focus topic is explored on location with pre and post program research. Special fee. Prereq: RUSS 504 or equivalent.

RUSS 733 - History of Slavic Languages and Culture**Credits:** 4

A survey of the history of the Russian language in a historical and cultural context. Overview of the changes in sounds, structure and vocabulary from Proto-Indo-European through Old Church Slavic, Old Russian to contemporary Russian. Readings and discussions of historical events, culture and civilization parallel the chronology of the studied linguistic period. Special fee.

RUSS 790 - Advanced Language and Style**Credits:** 4

For students who have a strong, active control of grammar. The most difficult problems of Russian grammar and syntax in poetry and prose. Develops confidence in expression both in everyday situations and in abstract concepts (emphasis on the latter). Prereq: grade of C or better in last Russian language course taken. Special fee. Barring duplication of material, may be repeated for a maximum of 8 credits. Writing intensive.

Attributes: Writing Intensive Course**RUSS 795 - Independent Study****Credits:** 1-4

Open to highly qualified juniors and seniors. To be elected only with permission of the Russian program coordinator and the supervising faculty member or members. Barring duplication of subject, may be repeated for credit. Special fee.

RUSS 796 - Independent Study**Credits:** 1-4

Open to highly qualified juniors and seniors. To be elected only with permission of the Russian program coordinator and the supervising faculty member or members. Barring duplication of subject, may be repeated for credit. Special fee.

RUSS 797 - Special Studies in Russian Language, Literature, and Culture**Credits:** 2 or 4

Selected topics in language, literature, and culture. Barring duplication of subject, may be repeated for credit. Special fee. Writing intensive.

Attributes: Writing Intensive Course**RUSS 798 - Special Studies in Russian Language, Literature, and Culture****Credits:** 2 or 4

Selected topics in language, literature, and culture. Barring duplication of subject, may be repeated for credit. Special fee. Writing intensive.

Attributes: Writing Intensive Course

Sign Language Interpreting (INTR)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

INTR 430 - Introduction to Interpretation**Credits:** 4

A survey of traditional and contemporary perspectives on interpretation and interpreters; introduces the cognitive processes involved in interpretation and factors that influence those processes. Several models of interpretation explored. Particular attention given to interpretation as an intercultural, as well as inter-lingual, process. Students engage in a research project related to course content.

INTR 438 - A Socio-cultural Perspective on the Deaf Community**Credits:** 4

Introduction to the deaf community and deaf culture. Discussion of similarities to, and differences from, mainstream hearing culture. Supplemental videotapes focus on aspects of culture including deaf education, autobiographical sketches, deaf norms and values, and deaf literature and folklore. Theoretical issues of culture and linguistics applied to deaf culture, American Sign Language, and the variety of cultural perspectives of the deaf community. Students engage in a research project related to course content. Pre- or Coreq: ENGL 401. Writing intensive.

Attributes: Social Science (Discovery); Writing Intensive Course**INTR 439 - Ethics and Professional Standards for Interpreters****Credits:** 4

Seminar course using readings, theory, and discussion of hypothetical situations and role plays to explore ethical standards and dilemmas in ASL-English interpretation. Covers personal and professional values, ethics, and morality; professional principles; power, responsibility, and group dynamics; the interpreter's role; cross-cultural issues; and the decision-making process. Students engage in a research project related to course content. Prereq: INTR 430. Writing intensive.

Attributes: Writing Intensive Course**INTR 539 - Comparative Linguistic Analysis for Interpreters****Credits:** 4

Examines the basic similarities and differences between the linguistic structure of American Sign Language and spoken English; focuses on each language's communication functions and how they serve these functions. Students engage in a research project related to course content. Prereq: ENGL 505; Pre-or Coreq: ASL 532.

INTR 540 - Translation**Credits:** 4

Introduction to theory and practice of translation. Students analyze pre-prepared interpretations and translations to discover how expert interpreters and translators construct meaning in the alternate language. Particular attention paid to the form/meaning distinction. Students prepare translations from texts of their choosing. Pre- or Coreq: ASL 532. Lab.

INTR 599 - Special Topics**Credits:** 1-4

Occasional offerings dependent on availability and interest of faculty. Barring duplication of subject, may be repeated up to a maximum of 8 credits.

INTR 630 - Consecutive Interpretation I**Credits:** 4

Introduction to the theory and practice of consecutive interpretation. Analyzes and integrates specific subtasks of the interpreting process culminating in the performance of prepared and spontaneous consecutive interpretations. Students work with a variety of texts, language models, and settings with the goal of engaging in the consecutive interpreting process by chunking information and constructing meaning in the alternate language. Prereq: INTR 540. Lab.

INTR 636 - Consecutive Interpretation II**Credits:** 4

Continues and advances the theory and practice of consecutive interpretation and introduces simultaneous interpretation. The focus of this course is on interactive discourse (dialogues). Particular attention is given to processes involved in the transition from consecutive to simultaneous interpreting, and determining when to use each mode of interpretation. The advantages and limitations of both types of interpreting are compared. Students apply theoretical information to the process of simultaneous interpreting. Students also engage in a research project related to course content. Prereq: INTR 630. Lab.

INTR 732 - Simultaneous Interpretation**Credits:** 4

Focuses on simultaneous interpretation of expository discourse (presentations). Students further explore and apply theory learned in INTR 636 to a variety of texts, language models, and settings. Students engage in a research project related to course content. Prereq: INTR 636. Lab. Writing intensive.

Attributes: Writing Intensive Course**INTR 734 - Field Experience and Seminar I****Credits:** 4

Gives students the opportunity to observe professional working interpreters, with some direct interpreting experience as deemed appropriate. Students integrate knowledge, theoretical understanding, and skills acquired in the interpreting program by working closely with on-site supervisors (interpreters) in addition to attending a bi-weekly seminar with the UNHM field experience coordinator. Pre- or Coreq: INTR 732.

INTR 735 - Field Experience and Seminar II**Credits:** 4

Gives students the opportunity to gain supervised interpreting experience. Students engage in actual interpreting assignments and receive support and mentorship from a professional interpreter, enabling them to integrate knowledge, theoretical understanding, and skills acquired in the interpreting program. Students work closely with on-site supervisors (interpreters) in addition to attending a biweekly seminar with the UNHM field coordinator. Prereq: INTR 734.

INTR 798 - Special Topics**Credits:** 4

Selected topics that vary by semester. Possible course topics are interpreting in educational settings, working with specific populations, or other topics of importance to interpretation. Descriptions available in departmental office during preregistration. Students engage in a research project related to course credit. Prereq: INTR 636; permission. May be repeated for credit if topics differ.

Social Work (SW)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

SW 424 - Introduction to Social Work**Credits:** 4

Introduces the learner to the field of social work with emphasis on the "person-in-environment" and attention to a range of practice approaches to understanding and assisting of the human condition. An overview of the history, values, and ethics of the profession. Includes various fields of practice in which social workers are employed. Special fee.

SW 440A - Honors/Healthy Communities: Personal Accountability and Social Change**Credits:** 4

This course utilizes theory and concepts from biology, sociology, psychology, political science, history, urban planning as well as social work to examine and promote healthy communities. Students will develop an interdisciplinary knowledge of community health and a value-based understanding of social advocacy in the community context. Important course topics include: social-economic-environmental justice, sustainable communities, community organization, community capital, and empowerment. Prereq: permission.

Attributes: Social Science (Discovery)**SW 444 - You've Got Your Troubles, I've Got Mine****Credits:** 4

A seminar for traditional first- or second-year students. Examines the many personal losses typical for students leaving home for the first time. Guest speakers from various disciplines (e.g., social work, therapeutic recreation, nursing, family studies). The various ways one may find and give informal support to others dealing with loss are explored. In addition, the personal responses allowing one to better cope with adversity and ways of expressing grief are explored. Group work brings the class together as an informal support network. Students exchange ideas in techniques used to deal with personal loss and develop an informal support network to use after the course has ended.

Attributes: Social Science (Discovery); Inquiry (Discovery); Writing Intensive Course**SW 525 - Social Welfare Policy: History of Social and Economic Justice****Credits:** 4

An overview of the history and current status of social welfare policy in the United States. Considers the origins, development, and analysis of significant policies, values, attitudes and other issues related to the social welfare system and the delivery of service. Focuses on policy analysis from a social and economic justice perspective.

Attributes: Historical Perspectives(Disc)**SW 550 - Human Behavior and Social Environment I****Credits:** 4

Introduces human behavior and development as it influences and is influenced by multiple factors in the social environment, including individual genetic and biological composition, race, gender, age, socioeconomic status, ethnicity, geographic location, physical appearance, and ability. How these factors operate throughout the life cycle. Provides a knowledge base and perspective to understand a client's behavior, attitude, and values in relation to the attitudes and values of the social work professional and the larger society.

Attributes: Social Science (Discovery)**SW 551 - Human Behavior and Social Environment II****Credits:** 4

Agents of socialization that most significantly affect family, group, and organizational development and behavior within an ecosystems framework. Particular attention is paid to the influence of class, gender, race, ethnicity, religion, age, sexual orientation and other aspects of diversity on development and behavior of larger systems.

Attributes: Social Science (Discovery)**SW 565 - Introduction to Child Life****Credits:** 4

When facing acute, chronic, or life-threatening illness and traumatic injuries, children and families have unique needs within the medical system. The purpose of this course is to provide an introduction to the theory and practice of the child life profession and family centered care. Topics include children's emotional reactions to hospitalization, use of play, preparation, and family support, designing healing environments, and specializations within the field.

SW 601 - Research Methods in Social Work**Credits:** 4

Introduces students to practitioner-researcher role in social work. Critical evaluation of, and introduction to research including project design, survey and evaluative methodologies. Introduction to statistics used in research process. Each student completes an individual research project. Cannot be taken for credit after SOC 601 or PSYC 502. Prereq: SW 424 and junior or senior standing or permission. Writing intensive.

Attributes: Writing Intensive Course**SW 622 - Social Work Practice: Interventions with Individuals and Families****Credits:** 4

Introduces methods and practice. Basic principles, values, and ethics, interviewing skills, problem assessment, and contracting of social work practice with individuals and families are studied. Skills training in lab sessions. Prereq: SW 424 or permission of instructor. Must have junior or senior status. Writing intensive.

Attributes: Writing Intensive Course**SW 623 - Social Work Practice: Interventions with Groups, Organizations and Communities****Credits:** 4

Continuation of SW 622. Delineation and study of intervention and change strategies differentiated with individuals, groups, and communities. Prereq: SW 622. Writing intensive.

Attributes: Writing Intensive Course**SW 625 - Social Welfare Policy in a Global Context****Credits:** 4

Builds on the curricular content covered in Introduction to Social Welfare Policy (SW 525). Both courses view social welfare policy as the framework from which social work services are developed and delivered. This course examines the macroeconomic context for policy analysis and advocacy and integrates policy and practice through student research and analysis of specific social problems. Policymaking is analyzed in legislative, community, organizational, and global environments emphasizing advocacy in the pursuit of social and economic justice. Prereq: SW 424, SW 525. Special fee.

SW 640 - Social Work Field Experience I**Credits:** 5

Majors are placed in a social welfare setting for a minimum of 225 hours; individual arrangements with faculty coordinator. Prereq: SW 622. Special fee. (No credit toward a minor.) Cr/F.

Co-requisite: SW 640A

SW 640A - Social Work Field Experience I: Seminar**Credits: 3**

This weekly seminar, held concurrently with Social Welfare Experience I, integrates the field experience with social work theory and concepts learned throughout the curriculum by class discussion, exercises, readings and written assignments. Seminar I provides an opportunity for orientation to field, an overview of field requirements, review of the Code of Ethics, and use of small group discussion for problem solving. Students learn to use supervision effectively, to participate in the helping process, and to manage their own stress. Students learn to assess the impact of policy on the client system, agency and worker and to use research to inform practice. Prereq: SW 622.

Co-requisite: SW 640

SW 641 - Social Work Field Experience II**Credits: 5**

A continuation of SW 640 with a minimum of 225 hours. Prereq: SW 640. (No credit toward a minor.) Cr/F.

Co-requisite: SW 641A

SW 641A - Social Work Field Experience II: Seminar**Credits: 3**

This is a continuation of Social Welfare Field Experience I: SW 640A and builds upon the concepts presented in the student's first field practice seminar. This seminar meets weekly for one and a half hours and is held concurrently with the field placement. It is designed to integrate the field experience with social work concepts through class discussion, reading and written assignments. Topics include but are not limited to, understanding and using agency structure to enhance client interactions, preparing client assessment and other documents, enhancing the client-worker therapeutic interaction, effective use of supervision, effective use of self in practice, prevention of burn-out, termination with clients and with agency staff, and values and ethics. Prereq: SW 640/SW 640A.

Co-requisite: SW 641

SW 650 - Exploring Social Justice and Cultural Competency Using an Experimental Learning Approach**Credits: 4**

This course explores the use of experiential activities to address social justice issues and cultural competency. Students will experience an interactive activity-based approach to build self-awareness and techniques for working with specific client groups. The course focuses on methods and activities using metaphoric development and facilitation to promote dialogue and reflection. (can be used to satisfy SW Distribution Requirement).

SW 697 - Special Topics in Social Welfare**Credits: 4**

Seminar for advanced majors. Topics may include: Alcohol and Alcoholism, Drugs and Chemical Dependency, Income Maintenance, Health Care, Child Welfare, Aging, Mental Health, or Developmental Disabilities, or study travel experiences. May be repeated for different topics. Prereq: permission. Special fee for course trip.

SW #701 - Women and Aging**Credits: 4**

Analysis of the major theories about social conditioning of aging women and its effects in contemporary society. Human service response. psychosocial, biological, legal, and economic implications. Prereq: junior, senior status or permission.

SW 705 - Child and Adolescent Risks and Resiliency: Program, Policy and Practice**Credits: 4**

Examination of the major policy and program questions of child welfare with a focus on child care and protection, adoption and foster care, juvenile delinquency, service delivery, and concepts of treatment in public and private programs. Prereq: junior, senior status or permission.

SW 706 - Social Action in the Dominican Republic**Credits: 4**

This course examines issues of culture, poverty, social development and social justice in the Dominican Republic through both service learning work and through preparatory and reflective class sessions and discussions. Students will examine social and economic development issues within a global framework and will explore efforts to improve conditions on this island nation. The service learning component includes working on a designated construction project and volunteering in a local elementary school. Students will also collaborate with community leaders to learn more about social, cultural and historical issues and will engage in a variety of cross-cultural activities. Students will engage with the local Haitian immigrant community, tour local schools and orphanages, and visit historical areas including the Zona Colonial of Santo Domingo. The primary part of the class will take place during March spring break. Special fee.

Co-requisite: INCO 589

SW 711 - Understanding Mental Illness**Credits: 4**

An overview of the public mental health system focusing on people affected by severe and persistent mental illness. Reviews the current service system and its history; major mental illness, psychosocial rehabilitation, and treatment; and community support systems. Prereq: junior, senior status or permission.

SW 712 - Understanding Developmental Disabilities**Credits: 4**

Analysis of the complex social contexts of people with developmental disabilities. Explores and questions traditional approaches and the current system. Examines family and community services and resources. Prereq: junior, senior status or permission.

SW 713 - School Social Work**Credits: 4**

The course examines the school as a social institution that serves to educate and socialize children into US society and the role of the social worker in the school setting. Readings, activities, and discussions provide practical skills and theory for school social work practice. The course content addresses the history of school social work integrating social work values into a school setting, systemic needs within school settings, the importance of networking and professional collaboration, and working with diverse and at-risk youth and their families. Students also examine the role of school social workers in helping students, schools and families adjust to and cope with trauma, special education needs, and related topics.

SW 714 - Drugs and Alcohol: Use, Misuse and Addiction**Credits: 4**

This course examines a) historical, cultural, social aspects of alcohol, b) impact of alcohol on body and behavior, c) progression of drinking and the treatment and prevention of alcoholism, d) impact of addiction on families. Prereq: junior, senior status or permission.

SW 715 - Practice with Gay, Lesbian, Bisexual, and Transgender People**Credits:** 4

Sexual minorities constitute the minority group social workers most consistently encounter wherever they work. Addresses practice with gay, lesbian, and bisexual people on both professional and personal levels for the social worker. The readings include theoretical, experimental, clinical, counseling, and personal perspectives, as well as providing an introduction to the gay/lesbian/bisexual subculture. A unit on gender minorities is included. Students are also required to explore and examine their own attitudes and assumptions about gays, lesbians, bisexuals, and gender minorities. Prereq: junior, senior status or permission. (Also offered as SW 815.)

SW 785 - Study Abroad: Comparative Social Welfare Systems**Credits:** 4

Students examine the historical development of social welfare in another country including an analysis of the underlying values and attitudes that dictate practice and policy decisions. Includes agency site visits, lectures, themed readings, and visits to important cultural sites. Prereq: SW 424 and SW 525; junior, senior status or permission. Special fee.

Co-requisite: INCO 589**SW 795 - Independent Study in Social Service****Credits:** 1-6

Independent work under department faculty guidance. Enrollment by permission only through arrangement with specific faculty. May be repeated with a different focus to maximum of 8 credits. Prereq: 12 hours social service coursework; permission. Cr/F. Special fee.

SW 796 - Independent Study: Teaching Assistantship**Credits:** 1-6

Participating students provide leadership and supervision for small groups of social work majors in social work practice simulations. Student teaching assistants work closely with, and under the direction of, department faculty. May be repeated to a maximum of 8 credits. Prereq: senior status; 16 hours in social work; and permission. Cr/F.

SW 797 - Special Topics in Social Welfare**Credits:** 4

Seminar for advanced majors cross-listed with SW 897. Topics may include: alcohol and alcoholism, drugs and chemical dependency, income maintenance, health care, child welfare, aging, mental health, or developmental disabilities or study travel experiences. May be repeated for different topics. Prereq: permission.

SW 797H - Honors Thesis**Credits:** 2-4

Working with an assigned faculty adviser, students propose and develop a thesis project for both oral and written presentation before the end of the semester. Prereq for 797H: admission to the SW honors program; senior status, 16 hours in social work and permission.

SW 798H - Honors Thesis**Credits:** 2-4

Working with an assigned faculty adviser, students propose and develop a thesis project for both oral and written presentation before the end of the semester. Prereq: satisfactory completion of 797H; senior status, 16 hours in social work and permission. 6 credit maximum for both semesters.

Sociology (SOC)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

SOC 400 - Introductory Sociology**Credits:** 4

Overview of sociology as the scientific study of human social and cultural relationships. Social theory, methods and techniques of research, and current research findings on a wide range of social issues.

Attributes: Social Science (Discovery)**SOC 400H - Honors/Introductory Sociology****Credits:** 4

Overview of sociology as the scientific study of human social and cultural relationships. Social theory, methods and techniques of research, and current research findings on a wide range of social issues. Writing intensive.

Attributes: Social Science (Discovery); Writing Intensive Course**SOC 400W - Introductory Sociology****Credits:** 4

Overview of sociology as the scientific study of human social and cultural relationships. Social theory, methods and techniques of research, and current research findings on a wide range of social issues. Writing intensive.

Attributes: Social Science (Discovery); Writing Intensive Course**SOC 440A - Honors/Drug Addiction in American Society****Credits:** 4

This course will introduce students to interdisciplinary topics in the study of drug addiction, drug panics, and the U.S. war on drugs. It will draw on scholarly and journalistic research to consider sociological theories, methods, and data gathering techniques in the study of addiction, and it will explore ways in which individuals create, interact with, and are shaped by social groups and institutions, including those associated with politics, health, economics, family, and the legal system.

Attributes: Social Science (Discovery)**SOC 444A - Society in the Arctic****Credits:** 4

Introduction to societies of the far North today, from Alaska and Canada through Greenland, Iceland, northern Scandinavia and Russia. Reviews interconnected issues of social change, environment, sustainable development, local control, and modernization vs. traditions. Arctic dilemmas highlight some basic questions facing all societies in the 21st century. Writing intensive.

Attributes: Environment, TechSociety(Disc); Inquiry (Discovery); Writing Intensive Course**SOC 502 - Statistics****Credits:** 4

Elementary applied statistical techniques; tables, graphs, cross-clarifications; central tendency and dispersion; correlation and linear regression; confidence intervals and hypothesis testing. Other statistical classes including ADM 430, BIOL 528, ADMN 420, EREC 525, HHS #540, MATH 439, MATH 539, OHIL 412, MATH 644, PSYC 402 cannot be used to satisfy the major requirement. This is, all majors must take SOC 502 even if they have taken an introductory statistics course in another department. A student can, however, petition to receive eight credits for two introductory statistics courses, if and only if, SOC 502 is taken after the student became a sociology major and took their first statistics course prior to declaring SOC as their major. Majors cannot receive credit for statistics courses taken after they have declared SOC.

Attributes: Quantitative Reasoning(Disc)

SOC 502H - Honors/Statistics**Credits: 4**

Elementary applied statistical techniques; tables, graphs, cross-classifications; central tendency and dispersion; correlation and linear regression; confidence intervals and hypothesis testing. No credit for students who have completed ADM 430, BIOL 528, ADMN 420, EREC 525, HHS #540, MATH 439, MATH 539, MATH 644, PSYC 402, but petitions for acceptance of such courses to fulfill the sociology major requirement in statistics will be entertained.

Attributes: Quantitative Reasoning(Disc)

SOC 515 - Introductory Criminology**Credits: 4**

Introduces the scientific study of crime. Reviews the different forms of criminal behavior, theories of crime, and strategies of crime control.

SOC 520 - Family**Credits: 4**

Sociological study of marriage and the family in American society. Following a life-cycle approach, topics include gender roles, communication and conflict, dating and mate selection, work and family economics, the transition to parenthood, middle- and late-life family, divorce, and remarriage.

SOC 525 - Juvenile Crime and Delinquency**Credits: 4**

Crime, violence, and the criminal justice system as it affects children and youth in the role of both perpetrators and victims.

SOC 535 - Homicide**Credits: 4**

Introduces to theory and research in homicide studies, including a review of the origins of and social responses to homicide.

SOC 540 - Contemporary Social Problems**Credits: 4**

This course introduces students to the study of major social problems in contemporary society, including poverty, discrimination, inequality, crime, violence, and environmental degradation. Explores how and why people come to view certain social conditions as problematic. Also explores the consequences of and possible solutions to contemporary social problems. This course fulfills the requirement in the Social Science category of UNH's Discovery Program.

Attributes: Social Science (Discovery)

SOC 545 - Sexualized Violence**Credits: 4**

Students examine the spectrum of sexualized violence in contemporary society. Topics include theoretical and methodological issues inherent in researching gender-based violence in the U.S. and in Europe. Students study sexualized violence in historical context, with particular attention to war, conflict, and military settings as well as examples of the impact of sexualized violence in everyday life. Finally, we explore how the pornography industry normalizes sexualized violence.

SOC 565 - Environment and Society**Credits: 4**

Environmental and Society focuses on the complex interactions between human communities and the natural world. The course considers the interconnected ways that social systems, the built environment, and related technologies produce environmental changes, and in turn how shifts in resources, air, water quality, climate, biodiversity, and ecosystems force societies to adapt. This course fulfills in the Environment, Technology, and Society category of UNH's Discovery Program.

Attributes: Environment,TechSociety(Disc)

SOC 570 - Sexual Behavior**Credits: 4**

This course approaches sexuality as a social phenomenon. We examine variability in sexual practices, sexual identities, and sexual behaviors throughout history, across cultures, and throughout the life course of individuals. Particularly, we focus on the social control of sexuality and the extent to which sexualities are socially constructed. We consider the media and other cultural influences on a diverse range of sexual experiences and take a straightforward, non-stigmatizing approach to tackling controversial issues.

SOC 595 - Independent Reading and Research**Credits: 2-8**

Independent study of advanced or specialized topics in sociology requiring extensive reading and writing. Before registering, students must develop a project in consultation with a faculty supervisor and submit a proposal to the undergraduate committee. Prereq: 12 sociology credits and permission.

SOC 597 - Special Topics**Credits: 4**

Occasional or experimental offerings. May be repeated for different topics.

SOC 599 - Sociological Analysis**Credits: 4**

Basic skills essential to sociological study, including: development of critical reading skills; evaluation of theory construction and evidence; analysis of classic and contemporary works, research, writing, and use of library resources. To be taken by sociology majors no later than the junior year. Writing intensive.

Attributes: Inquiry (Discovery); Writing Intensive Course

SOC 601 - Methods of Social Research**Credits: 4**

Overview of major research methods: survey analysis, personal interview, participant observation, content analysis, and experimental design. Each student designs and completes a research project. Prereq: SOC 502 or equivalent; juniors and seniors only. Writing intensive.

Attributes: Writing Intensive Course

SOC 611 - Sociological Theory**Credits: 4**

Analysis of the origins and development of sociological theory. Includes the classical works of Marx, Weber, and Durkheim and their connections to the major strands of present day research. Writing intensive.

Attributes: Writing Intensive Course

SOC 620 - Drugs and Society**Credits:** 4

Provides students with an overview of drug using behavior as viewed from a sociological perspective. Highlights historical and current drug use trends, examines the social correlates of drug use, considers societal responses to drug use including treatment, prevention, and policy, and engages students in key controversial debates confronting U.S. citizens and policymakers. Provides a foundation for understanding of drugs and society.

SOC 625 - Mental Health and Society**Credits:** 4

This course introduces students to sociological approaches for studying and understanding mental health and illness in society. With an Emphasis on the importance of social stress, we examine the distribution of mental illness in the United States and identify the factors that help to explain mental health differences across social roles and statuses.

SOC 630 - Sociology of Gender**Credits:** 4

Gender examined as (1) socially constructed differences between the sexes, and (2) a system of social relations, which are part of the fabric of our social institutions. Topics include gender socialization, gender and education, gender and employment, and work-family intersections. Attention paid to the issue of gender inequalities and to the intersection of class, culture, race-ethnicity, age, and sexual orientation with gendered experience and gendered institutions. Focuses primarily on the contemporary United States.

SOC #635 - Medical Sociology**Credits:** 4

Health and illness are considered as a sociocultural phenomenon. Meanings are attached to health and illness as they are influenced by our social values and our cultural beliefs, which to a large degree are influenced by available medical technologies. People's experiences of health and illness are shaped by a range of social factors (e.g., race, class, gender) and follow clear patterns of social inequality. A critical approach is taken to examine topics such as the social determinants of health, illness and healthcare; the social construction of illness; the medicalization of society; and the social organization of health care.

SOC 635W - Medical Sociology**Credits:** 4

Health and illness are considered as a sociocultural phenomenon. Meanings are attached to health and illness as they are influenced by our social values and our cultural beliefs, which to a large degree are influenced by available medical technologies. People's experiences of health and illness are shaped by a range of social factors (e.g., race, class, gender) and follow clear patterns of social inequality. A critical approach is taken to examine topics such as the social determinants of health, illness and healthcare; the social construction of illness; the medicalization of society; and the social organization of health care. Writing intensive.

Attributes: Writing Intensive Course**SOC 640 - Religion****Credits:** 4

The continuing significance of religion in society is a central area of sociological inquiry. Examines the historical and cultural explanations for the persistence of religion and apply diverse sociological perspectives to explaining the personal, institutional, and cultural relevance of religion with a focus on contemporary American society. Topics studied include religious authority, identity, violence, and the impact of religion on various domains of social life including gender relations, family, politics, and economy. Writing intensive.

Attributes: Writing Intensive Course**SOC 645 - Class, Status and Power****Credits:** 4

Focuses on the major dimensions of inequality, including class, gender, and race, by exploring the distribution of economic, political, and social resources within contemporary societies.

SOC 655 - Sociology of Law and Justice**Credits:** 4

Systematic study of how social factors, such as inequality, differentiation, culture, and organization, influence the justice process. Historical and cross-cultural focus on the behavior of the police, courts, and other legal institutions. Prereq: SOC 515 or permission; juniors and seniors only.

SOC 656 - Terrorism**Credits:** 4

This course provides a global assessment of the definition and nature of terrorism, trends in terrorism over the course of the past several decades, perspectives concerning the degree to which cultural, economic, and political conflict contribute to terrorism, and alternative means for dealing with terrorism in the age of globalization.

SOC #660 - Urban Sociology**Credits:** 4

Focuses on urban communities, urbanization, and urban social issues. Covers the historical development of cities; the differences between urban, suburban, and rural communities; urban life styles; and the significance of poverty and race for understanding contemporary American cities. Emphasizes American cities, with some consideration to world patterns of urbanization and the growth, development, and role of global cities. Writing intensive.

Attributes: Writing Intensive Course**SOC 665 - Environmental Sociology****Credits:** 4

Interactions between society and the physical environment, including environmental constraints, population and economic growth, social impacts of resource development, large-scale environmental change, and the social bases of environmental attitudes, behavior, and politics. Writing intensive.

Attributes: Writing Intensive Course**SOC #680W - Sociology of the Holocaust****Credits:** 4

Examines the origins, realities, and consequences of the Holocaust as an all-embracing European phenomenon. Topics include the genocidal policies and procedures of the Nazis and Soviets with respect to indigenous populations as well as the role of collaborators. This course is normally offered only at UNH-Manchester. Writing intensive.

Attributes: Writing Intensive Course

SOC #685 - Work and Occupations**Credits: 4**

Examines the changes in workplace organizations and workers' lives, the emergence of new service and financial occupations, and how globalization, technology, and the increased presence of women in the labor force are impacting work and individuals' experiences of work.

SOC 693 - Global Social Change**Credits: 4**

This course explores the causes and consequences of social change in societies around the world. Case studies of important social trends such as the diffusion of culture, international migration, health pandemics, changing status of women, environmental degradation, and promoting more equitable development enable investigation of the broad social implications of the process of globalization. Writing intensive.

Attributes: Writing Intensive Course

SOC #695 - Research on Family Violence in World Perspective**Credits: 4**

The nature, frequency, causes, and consequences of family violence, including physical, verbal, material, and sexual abuse of children; of partners in dating, cohabitating, and marital relationships; and of the elderly; and also neglect of children and the elderly. Includes data analysis projects to provide experience with cross-national comparative research to test theories about social causes of family violence and the effects of family violence on society as a whole. Prereq: SOC 502 (or equivalent), SOC 601.

SOC 697 - Special Topics**Credits: 4**

Occasional or experimental offerings. May be repeated for different topics.

Attributes: Writing Intensive Course

SOC 699 - Senior Thesis**Credits: 4 or 8**

Independent work in the library or field culminating in a written senior thesis. Recommended for, but not confined to, majors intending to pursue graduate studies. Students must arrange for supervision from two faculty members and submit a proposal to the Undergraduate Committee before registering. May be completed in one or two successive semesters during the senior year. Permission required. May be repeated up to a maximum of 8 credits.

SOC 699H - Senior Honors Thesis**Credits: 4 or 8**

Independent work in the library or field culminating in a written senior honors thesis and a formal research presentation. Recommended for, but not confined to, majors intending to pursue graduate studies. Required for students participating in the departmental honors program as part of their 16 honors credits. Students must arrange for supervision from two faculty members and submit a proposal to the Undergraduate Committee before registering. May be completed in one or two successive semesters during the senior year. Permission required. May be repeated up to a maximum of 8 credits.

SOC 715 - Criminological Theory**Credits: 4**

Introduces graduate students and advanced undergraduates to the major theoretical literature in crime and delinquency. Covers both classical and contemporary theory, with empirical assessments of theories, including macro- and micro-level control, strain, and learning theories, as well as recent developments in biosocial, deterrence, labeling, and critical/feminist theories. Permission required.

SOC 720 - Sociology of Drug Use**Credits: 4**

Examines licit and illicit drug use from a sociological perspective. Draws primarily from the sociology of mental health and criminology to explore a variety of drug-related topics including historical and current U.S. drug trends, dominant theoretical approaches about the initiation into, and continued use of drugs, drug-related crime, therapeutic use of drugs, prevention and treatment of drug problems, and drug-related policies. Permission required.

SOC 725 - Social Demography**Credits: 4**

Social demography examines the linkages between changes in the size, composition and distribution of the population and changes in social, environmental, economic and political factors. The course examines demographic methods and the materials and the analytical techniques used by demographers to analyze population redistribution, fertility, work, marriage, migration and mortality. The policy implications of demographic change will be examined with attention to the U.S. as well as the developed and developing world. Permission required.

SOC 730 - Communities and the Environment**Credits: 4**

People and the natural environments in which they live fundamentally structure communities around the globe. Economic change, expanding development, and human migration are transforming social and environmental conditions in both rural and urban settings, altering the identities of many communities as well as their relationships with the natural world. The importance of these emerging social and environmental issues has made them a focus for social science inquiry. This course exposes students to a range of sociological concepts, theories, and research approaches related to the study of communities and environmental issues. Some of the substantive themes that are covered include: population dynamics and environmental change; social capital and social networks; political economy and community development; collective action and social movements; science, technology, and environmental risks; and environmental racism and justice. The principal assignment for the course will be a research project where students investigate a community or environmental issue of their own interest. Permission required.

SOC 733 - Gender-Based Violence: US and International Perspectives**Credits: 4**

Students examine the spectrum of gender-based violence occurring in the United States and Europe. Four main areas are examined: (1) Theoretical and methodological issues inherent in researching gender-based violence. (2) Different types of gender-based violence including sexual and relationship violence, harassment, pornography, and human trafficking. (3) The historical economic, and cultural contexts that facilitate gender-based violence. (4) Prevention and intervention efforts to reduce gender-based violence. Permission required.

SOC #735 - Sociology of Community**Credits:** 4

This course analyzes "community" from a sociological perspective. Community is one of the fundamental concepts in the sociological literature; this course covers those aspects of the concept that are concerned with geographic communities: neighborhoods, communities, cities, etc. It considers how American communities have changed over time and what the current characteristics are, and how these characteristics are related to the "quality of life" in the communities. Students study theoretical and empirical approaches to studying communities, particularly but not exclusively American communities. Among specific areas of community research covered are: spatial inequality and concentrated poverty; what housing research shows about the importance of community to outcomes for families and children; the impact of community on health; and community development as a strategy for community change. Permission required.

SOC 740 - Sociology of Mental Health**Credits:** 4

Introduces students to different sociological approaches for studying and understanding mental health and illness. Students examine the social distribution of mental illness in the United States and the social-structural factors that help to explain mental health variations. Also addresses issues surrounding mental health treatment, systems, and policies for the mentally ill. Permission required.

SOC #742 - Sociology and Social Policy**Credits:** 4

Social policy and public policy defined: description of the policy making process. The political sociology of the policy-making process; who makes policy and who influences policy, under what conditions and with what effect. Definition of social policy research and the various roles social scientists can adopt for policy-relevant work. Students are responsible for critiquing the readings and for preparing a substantial research paper. Permission required.

SOC 745 - Race, Ethnicity, and Inequality**Credits:** 4

Sociological perspectives on race and ethnic relations for graduate and advanced undergraduate students. Topics include the creation of racial and ethnic identities, the nature and extent of segregation, education, employment, and wealth inequalities, and the effects of state policy. The course emphasizes both theoretical and empirical assessments. Permission required.

SOC 773 - Childhood and Social Policy**Credits:** 4

Exposes students to a variety of sociological perspectives about childhood in American society. Stimulates analysis about how social institutions, like the modern family, school, economic system, justice system and communications media affect children. Assumes prior understanding of important sociological concepts, critical thinking skills and social science writing ability. Permission required. Writing intensive.

Attributes: Writing Intensive Course**SOC 780 - Social Conflict****Credits:** 4

Analysis of the social conditions associated with the major forms of conflict management in human societies: discipline, rebellion, vengeance, negotiation, mediation, law, therapy, supernaturalism, and avoidance. Permission required. Writing intensive.

Attributes: Writing Intensive Course**SOC 788 - Advanced Medical Sociology****Credits:** 4

This course is intended to provide an in-depth introduction to the major theoretical frameworks of medical sociology and empirical research examining social factors that influence individual's health and illness. We will take a critical approach in our examination of: the distribution of health and illness (by socioeconomic status, sex/gender, and race/ethnicity); medicalization and social control; and the social construction of health and illness. Most of the learning in this course will take place through shared facilitation of class discussions based on the reading. Writing intensive.

Attributes: Writing Intensive Course**SOC 792 - Internship Independent Study****Credits:** 2-8

Provides upper level sociology majors with an opportunity to apply what they have learned in the classroom to the real world. This will provide the opportunity for students to work individually with a faculty member on an Internship with the option of variable credit. There is no formal class time required. Students will arrange meetings with supervising faculty to plan assigned readings, update internship progress and complete semester projects. Project ideas are developed with faculty and internship site supervisor. Permission required.

SOC 793 - Internship**Credits:** 4

Provides upper level sociology majors with an opportunity to apply what they have learned in the classroom to the real world. Students meet weekly to discuss assigned readings, internship progress and semester project. Project ideas are developed with faculty and internship site supervisor. Permission required.

SOC 794 - Evaluation Research**Credits:** 4

This course is designed to cover major methodological and practical issues in the field of evaluation research, including the definition and meaning of evaluation; the purposes of evaluation; the design and conduct of evaluation studies; evidence-based policy writing; and the uses of evaluation results. This is an advanced undergraduate-level and graduate-level course. The prerequisite for the course is successful coursework in methods of research and statistical analysis.

SOC 797 - Special Topics**Credits:** 4

Occasional or experimental offerings. May be repeated for different topics. Permission required. Writing intensive.

Attributes: Writing Intensive Course

Spanish (SPAN)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

SPAN 401 - Elementary Spanish I**Credits:** 4

Conducted in Spanish. For students without previous knowledge of Spanish. Aural-oral practice, fundamental speech patterns, reading and writing to achieve a firm basis for an active command of Spanish. Lab. No credit toward a major. (No credit for students who have had two or more years of Spanish in secondary school; however, any such students whose studies of Spanish have been interrupted for 5 years or more should consult the coordinator of elementary Spanish. 401-402 taken together satisfies the foreign language requirement. Special fee.

SPAN 402 - Elementary Spanish II**Credits:** 4

Conducted in Spanish. Aural-oral practice, fundamental speech patterns, reading and writing to achieve a firm basis for an active command of Spanish. No credit toward a major. 401-402 taken together satisfies the foreign language requirement. Special fee. SPAN 401 is a prerequisite for this course. Cannot be taken separately without permission of instructor.

Attributes: Foreign Language Requirement**SPAN 403 - Review of Spanish****Credits:** 4

Conducted in Spanish. Emphasizes aural/oral practice, reviews basic structure, reading and writing to develop active command of language. Preparation for Spanish 503. Designed for those who have had only two years of high school Spanish. Special fee. Does not satisfy the foreign language requirement. A grade of C or higher is required in the course to advance to SPAN 503.

SPAN 500 - Selected Topics in World Literature**Credits:** 4

Topics chosen that introduce students to major themes and genres. (Also offered as CLAS 500, FREN 500, GERM 500, ITAL 500, PORT 500, RUSS 500.) May be repeated for credit. Writing intensive.

Attributes: Writing Intensive Course**SPAN 503 - Intermediate Spanish I****Credits:** 4

Conducted in Spanish. Emphasizes the development of reading, writing, speaking, and listening skills. Review of grammar. Discussion and short papers in Spanish based on cultural and literary readings. Films. No credit toward the major. Special fee. Lab. Satisfies the foreign language requirement.

Attributes: World Cultures(Discovery)**SPAN 503H - Honors/Intermediate Spanish I****Credits:** 4

Conducted in Spanish. Emphasizes the development of reading, writing, speaking, and listening skills. Review of grammar. Discussion and short papers in Spanish based on cultural and literary readings. Films. No credit toward the major. Special fee. Lab. Satisfies the foreign language requirement.

Attributes: World Cultures(Discovery)**SPAN 504 - Intermediate Spanish II****Credits:** 4

Conducted in Spanish. Emphasizes the development of reading, writing, speaking, and listening skills. Review of grammar. Discussion and short papers in Spanish based on cultural and literary readings. Films. No credit toward the major. Special fee. Lab. Satisfies the foreign language requirement.

Attributes: World Cultures(Discovery)**SPAN 504H - Honors/Intermediate Spanish II****Credits:** 4

Conducted in Spanish. Emphasizes the development of reading, writing, speaking, and listening skills. Review of grammar. Discussion and short papers in Spanish based on cultural and literary readings. Films. No credit toward the major. Special fee. Satisfies the foreign language requirement.

Attributes: World Cultures(Discovery)**SPAN 525 - Introduction to Spanish Cultures****Credits:** 4

Historical, geographical, and artistic expressions of Spanish civilization that have formed the character of contemporary Spanish culture. Conducted in English. Majors may take either 525 or 526, but both may not be counted for major credit. Special fee.

Attributes: World Cultures(Discovery)**SPAN 526 - Introduction to Latin American Cultures****Credits:** 4

Significant historical, geographical, and artistic expressions of pre-Colombian and Latin American civilization. Conducted in English. Majors may take either 525 or 526, but both may not be counted for major credit. Special fee.

Attributes: World Cultures(Discovery)**SPAN 595 - Practicum****Credits:** 2

Practical use of Spanish language or cultural skills outside the classroom through special projects. Prereq: SPAN 504. May be repeated up to a maximum of 4 credits.

SPAN 631 - Advanced Conversation and Composition I**Credits:** 4

Emphasis on written and spoken Spanish through in-class and online discussions and frequent writing assignments based on cultural and literary readings and films. Prereq: SPAN 504 or equivalent. Special fee. Writing intensive. Satisfies the foreign language requirement.

Attributes: World Cultures(Discovery); Writing Intensive Course**SPAN 631H - Honors/Advanced Conversation and Composition I****Credits:** 4

Emphasis on written and spoken Spanish through in-class and online discussions and frequent writing assignments based on cultural and literary readings and films. Prereq: SPAN 504 or equivalent. Special fee. Writing intensive. Satisfies the foreign language requirement. Writing Intensive.

Attributes: World Cultures(Discovery); Writing Intensive Course**SPAN 632 - Advanced Conversation and Composition II****Credits:** 4

Emphasis on written and spoken Spanish through in-class and online discussions and frequent writing assignments based on cultural and literary readings and films. Satisfies the foreign language requirement.

Attributes: World Cultures(Discovery); Writing Intensive Course**SPAN 632H - Honors/Advanced Conversation and Composition II****Credits:** 4

Emphasis on written and spoken Spanish through in-class and online discussions and frequent writing assignments based on cultural and literary readings and films. Prereq: SPAN 631 or equivalent. Special fee. Writing intensive. Satisfies the foreign language requirement.

Attributes: World Cultures(Discovery); Writing Intensive Course**SPAN 641 - Spanish Phonetics****Credits:** 4

Practical application of fundamental phonetic theory to spoken Spanish.

SPAN #645 - Intro to Spanish Linguistics**Credits:** 4

Establishes the basis for future application of linguistic principles. Explores different areas of linguistics including morphology, word formation and verbal inflection. Issues in syntax and semantics are analyzed both in isolation and in terms of their relationship to each other. Students will be equipped with the skills necessary to apply these linguistic concepts to actual Spanish language data and to achieve a better understanding of the structures governing the language they are studying. Prereq: SPAN 632 (or equivalent) or consent of instructor. Special fee.

SPAN 647 - Hispanic Cultural Studies**Credits:** 4

Contemporary approaches to the study of the cultures of Hispanic populations that examine the intersections of politics, art, religion and the forces of globalization. Prereq: consent of instructor. Special fee.

SPAN 648 - The Hispanic World Today**Credits:** 4

This course focuses on researching and discussing contemporary issues in Spain and/or Latin America while improving reading and oral performance. Primary sources include newspapers, resources from the internet, and/or archival materials. Prereq: SPAN 631 (or equivalent) or consent of instructor.

SPAN 650 - Hispanic Literature and Popular Culture**Credits:** 4

The study of literary texts and popular literary art for. Frequent short papers. Prereq: SPAN 631 (or equivalent) or consent of instructor.

Attributes: Writing Intensive Course**SPAN 651 - Introduction to Spanish Literature and Thought****Credits:** 4

Reading and analysis of major works within the historical, cultural, and social background of the Iberian peninsula. Emphasis on works from medieval to Golden Age Spain. Papers, discussion, and examinations in Spanish. Prereq: consent of instructor.

Attributes: Humanities(Disc); Writing Intensive Course**SPAN 652 - Introduction to Spanish Literature and Thought****Credits:** 4

Reading and analysis of major works in the historical, cultural, and social background of the Iberian peninsula. Emphasis on works from 19th and 20th century Spain. Papers, discussion, and examinations in Spanish. Prereq: consent of instructor.

Attributes: Humanities(Disc); Writing Intensive Course**SPAN #653 - Introduction to Latin American Literature and Thought****Credits:** 4

Reading and analysis of major works within the historical, cultural, and social background of the New World. Emphasis on works from Colonial period and 19th century. Papers, discussion, and examinations in Spanish. Prereq: consent of instructor.

Attributes: Humanities(Disc); Writing Intensive Course**SPAN 654 - Introduction to Latin American Literature and Thought****Credits:** 4

Reading and analysis of major works within the historical, cultural, and social background of Latin America. Emphasis on works from the 20th century. Papers, discussion, and examinations in Spanish. Prereq: consent of instructor.

Attributes: Humanities(Disc); Writing Intensive Course**SPAN 683 - Summer Study in Costa Rica****Credits:** 8

Studies in San Joaquin de Flores, Costa Rica. Six week summer immersion program for undergraduate students. Prereq: a minimum of 32 credit hours with an overall GPA of 2.5. Interested students should contact the program director. Spanish majors only. Special fee. Cr/F.

Co-requisite: INCO 589**SPAN 685 - Study Abroad/Granada****Credits:** 16

Studies at a Spanish or Latin American university. Prereq: primarily for juniors and seniors who have passed SPAN 503-504 or equivalent with a grade of B (3.00) or better. Noncredit orientation meetings required during semester prior to departure. Interested students should consult with the program directors. Special fee. Cr/F. (An IA [continuous grading] grade will be assigned until official transcript is received from the foreign institution.)

Attributes: World Cultures(Discovery)**SPAN 686 - Study Abroad/Granada****Credits:** 20

Studies in Granada, Spain. Prereq: primarily for juniors and seniors who have passed SPAN 503-SPAN 504 or equivalent with a grade of B (3.00) or better. Noncredit orientation meetings required during semester prior to departure. Interested students should consult with the program directors. Special fee. Cr/F. (An IA [continuous grading] grade will be assigned until official transcript is received from the foreign institution.)

Co-requisite: INCO 588**Attributes:** World Cultures(Discovery)**SPAN 790 - Topics in Second Language Acquisition/Pedagogy/ Methodology****Credits:** 4

A) Introduction to Second Language Acquisition, B) Internet Technologies and Second Language Learning. Prereq: permission of instructor. Special fee. May be taken more than once if no duplication of content.

SPAN 795 - Independent Study**Credits:** 1-4

Guided individual study with training in bibliography and organization of materials. Topics selected by instructor and student in conference. Barring duplication of content, may be repeated for credit. Prereq: permission of of instructor. Special fee.

SPAN 797 - Topics in Hispanic Literary and Cultural Studies**Credits:** 4

A) Medieval Spanish Literature, B) Spanish Literature of the Renaissance and the Golden Age, C) Spanish Literature of the 18th and 19th Centuries, D) Spanish Literature of the 20th Century (Poetry/Theater/Prose), E) Contemporary Spanish Literature, F) Spanish Cultural Studies, G) Latin American Literature of the 16th and 17th Centuries, H) Latin American Literature of the 18th and 19th Centuries, I) 20th Century Latin American Literature (Poetry/Theater/Prose), J) Contemporary Latin American Literature, K) Cyberliterature and Cyberculture, L) Transatlantic Studies, M) Spanish and Latin American Philosophy and Essay, N) Indigenous Cultural Expression of the Americas, O) Hispanic Film Studies, P) U.S. Hispanic Cultural Studies, Q) Latin American Cultural Studies, R) Senior Seminar, S) Other. Prereq: permission of instructor. Special fee. May be taken more than once for credit if no duplication of content. Writing intensive.

Attributes: Writing Intensive Course

SPAN 798 - Topics in Hispanic Linguistics and Cultural Studies**Credits:** 4

A) History of the Spanish Language, B) Study of Spanish Mood and Aspect, C) Sociolinguistics of Spanish, D) Discourse Analysis, E) Politeness and Pragmatics, F) Bilingualism and Spanish in the U.S., G) Spanish Pronouns, Agreement and Modifiers, H) Regional and Social Variation in Spanish Phonetics, I) Other. Prereq: permission of instructor. Special fee. May be taken more than once for credit if no duplication of content.

SPAN 799 - Senior Honors**Credits:** 4

For senior Spanish majors with a minimum cumulative grade-point average of 3.40 and the same or better average in the major who want to undertake a special honors project in an area of Spanish language or literature of their choice. Prereq: permission of advisor. Special fee.

Sustainability (SUST)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

SUST 401 - Surveying Sustainability**Credits:** 4

This interdisciplinary and transdisciplinary course explores the history of sustainability and the varied and changing meanings of the concept. It focuses on the principles and challenges of sustainability in support of the long-term welfare of humans and the earth system. Students discuss and debate a set of global grand challenges, their local and national ramifications, and how to connect knowledge to action. Sustainability is explored through case studies, experiential learning, individual research and team projects.

SUST 501 - Sustainability Perspectives and Methods**Credits:** 4

Sustainability Perspectives and Methods will explore the multiple ways in which we measure, assess and use concepts of sustainability. We begin by establishing the cross-cutting perspectives and methods that run throughout sustainability science including transdisciplinarity, systems thinking, stakeholder-driven research, and solutions-based projects. The course builds on this foundational knowledge to delve more deeply into sustainability challenges as examined through specific perspectives including the humanities, social sciences, and natural sciences. Prereq: SUST 401. Writing intensive.

Attributes: Writing Intensive Course**SUST 600 - Sustainability Independent Study****Credits:** 1-4

SUST 600 will provide an independent study to students who are interested in studying of a topic in sustainability in depth. Due to the highly personalized nature of SUST 600, the specific readings, activities and assignments will vary based on student interests and disciplinary backgrounds. At a minimum, students will be guided in how to prepare a project proposal, place their work within the current literature on the topic, and complete a final project. Prereq: SUST 401. Permission required.

SUST 605 - Sustainability Internship**Credits:** 1-4

SUST 605 will provide credit for practical work or a project experience in sustainability. The purpose of SUST 605 is to gain practical experience working in a sustainability field while simultaneously achieving specific learning goals pre-identified by the student and faculty mentor. Prereq: SUST 401. Permission required.

SUST 750 - Sustainability Capstone**Credits:** 4

The Sustainability Capstone is the culminating experience in a series of three core courses for the Sustainability Dual Major. The objective of SUST 750 is to synthesize the knowledge obtained in other core and elective courses taken for the Sustainability Dual Major and apply it to a project. In doing so, students will explore areas of interest, reflect on undergraduate learning experiences, and experience the interdisciplinary aspects of sustainability issues. Prereq: SUST 401, SUST 501. Permission required. Writing intensive.

Attributes: Writing Intensive Course

Sustainable Agriculture & Food Systems (SAFS)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

SAFS 405 - Sustainable Agriculture and Food Production**Credits:** 4

This course introduces the fundamental concepts that define sustainable and organic agriculture. We will explore the scientific and biological principles that underlie sustainable and organic farming techniques and methods, and each student will explore research-based evidence surrounding the sustainability of different practices within the agricultural and food system. We will study the environmental, social and economic impacts of different food production systems, with an emphasis on systems common in the U.S. Finally, we will look at the role each of us has in influencing how food is grown, either as producer or as a consumer.

Attributes: Environment, TechSociety(Disc)**SAFS 410 - A Taste of the Tropics****Credits:** 4

This course will expose students to the exciting world of tropical agriculture and the ways that people in the tropics utilize a diverse array of food crops. Our lives as consumers in the developed world are touched by tropical products every single day. Whether it's the cinnamon in your tea, the vanilla in your cookies, the black pepper on your salad, or your cup of hot coffee, you likely consume tropical crops whether you know it or not. Ever stop to wonder where these items are from and how they are produced? We will examine agriculture and food culture throughout the tropical world's four principle areas: Latin America, Tropical Asia, Tropical Africa, and the South Pacific. Production systems ranging from large scale modern high input operations to home subsistence gardens are explored. Tropical crops are examined in five major groups: grains and legumes, starchy roots, exotic vegetables, tropical fruit, and herbs, spices, medicinal plants. Cultural uses of these crops throughout the tropical world are given special emphasis.

Attributes: World Cultures(Discovery)**SAFS 415 - Introduction to Brewing Art and Science****Credits:** 4

Introduction to the scientific foundations of beer brewing. Topics covered will include beer styles; ingredient sourcing; industrial production from nano to macro scale; current trends and topics; quality control; safety and sustainability.

SAFS 421 - Introductory Horticulture**Credits: 4**

This course will introduce the disciplines of plant science and horticulture. Students will learn the fundamentals of plant structure and how cells, tissues, organs and whole plants develop and function. Students will then explore how environmental factors affect growth and development, and how humans manipulate them to produce horticultural crops: fruits, vegetables, flowers and landscape plants. Labs are designed to emphasize and reinforce the principles covered in lecture and will give students a hands-on introduction to horticulture. Special Fee. Lab.

Attributes: Biological Science(Discovery); Discovery Lab Course**SAFS 502 - Agroecology****Credits: 4**

This course introduces students to the discipline and practice of agroecology, with an emphasis on relevant ecological theory within the context of production agriculture. Students are exposed to key ecological principles from population, community, and ecosystem ecology and agronomy. Students learn about the history and consequences of modern industrial agricultural systems and the need for more sustainable management practices that consider ecological interactions.

SAFS 510 - Agriculture and Development in the Neotropics**Credits: 4**

Course is designed as a three week immersion into tropical agriculture and Costa Rican ecology and culture. Agriculture plays a pivotal role in Costa Rica's history and in shaping current events. Production of horticultural and agronomic crops occurs on a variety of scales ranging from large export based systems, to mid-sized operations for domestic sales, and sustenance based home gardens. Examples of all systems are visited and discussions focus on their overall sustainability. Sustainability is a broad concept and requires consideration of socio-cultural, environmental, and economic factors. Agriculture and agricultural products infuse the culture as seen by large participation in farmers markets and appreciation for a wide variety of fruits and vegetables prepared in myriads of ways. An appreciation for nature also infuses the culture and is embodied by the country's extensive system of national parks and protected reserves along with the national philosophy of 'Pura Vida'. Special fee.

Attributes: World Cultures(Discovery)**SAFS 515 - Technical Brewing****Credits: 4**

Technical brewing will focus on learning skills needed in the brewing industry. This hands-on class will focus on sensory, the brewing process, quality control, safety, and sanitation in the brew house. Must be 21 to enroll in the course. Prereq: SAFS 415. Special fee.

SAFS 517 - Advanced Aspects of Brewing**Credits: 4**

In Advanced Aspects of Brewing, we will examine five specific aspects of the brewing industry: microbiology, waste products, sustainability, engineering, and analytical chemistry. We will utilize the UNH brewery to make a series of unique products that will serve as the testing basis for each module. Prereq: SAFS 415.

SAFS 600 - Field Experience**Credits: 0**

As part of their degree program, students are expected to engage in a work experience or internship under professional supervision and approved by sustainable agriculture faculty. Provides the opportunity to apply academic knowledge in settings associated with future professional employment and/or related graduate opportunities. Must be approved by a faculty advisor selected by the student. Permission required. Cr/F.

SAFS 601 - Fruit Crop Production**Credits: 4**

This course explores the origin, distribution, botany, and cultural practices of fruit crops. Fruit crops represent an important component of both our dietary needs and many agricultural production systems. Emphasis is given to temperate fruit crops suitable for New England growing conditions. Other topics explored include integrating fruit crops into landscapes, organic and conventional cultural practices, and post-harvesting handling. Prereq: SAFS 421 or permission.

SAFS 632 - Urban Agriculture**Credits: 4**

Urban agricultural systems play an important role in local food production. Production systems range from community gardens to completely controlled production environments. Urban farmers face unique challenges developing sustainable business models due to high land costs, waste management, post-harvest storage, and limited technical experience. This course provides a practical, hands-on understanding of urban agricultural production systems. Emphasis is placed on controlled environmental agriculture from an urban farmer's perspective through classroom discussion and production systems operation.

SAFS #642 - Team Experience in Agroecosystems Management (TEAM - Organic)**Credits: 4**

TEAM - Organic is a 2-semester experiential course where students are actively engaged in the operation of the COLSA/NHAES Organic Dairy Research Farm. Building on principles of agro-ecology and sustainable agriculture, students explore and practice the environmental, economic, social and production strategies needed for organic food production. Organic dairy farming methods and best practices are presented and applied. The organic food chain is addressed along with marketing and value-added strategies for organic dairy products. Instruction permission. Two semesters of SAFS #642 are required.

SAFS 651 - Plant Pathology**Credits: 4**

Plant pathology explores the nature, impact and management of plant diseases. Topics covered include organisms and environmental causes of plant diseases and disorders, how plant pathogens interact with host plants and the environment to cause disease, types of diseases, disease development and spread, the human environmental costs of plant diseases, diagnosis, and prevention and management. Students learn to diagnose diseases and disorders through the recognition of symptoms and signs. Laboratory exercises explore the causal agents of plant diseases, symptom and signs, and diagnosis. Prereq: BIOL 409 or SAFS 421, or instructor permission. Lab.

SAFS 679 - Food Production Field Experience I**Credits:** 4

This is part one of a two course series to be taken during spring semester. Course provides students with hands-on experience in growing food and managing a small farm business. We will be growing fresh vegetables and some fruits for the UNH Dairy Bar. Lectures, readings, and hands-on activities during Part I focus on all aspects of production: propagation, crop establishment, irrigation, crop management, soil considerations, and pest and disease practices. Prereq: SAFS 405 or permission of instructor.

SAFS 680 - Food Production Field Experience II**Credits:** 4

This is part of a two course series to be taken during fall semester. Course provides students with hands-on experience in growing food and managing a small farm business. We will be growing fresh vegetables and some fruits for the UNH Dairy Bar. Lectures, readings, and hands-on activities in part two focus on crop harvesting and maturity, post-harvest considerations, marketing, special event planning and execution, record keeping, and small farm business management. Prereq: SAFS 405, SAFS 679 or permission of instructor.

SAFS 689 - Greenhouse Management and Operation**Credits:** 4

Course provides introduction to greenhouse construction, design, environmental control, and current trends in the industry. Fundamentals of starting a greenhouse business including safety and labor, marketing, and post-harvest considerations also covered. Efforts towards making the greenhouse industry more sustainable are explored alongside with certification options and procedures. Crops representative of current major New England crops are grown during lab. Students learn about crop selection and practices including IPM, irrigation, and fertility management. Prereq: SAFS 421 or permission of the instructor. Lab. Special fee. (Offered alternate years). Writing intensive.

Attributes: Writing Intensive Course**SAFS 729 - Agricultural Waste Management****Credits:** 4

The management of agricultural wastes is crucial in the development of sustainable agricultural practices. This course covers principles of managing, handling, treating, and applying animal manures and organic byproducts from an agricultural system perspective. Topics include waste characterization, descriptions of systems and technology, utilization of wastes as resources (land application, composting electricity generation, fertilization, etc.), land application principles, preparations of waste management plans, and potential impacts to the environment. Prereq: SAFS 502 or permission of instructor.

SAFS #731 - Sustainable Landscape Design and Management**Credits:** 4

Students examine principles and trends in sustainable sites development and apply knowledge of ecological and biological systems in the design and maintenance of residential and commercial landscapes. Understanding woody plant structure and function and plant responses to environmental factors and horticultural practices are included as an integral part of sustainable landscape establishment. Each student completes a sustainable landscape renovation plan that creates an attractive human habitat and provides ecosystem services such as biodiversity and wildlife habitat, soil and water quality protection, nutrient recycling and microclimate modification. Prereq: SAFS 421.

SAFS 733 - Advanced Topics in Sustainable Agriculture**Credits:** 4

In this writing-intensive, capstone course, SAFS juniors and seniors engage in critical, student-led discussion of instructor-chosen and student-selected works related to food systems sustainability across scales, local to global. With these discussions as context, students pursue individual, semester-long projects to practically address a specific issue of interest. The course aims to improve critical reading, writing, discussion, and presentation skills; build cohort cohesiveness; and challenge students' beliefs and working assumptions about agriculture and food systems sustainability. Pre- or Coreq: Must be SAFS junior or senior, or by permission. Writing intensive.

Attributes: Writing Intensive Course**SAFS 760 - Insect Pest Management****Credits:** 4

Students learn the principles of integrated pest management, as they apply to insects (and some other arthropods). Additionally, they learn to recognize the major orders of insects, and some insect families that are important as natural enemies of pests. Course incorporates a significant amount of writing, plus learning to search the scientific literature. Prereq: BIOL 411 and BIOL 412 or equivalent. Writing intensive.

Attributes: Writing Intensive Course**SAFS 795 - Investigations****Credits:** 1-4

With faculty guidance, students work on individual projects related to sustainable agriculture and food systems. Permission required. May be repeated to a maximum of 8 credit hours.

SAFS 795W - Investigations**Credits:** 1-4

With faculty guidance, students work on individual projects related to sustainable agriculture and food systems. Permission required. May be repeated to a maximum of 8 credit hours. Writing intensive.

Attributes: Writing Intensive Course**SAFS 799 - Honors Senior Thesis****Credits:** 1-4

Independent research requiring a written proposal, thesis, and presentation of research results to an audience of faculty and/or students. Intended for students completing SAFS Honors-in-Major requirements. Contact SAFS Program coordinator prior to senior year to arrange supervision and obtain permission. Two-semester sequence; students typically register for 5 credits over two semesters. IA grade (continuous course) given at end of first semester. Writing intensive.

Attributes: Writing Intensive Course

Technology (TECH)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

TECH 400 - Introduction to CEPS Programs**Credits:** 1

An overview of programs offered by the College of Engineering and Physical Sciences with an emphasis on skills needed to be successful academically, career opportunities and professional development. Required course of all undeclared majors in CEPS. Cr/F.

TECH 401 - Scientific Reserach Exploration**Credits: 2**

This course introduces incoming freshmen to the scientific research process via a hands-on approach, which includes case studies, group work, and a two-week immersion experience under the guidance of the College of Engineering and Physical Sciences (CEPS) faculty. Course readings, discussions, and active participation in local research will facilitate the student's exploration of experimental design, hypothesis testing, data collection and analysis, interpretation of results, and effective communication of research findings. In the context of a group research project, students begin thinking like scientists, as well as strengthening their math, writing, an oral communication skills. Prereq: permission. Open to incoming freshmen only.

TECH 411 - Innovation Scholars I**Credits: 2**

A cohort-based research experience for first year students. Students, acting as a cohort, will undertake research projects under the direction of faculty members in CEPS. The two-semester research project will be supplemented by a weekly cohort meeting/seminar program, which will be used to organize research activity and present topics relevant to professional development of scientists and engineers. Activities will conclude with a research presentation at the completion of the second semester.

TECH 412 - Innovation Scholars II**Credits: 2**

A cohort-based research experience for first year students. Students, acting as a cohort, will undertake research projects under the direction of faculty members in CEPS. The two semester research project will be supplemented by a weekly cohort meeting/seminar program, which will be used to organize research activity and present topics relevant to professional development of scientists and engineers. Activities will conclude with a research presentation at the completion of the second semester.

TECH 500 - Integrated CEPS Seminar I**Credits: 2**

The seminar course is intended for students transferring to CEPS. The course focuses on building an interdisciplinary community among students; introducing the STEM disciplines as fields of study and professions, discussing the nature of acientific knowledge and ethics; learning how to learn, and engaging with CEPS student organizations, and with other campus academic support structures. Students are evaluated on their participation in class activities, written assignments, presentations, and posting/commenting to/on topical online blogs, which promote out-of-class discussion. Permission required. Cr/F.

TECH 501 - Integrated CEPS Seminar II**Credits: 1**

The seminar course is intended for students transferring to CEPS. The course focuses on building an interdisciplinary community among students, advancing topics from TECH 500, and professional development via engagement in undergraduate research and career development activities. Students are required to be simultaneously involved in a research project with a faculty member of their choosing. Students are evaluated on their participation in class activities, written assignments, presentations, and posting/commenting to/on topical online blogs, which promote out-of-class discussion. Permission required. Cr/F.

TECH 564 - Fundamentals of CAD**Credits: 3**

Fundamentals of CAD and computer-based graphics, including using CAD as a design tool to create engineering drawings. AutoCAD and Softdesk Civil software used to cover the following topics: drawing file storage and retrieval, display functions, basic drawing and editing commands, symbol libraries, plotting drawings on paper, and using parametric design features in the CAD system. Basic DOS familiarity is assumed. Prereq: civil engineering majors only. Special fee. Lab.

TECH 602 - Machine Shop Training**Credits: 1**

In this course, the operation of the basic metal-cutting machine tools (e.g., engine lathe, milling machine, drill press, band saw, cut-off saw, etc.) are demonstrated. The students receive introductory training on the safe operation of these machines as well as on safe practices in the machine shop. Two small projects are completed to demonstrate basic machine shop abilities by the end of the course. Prereq: no course prerequisites, but students must successfully complete an online shop safety quiz prior to the first day of the course. Offered spring and fall semesters only. Special fee. Cr/F.

TECH 602A - Machine Shop Training**Credits: 1**

In this course, the operation of the basic metal-cutting machine tools (e.g., engine lathe, milling machine, drill press, band saw, cut-off saw, etc.) are demonstrated. The students receive introductory training on the safe operation of these machines as well as on safe practices in the machine shop. Two small projects are completed to demonstrate basic machine shop abilities by the end of the course. Prereq: no course prerequisites, but students must successfully complete an online shop safety quiz prior to the first day of the course. Offered January term and summer session only. Special fee. Tuition waived. Cr/F.

TECH #685 - Budapest Program**Credits: 16**

Enables students to pursue a semester of study at the Technical University of Budapest. For information, contact the Dean's Office, College of Engineering and Physical Sciences. Prereq: CEPS students only. Special fee. Cr/F.

Co-requisite: INCO 588

Attributes: World Cultures(Discovery)

TECH 696 - Independent Study**Credits: 1-4**

Open to all qualified students pursuing studies that do not fall within existing departmental areas. Special fee when the topic is chemistry for engineers.

TECH 697 - CEPS Industrial Experience**Credits: 1**

Students in the CEPS Industrial Experience must register for TECH 697 during each semester (fall and/or spring) in which they are participating in their industrial work experience. Student in the minor must get permission from the minor advisor in order to register for this course.

TECH 750 - Intellectual Asset Management for Engineers and Scientists**Credits:** 4

This course provides an introduction to the most important topic in the 21 century—intellectual assets. Students will receive an overview in practical, real-world aspects of managing intellectual assets (copyright, patents, trademarks, trade secrets, etc.). Students taking this course will be exposed to lectures, guest presentations, and case studies aimed at increasing their understanding of intellectual property strategies and related legal issues; technology assessment; technology valuation; licensing issues, strategies and negotiation techniques; business planning and start-up company development; and strategies for attracting investment for new ideas. The instructors and guest speakers for the course are involved in managing, protecting, investing in, or commercializing intellectual property assets in real world settings such as university technology transfer offices, patent law firms, venture capital firms, start-up companies, and related settings.

TECH 780 - Intellectual Property Law for Engineers & Scientists**Credits:** 3

This course will cover the major doctrines of trade secrets, patents, copyrights, and trademarks, including what kinds of information qualify for protection, what must be done to obtain that protection, what rights owners and others have to use the information, and the underlying policy choices made by legislators and courts.

TECH 797 - Undergraduate Ocean Research Project**Credits:** 2

Students work as members of interdisciplinary project teams on contemporary ocean-related problems under the guidance of a faculty adviser. Student team defines problem, prepares a budget, conducts literature surveys, engages in dialogue with experts in the community, deals with vendors, designs, and builds a working engineering model, gathers and analyzes scientific data or conducts a comprehensive study, makes interim reports, and defends the results before a jury of experts. Prereq: normally senior standing and permission of the program director. A yearlong effort: 2 credits each semester, 4 credits total, an IA (continuous course) grade given at the end of the first semester. Writing intensive.

Attributes: Writing Intensive Course

Theatre & Dance (THDA)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

THDA 401 - Freshman Seminar**Credits:** 1

This course is an introduction to being a theatre and dance major. Students will examine academic standards expected in our department as well as management skills essential for success in balancing rehearsal and practicum schedules with academic responsibilities for all classes. This course is focused on helping majors understand expectations of being a Theatre and Dance major along with ways to cope with the stress.

THDA 435 - Introduction to Theatre**Credits:** 4

Introduces all aspects of theatrical production: play writing, acting, directing, design, technical theatre and construction, and theatre management. Cultural and social context of theatre in our time and through the ages. Introduces major classical and modern types of theatre. Selected plays are read and discussed, and attendance at theatrical production is required. Special fee.

Attributes: FinePerformingArts(Discovery)**THDA 436 - History of Theatre I****Credits:** 4

The history of theatre and its drama is introduced through close study of the world's greatest plays from the Greeks through the end of the 17th century – How these plays were performed then, how they are performed now, their political, social, and cultural urgencies.

Attributes: FinePerformingArts(Discovery); Writing Intensive Course**THDA 436H - Honors/History of Theatre I****Credits:** 4

The history of theatre and its drama is introduced through close study of the world's greatest plays from the Greeks through the end of the 17th century – How these plays were performed then, how they are performed now, their political, social, and cultural urgencies. Writing intensive.

Attributes: FinePerformingArts(Discovery); Writing Intensive Course**THDA 438 - History of Theatre II****Credits:** 4

The history of theatre and its drama is introduced through close study of the world's greatest plays of the 19th, 20th, and 21st centuries – How these plays were performed then, how they are performed now, their political, social and cultural urgencies.

Attributes: FinePerformingArts(Discovery); Writing Intensive Course**THDA 438H - Honors/History of Theatre II****Credits:** 4

The history of theatre and its drama is introduced through close study of the world's greatest plays of the 19th, 20th, and 21st centuries – How these plays were performed then, how they are performed now, their political, social and cultural urgencies. Writing intensive.

Attributes: FinePerformingArts(Discovery); Writing Intensive Course**THDA 439 - In Bed with the Bard: Shakespearean Seduction from Romeo and Juliet to Leonardo and Claire****Credits:** 4

Introduces the imaginative process by which actors and directors bring Shakespeare's plays to life on the stage. Detailed study of eight plays.

Attributes: FinePerformingArts(Discovery)**THDA 440A - Honors/Theatre and Social Justice****Credits:** 4

This course that will examine to what degree dramatic literature and theatre art has effected socio-political change in the past, and in the present, through an in-depth exploration of texts, artistic methods and theatrical techniques. Students will create theatrical art related to various sociopolitical issues. Absolutely no experience in theatre is necessary, as this course is built around the premise that we all have the ability to create art and affect politics and society.

Attributes: FinePerformingArts(Discovery)

THDA 441 - Exploring Musical Theatre**Credits:** 4

This is an introductory course designed to enhance the student's enjoyment and understanding of musical theatre. Course content and internet exploration as well as play attendance are designed to acquaint students with and nurture an appreciation for musical theatre. This course is intended for introductory students of all majors who are interested in studying musical theatre elements, styles, and significance.

Attributes: FinePerformingArts(Discovery)**THDA 442 - Introduction to the Art of Acting****Credits:** 4

Designed for non-THDA major students interested in the art of acting. Students broaden and deepen their own creativity, gain a deeper understanding of human behavior and interaction, and strengthen analytical skills through class work and projects. Focuses on the basic skills of acting: the ability to effectively communicate, to gain access to the full spectrum of human emotions, and increase spontaneity. Important innovators and theorists in the field of theatre and acting are covered, such as Sanford Meisner, Constantine Stanislavski, Bertolt Brecht, Jerzy Grotowsky, Augusto Boal, and Jacques Lacoq. Additional topics include contemporary plays and playwrights, an historical perspective of the art of acting, and the current state of live theatrical performance. Theatre majors not allowed.

Attributes: FinePerformingArts(Discovery)**THDA #444A - What's Old Becomes New: Threading Theatrical Themes into Societal Truths****Credits:** 4

To what degree does updating theatrical themes contribute to societal norms and relevant commentary? This course will examine how enduring dramatic ideas evolve by comparing plays that are written in reaction to or as an extension of a provocative piece, both carrying on similar themes but told in updated ways. Students also will investigate the role these adaptations play in theatre history, why they are done and whether they are justified as quality art.

Attributes: FinePerformingArts(Discovery); Inquiry (Discovery)**THDA 444B - Famous Dancers of the 20th Century****Credits:** 4

The purpose of this course is to provide an introduction to the dancers of the twentieth century whose contributions to the art form have made dance an important cultural necessity. This includes examining how their style of dance and unique personalities has had a major influence on our perceptions of dance and how they have had an effect on society. Writing intensive.

Attributes: FinePerformingArts(Discovery); Inquiry (Discovery); Writing Intensive Course**THDA 450 - History of Musical Theatre in America****Credits:** 4

Study of the development of the musical and its relationship to American social history.

THDA 458 - Costume Construction**Credits:** 4

Study and development of costuming techniques, including hand and machine sewing, pattern drafting, alterations, and fabric manipulation. Emphasis on demonstrated understanding. Special fee.

THDA 459 - Stagecraft**Credits:** 4

Elements of play production: basic building components, tools, and materials for producing the scenery; equipment and shop layouts supporting all of the areas of the set, lighting, and costume designs; and consideration of various stage spaces and theatrical venues. Practical application on University theatre productions. Special fee. Lab.

Attributes: FinePerformingArts(Discovery)**THDA 460 - Elements of Design****Credits:** 4

Course is designed for students who are interested in theatrical design elements including scenery, costume, lighting and sound. Class encompasses lecture, discussion, presentation and studio (work in class) formats. Critique and discussion are essential to the creative thinking that a designer needs to have. Throughout the course, each student is expected to complete projects that incorporate the design elements they have studied.

THDA 462 - Ballet I**Credits:** 4

Introductory lecture and dance technique course focusing on the fundamentals of ballet technique and the historical development of ballet from the Renaissance to modern times. This ballet class will improve strength, flexibility, coordination, agility, endurance, and musicality while incorporating an appreciation for artistry. No dance experience required, only willingness to develop at your own pace. Open to both majors and non-majors.

Attributes: FinePerformingArts(Discovery)**THDA 463 - Theatre Dance I****Credits:** 4

Introductory lecture and dance technique course focusing on how technology, industrialization and popular culture impact the art by discussing dancers, choreographers, films and musicals of the 20th century. Jazz and tap class will improve strength, flexibility, coordination, and musicality. No Dance experience required, only willingness to develop at your own pace. Students with prior experience are expected to register for THDA 563 or THDA 663. Instructor determines appropriate level. Class open to both majors and non-majors. Special Fee.

Attributes: FinePerformingArts(Discovery)**THDA 464 - Ballet Cross-Training****Credits:** 1

Traditional ballet exercises will be modified to focus on repetition and body mechanics to improve athletic skills through dance. This ballet class will help students further develop strength, coordination, speed, agility, flexibility, fluidity, balance, efficiency of movement, and mental focus. Particular emphasis will be given to psychomotor skill development through challenges that require applying unfamiliar ballet vocabulary while moving to music. No dance experience required, only willingness to develop at your own pace in a fun, judgment-free environment.

THDA 470 - Movement and Vocal Production**Credits:** 4

Expansion of the student's vocal and physical/kinesthetic awareness, utilizing basic theories and lessons of Lessac, Laban, and Alexander. Text exploration is supplemented with exercises from Berry. Permission required. Special fee.

THDA 475 - Stage Makeup**Credits:** 2

Fundamentals of juvenile, old age, character, and special stage makeup techniques. Special fee.

THDA 487 - History of Dance**Credits:** 4

This course will be a study of dance from prehistory to the present. Through an interactive approach students will gain methods to perceive, create and respond to the history of dance through integrated arts and technology. Activities both in and out of the classroom will aid in the understanding of dance and how it has evolved throughout history both socially and as a means of entertainment. This course will also examine how dance has influenced or collaborated with other art forms.

Attributes: FinePerformingArts(Discovery)**THDA 500 - Musical Theatre Voice I****Credits:** 1

This course provides students with a foundation in healthy, relaxed, and dynamic singing of primarily musical theatre repertoire. In addition to expanding the student's knowledge of and ability to sing various styles of musical theatre repertoire, this course provides a venue to explore and develop analytical skills relating to character and script.

THDA 520 - Creative Drama**Credits:** 4

Drama techniques leading to the design and execution of drama sessions with children. Includes role-playing, improvisation, and story dramatization. Lab.

THDA 522 - Storytelling, Story Theatre, and Involvement Dramatics**Credits:** 4

This course actively explores storytelling techniques based on individual needs. An examination of story theatre and involvement styles leads to practical experience in individual performances. Participants will actively develop performance techniques that reflect a variety of styles and approaches for storytelling. We will examine the historical significance of storytelling in Eastern and Western civilizations and develop a perspective on its role in culture and religion. Applications for both educational and entertainment purposes will be explored through acting and vocal techniques, games, media, felt board, and puppetry. This course will include an examination of story theatre and involvement styles and the development of the ensemble for performance. The projects will include individual performances and group collaboration of selected stories appropriate for a wide range of audiences. The final project will reflect the participant's individual needs and utilize storytelling techniques developed in the course. Special fee.

Attributes: FinePerformingArts(Discovery)**THDA 531 - The London Experience: Discovery****Credits:** 4

Learn about one of the greatest cities in the world during this 10-day trip to London. This Discovery class begins as a two-week, on-line course and then packs in a busy schedule visiting amazing sights and taking in some of the best theatre in the English speaking world. The course offers an insight into the history, politics, society and culture of London through the lens of art, architecture, music, and of course, theatre. Special fee.

Co-requisite: INCO 589**Attributes:** FinePerformingArts(Discovery)**THDA 532 - The London Experience****Credits:** 2

Exploration of the culture and history of London while enhancing study of live theatre prior to active study in the country. May be repeated to a maximum of 4 credits. IA (continuous grading). Special fee.

Co-requisite: INCO 589**THDA 541 - Art and Theatre Administration****Credits:** 4

Administration practices applied to arts, music, and theatre management. Fund raising, public relations, business and box office management, audience development and long range planning.

Attributes: Inquiry (Discovery)**THDA 546 - Costume Design for the Theatre****Credits:** 4

How to design costumes for the theatre, not figure drawing, although drawing techniques are taught. Script analysis and research and presentational techniques for costume design explored and implemented. Special fee. Prereq: THDA 460 or permission of instructor.

THDA 547 - Stage Properties**Credits:** 4

Research and manufacture of period and modern stage, trim, and hand properties. Prereq: THDA 459. Special fee.

THDA 548 - Stage Lighting Design and Execution**Credits:** 4

Script analysis, the light plot, and instrument schedule, including cue-writing, color, instrumentation, and the mechanics of developing a functional design. Special fee.

THDA 550 - Actor's Voice Through Text**Credits:** 4

Continuing development of the actor's techniques for creating increased vocal expressiveness. Addresses the methods of varying vocal style and presentation through in-depth analysis and interpretation of the text. Prereq: THDA 470.

THDA 551 - Acting I**Credits:** 4

Development of fundamental vocal and physical stage techniques for actors and directors through exercises, improvisation and theatre games. Special fee.

Attributes: Inquiry (Discovery)**THDA 552 - Acting II****Credits:** 4

Focuses on strengthening the actor's ability to achieve a higher level of truth, presence, and spontaneity on stage. Building on the approach devised by Sanford Meisner, this highly intensive class creates a bridge to connect these developing skills to various forms of text. Prereq: THDA 551. Special fee.

THDA 554 - Stage Combat**Credits:** 4

This course actively explores stage combat techniques for unarmed combat as well as basic rapier swordplay. Students are expected to prepare hand-to-hand acting projects as well as a final rapier fight project which demonstrates proper stage combat techniques learned during the semester. Special fee.

THDA 555 - Musical Theatre I**Credits: 4**

Foundations of solo musical theatre performance, including the development of the speaking and singing voice, stage movement, and character analysis explored through exercises, improvisation, theatre games, in-class performance, and written assignments. Lab. Special fee.

THDA 562 - Ballet II**Credits: 2**

This dance technique class is taught at an intermediate level and is an extension of Ballet I with a focus on developing ballet vocabulary and artistry. Open to both majors and non-majors. May be repeated for a maximum of 16 credits.

THDA 563 - Theatre Dance II**Credits: 2**

This dance technique class is an extension of THDA 463. Students will become versatile in a variety of dance styles, including contemporary and musical theatre style jazz and tap dance. Technical execution, artistry and improvisation will be explored. Open to both majors and non-majors. May be repeated for a maximum 16 credits. Prereq: THDA 463 or permission of instructor. Special fee.

THDA #564 - Compocinema**Credits: 4**

Compocinema examines dance/movement as an interdisciplinary form that integrates the human body, digital video camera, the computer program, and site-specific and/or collaborative formats. Emphasizing conceptual and practical approaches, students (individually and in groups) will take turns developing and performing movement as well as planning, designing, shooting, editing, observing, describing, analyzing, and revising video of dance/movement as artistic expression. Prereq: THDA 442 or THDA 462 or THDA 463 or THDA 551 or permission.

THDA 576 - Pointe**Credits: 2**

This class is taught at an intermediate level focusing on developing pointe technique and artistry. Classical variations are incorporated to study the history of ballet through practical application. 1-2 years of pointe technique required. If interested in beginning the study of pointe technique, contact the instructor. May be repeated up to a maximum of 16 credits. Open to both majors and non-majors.

THDA 583 - Introduction to Puppetry**Credits: 4**

Introduces the art of puppetry for general appreciation, entertainment, application in the classroom, and as a therapeutic tool. Emphasis on constructing a variety of puppets (e.g., hand, rod, shadow, and scarf) and adapting literary sources for scripts and performance. Special fee.

Attributes: FinePerformingArts(Discovery)

THDA 589 - Practicum**Credits: 1**

The practicum ensures a breadth of experience in the major, including sets, costumes, lighting, props, box office, marketing, and performing. Students must register for practicum every semester. They are notified of their practicum assignment at the beginning of each semester. Cr/F.

THDA 592A - Special Topics**Credits: 1-4**

Special topics, projects in theatre and dance. Content varies according to needs and interests of students and faculty. Course descriptions are available in department office. May be repeated for credit. Special fee.

THDA 597 - Dance Theatre Performance**Credits: 2**

Designed for students participating in UNH Dance Theatre Company. Skill development through rehearsal and actual performance experience. May be repeated for a maximum of 16 credits.

THDA 600 - Musical Theatre Voice II**Credits: 1**

This course is a continuation of THDA 500: Musical Theatre Voice I. Students build on the groundwork in vocal technique, analysis, and performance established in Musical Theatre Voice I and continue to explore and develop these skills.

THDA 624 - Theatre for Young Audiences**Credits: 4**

Introduces coaching and directing techniques for classical and contemporary acting styles in theatre for young audiences. Historical contents leads into practical exploration of actor training and coaching, production and design, choreography, and business management for theatre and for youth programs. Students develop teaching strategies for young performers and participate in a culminating project. Prereq: THDA 551 and THDA 436 or THDA 438. Special fee.

THDA 632 - Interpretation of Shakespeare in Theatre**Credits: 4**

Increases understanding of Shakespeare's language and action, and improves ability to speak his verse and prose with clarity and verve. Students achieve insights into Shakespeare's plays through the medium of performance. Weekly oral and written assignments. Prereq: THDA 551 and THDA 552; or permission of instructor.

THDA 633 - Dance Composition**Credits: 4**

Practical, developmental approach to process of creating dances. Prereq: THDA 561; 562; 563;/or permission. Special fee.

THDA 638 - American Theatre: 1920-1970**Credits: 4**

A survey of American plays from O'Neill onward. Students read and analyze two plays a week. Oral, written, and theatrical assignments. Prereq: (one of the following) THDA 436, THDA 438, THDA 450 or permission of the instructor.

THDA 640 - Playwriting**Credits: 4**

To illuminate and guide each student through the art and craft of writing for performance. This course explores the fundamental principles needed to build a realistic play that is intended to be produced upon the stage. Though the course is built around the construction of plays, the principles, writing exercises, readings, and other assignments serve as a solid base for any form of dialogue driven writing. Special fee.

THDA 640W - Playwriting**Credits: 4**

To illuminate and guide each student through the art and craft of writing for performance. This course explores the fundamental principles needed to build a realistic play that is intended to be produced upon the stage. Though the course is built around the construction of plays, the principles, writing exercises, readings, and other assignments serve as a solid base for any form of dialogue driven writing. Special fee. Writing intensive.

Attributes: Writing Intensive Course

THDA 641 - Stage Management**Credits: 4**

Introduces to the concepts and skills needed for stage management. Stage managers perform a central role in the theatrical production, coordinating artistic and technical elements. They need a thorough understanding of the script, strong management skills, and a solid background in all aspects of the theatre. Prepares students to function as a stage manager in productions at any theatre. Special fee.

THDA 650 - Scene Painting for the Theatre**Credits: 2**

Scene painting analyzed. Techniques and media to create a larger-than-life approach to scale, equipment for conversion, and appropriate stylistic techniques for enlargement reviewed. Employs basic painting techniques and methods of paint application, but scale conversion technique extend the training of easel painters. Prereq: THDA 459. Special fee.

THDA 651 - Rendering for the Theatre**Credits: 2**

Theatrical rendering is a presentational arrangement of given items in perspective appropriate to a set or in a costume at a frozen moment during the production, indicating appropriate mood, atmosphere, and depth. For the theatre, this is generally done in watercolor, but many other media are possible and are explored. Special fee.

THDA 652 - Scene Design**Credits: 4**

Scene design from script to finished design. Both aesthetic and practical viewpoints considered. Emphasis on presentational techniques: study of perspective and finished rendering. Prereq: THDA 460 or permission of instructor. Special fee.

THDA 653A - Performance Project**Credits: 2**

Application of prior coursework to a formal theatre production or to an individual performance or teaching project. Substantial written work is factored into the final grade. May be repeated for up to 8 credits. Writing intensive.

Attributes: Writing Intensive Course

THDA 653B - Performance Project/Musical Theatre**Credits: 2**

Application of prior coursework to a formal theatre production or to an individual performance or teaching project related to Musical Theatre. Substantial written work is factored into the final grade. May be repeated. Special fee. Writing intensive.

Attributes: Writing Intensive Course

THDA 654 - Scenic Arts Project**Credits: 2**

Application of prior coursework to a formal theatre production or to an individual performance or teaching project. Substantial written work is factored into the final grade. May be repeated up to a maximum of 8 credits. Writing intensive.

Attributes: Writing Intensive Course

THDA 655 - Musical Theatre Scene Study**Credits: 4**

Builds on and expands the techniques learned in Acting I and Musical Theatre Voice I, with a special emphasis on partner work and scene study. Prereq: THDA 551 or permission of instructor. Special fee.

Attributes: Writing Intensive Course

THDA 657 - Play Reading**Credits: 4**

A high-volume reading course that introduces a breadth of dramatic literature from ancient times to the present. Reading lists vary according to interests and needs of students. Students read and analyze three plays/week.

THDA 662 - Ballet III**Credits: 2**

Advanced-level course in technique. May be repeated for a maximum of 16 credits. Prereq: THDA 562 or permission. Open to both majors and non-majors.

THDA 663 - Theatre Dance III**Credits: 2**

This dance technique class is an extension of THDA 563. Students will become seasoned in contemporary jazz, musical theatre style jazz and tap dance. Technical execution, choreographic artistry and improvisation will be explored. Class open to both majors and non-majors. May be repeated for a maximum of 16 credits. Prereq: THDA 563 or permission of instructor. Special Fee.

THDA 665 - Aerial Dance**Credits: 2**

The study of aerial arts including two and one point trapeze and fabric. May be repeated for a maximum of 16 credits. Class open to both majors and non-majors. Prereq: THDA 662 or THDA 663. Permission Required.

THDA 670 - Dialects**Credits: 4**

Study and practice in basic dialect acquisition for performers. Prereq: THDA 470, THDA 551. Permission required. Special fee.

THDA 683 - Advanced Puppetry**Credits: 4**

In-depth study of the theory and practice of puppetry for the advanced student. Students develop skills in manipulation and construction of selected puppet forms and apply these skills in performance. Examines historical perspectives and the application of puppetry in the classroom and as a therapeutic tool. Prereq: THDA 583 or permission. Special fee.

THDA 684 - Special Topics**Credits: 2-4**

Exploration of topics agreed upon by students and instructor. Topics vary. May be repeated.

THDA 691 - Internship**Credits: 2-8**

Fieldwork with a regional or touring theatre. This advanced level internship allows the student to experience a professional theatre setting prior to graduation. Normally supervised by a qualified theatre professional, with frequent consultation with a faculty sponsor. A written report is required. May be part- or full-time with credits assigned accordingly. Permission required. Student must also register for a graded 4-credit independent study. May be repeated up to a maximum of 12 credits. Cr/F.

THDA 700 - Musical Theatre Voice III**Credits: 1**

This course is a continuation of THDA 600: Musical Theatre Voice II. Students continue to develop their skills of vocal technique, analysis, and performance established in Musical Theatre Voice II, while focusing these skills towards their application in auditioning for, and performing in, professional theatre. This course is repeatable for up to 3 credits.

THDA 721 - Arts Integration**Credits:** 4

This course examines the value and practical application of incorporating the arts into non-arts educational settings. From the perspective of multiple intelligences and varied learning styles, students investigate how the arts can enhance teaching methodology by developing and implementing lesson plans for a variety of non-arts subject areas. Active theatre involvement is limited; the focus is on practicing teaching methods. Special fee. Writing intensive.

Attributes: Writing Intensive Course**THDA 727 - Methods of Teaching Theatre****Credits:** 2-4

The capstone of the theatre education major's studies. Designed for students who are preparing to enter student teaching. Provides practical information, skills, and lesson plans that theatre teachers use as source material for the secondary classroom. Covers a wide range of teaching models. Students define and articulate a personal teaching philosophy, write comprehensive semester curricula and course syllabi, and create an extracurricular program plan and philosophy. Prereq: THDA 520. Special fee. Writing intensive.

Attributes: Writing Intensive Course**THDA 729 - Community Oriented Drama Programs****Credits:** 1-4

Advanced practicum in designing, developing, and producing drama programs for the school and community. Includes audience analysis and marketing skills as well as adapting spaces, soliciting volunteers, and working with a limited budget. May be repeated to a maximum of 12 credits. Special fee.

THDA 732 - Choreography**Credits:** 4

Theoretical and practical consideration of the creative and aesthetic aspects of ballet, modern, and theatre dance. Prereq: THDA 633. Special fee.

THDA 741 - Directing**Credits:** 4

A process oriented approach to the art of stage directing. The course begins with an in-depth focus on script analysis. Students then develop their skills as the "master storyteller" through imagination, interpretation, communication, and style. Prereq: THDA 551 and THDA 552. Special fee.

THDA 742 - Directing II**Credits:** 4

In-depth study of the theory and practice of stage direction for the advanced student. Builds on 741, Directing. Students strengthen and expand their existing knowledge of the subject area. Exploration focuses on three areas of directorial communication: application to periods and styles, exploration of avant-garde theory, and directorial technique. Concludes with a major project mounted for public performance. Prereq: THDA 741. Special fee.

THDA 755 - Advanced Musical Theatre**Credits:** 4

Students learn to integrate and expand on techniques in previous acting, musical theatre, and voice classes, with special emphasis given to audition techniques, repertoire expansion and specialization, and in-depth analysis of the business and personal requirements necessary to be a successful artist in the professional theatre. Prereq: THDA 551 and THDA 655, or permission of the instructor. Special fee.

THDA 758 - Acting III**Credits:** 4

Applies the principles and techniques acquired by students in THDA 551 and THDA 552 to various genres, such as epic and absurdist, and to mediums such as television and film. Special attention is given to characterization beyond the student's standard range and the development of the actor as a creative artist, using the techniques of such methodologists as Lacoq, Laban, and Grotowski. Prereq: THDA 551 and THDA 552. Special fee.

THDA 759 - Acting: Period and Style**Credits:** 4

Techniques of style analysis and period research. For the first time in the students' undergraduate actor training, students synthesize their basic actor training with the heightened language and archetypal characterization inherent in the classical theatre of the ancient Greeks, the Commedia dell' Arte, the Renaissance, the Neoclassical period, and the Restoration period. Prereq: THDA 470, THDA 551, THDA 552; one semester of THDA 436 or THDA 438, or permission. Special fee.

THDA 760 - Teacher Planning for Theatre**Credits:** 4

Focuses on lesson and unit planning for the areas of high school theatre history, play analysis, and play writing. Students will practice various methods of teaching these areas of drama. Prereq: THDA 436 and THDA 438. Special fee.

THDA 786 - Dance Pedagogy**Credits:** 4

Methods course that focuses on the art and science of teaching the movement forms of ballet, modern, jazz and tap. Designed to prepare students who are seeking dance certification with a M.Ed. or a M.A.T., or who wish to open their own studio. Provides background into the nature of teaching, standards that make up good teaching, awareness of National/State standards, and study and practice of lesson plans in K-12 school curricula or private studios. Prereq: THDA 462 and THDA 562, or THDA 463 and THDA 563, or permission of the instructor.

THDA 791 - Internship in Theatre and Dance**Credits:** 2-8

Fieldwork with a regional or touring theatre or with a theatre education program. This advanced-level internship allows the student to experience a professional theatre/theatre education setting prior to graduation. Normally supervised by a qualified theatre professional, with frequent consultation with a faculty sponsor. Written report required. May be part- or full-time with credits assigned accordingly. Permission required. May be repeated up to a maximum of 12 credits.

THDA 795 - Independent Study**Credits:** 1-8

Advanced individual study. Specific independent study opportunities are sometimes posted in the Theatre and Dance Department Office. Project, which includes a substantial piece of writing, must be developed with supervising instructor. May be repeated up to a maximum of 8 credits.

THDA 795W - Independent Study**Credits:** 1-8

Advanced individual study. Specific independent study opportunities are sometimes posted in the Theatre and Dance Department Office. Project, which includes a substantial piece of writing, must be developed with supervising instructor. May be repeated up to a maximum of 8 credits. Writing intensive.

Attributes: Writing Intensive Course

THDA 796 - Independent Study**Credits:** 1-8

Advanced individual study. Specific independent study opportunities are sometimes posted in the Theatre and Dance Department Office. Project, which includes a substantial piece of writing, must be developed with supervising instructor. May be repeated up to a maximum of 8 credits.

THDA 796W - Independent Study**Credits:** 1-8

Advanced individual study. Specific independent study opportunities are sometimes posted in the Theatre and Dance Department Office. Project, which includes a substantial piece of writing, must be developed with supervising instructor. May be repeated up to a maximum of 8 credits. Writing intensive.

Attributes: Writing Intensive Course**THDA 798 - Senior Thesis****Credits:** 2

Supervised research leading to the presentation of a major research paper. Prereq: permission, majors only, senior standing. Writing intensive.

Attributes: Writing Intensive Course**THDA 798H - Honors Senior Thesis****Credits:** 4

Supervised research leading to the presentation of a major research paper; the resulting paper is defended in an oral presentation before department faculty. Required for graduation from the honors program in Theatre and Dance. Prereq: permission, majors only, and senior standing. Writing intensive.

Attributes: Writing Intensive Course**THDA 799 - Capstone Project****Credits:** 2 or 4

This required course incorporates and tests the knowledge that majors have learned over their careers in the Department of Theatre and Dance. Capstone experiences are tailored to each student through conference with their adviser in their specific Theatre and Dance track. Writing intensive.

Attributes: Writing Intensive Course**THDA 799H - Honors/Capstone Project****Credits:** 4

See description for THDA 799. THDA majors only. Writing intensive.

Attributes: Writing Intensive Course

Tourism Planning & Development (TOUR)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

TOUR 400 - Introduction to Tourism**Credits:** 4

Provides an informational foundation in tourism and gives a more extensive knowledge of the tourism industry. Examines historical perspectives, tourism organization, and supply and demand of the tourism industry. Discusses the dynamic and pluralistic nature of the tourism industry.

TOUR 510 - Tourism and Global Understanding**Credits:** 4

Introduces ways in which tourism can act as a vehicle to understanding foreign cultures. Responsible tourism, has the potential to help bridge cultural and psychological distances that separate people of different races, religions, and socio-economic classes. Through responsible tourism we can learn to appreciate, trust, and respect the human diversity that our world has to offer. Helps students gain an informed acquaintance with other cultures and customs, and to understand the central role of tourism in international and cross-cultural understanding. Cr/F option.

TOUR #615 - Tourism Planning and Development**Credits:** 4

The planning and development of tourist resources and programs within a geographic region. Planning models are reviewed and analyzed. The relationship among tourists, tourist developments, and the planning of tourist attractions and services is examined. A strategic planning process is applied to the development of a regional tourism plan in New Hampshire. Prereq: TOUR 400.

TOUR #705 - Ecotourism: Managing for the Environment**Credits:** 4

Ecotourism embraces both the environment and economics. Provides a comprehensive framework for planning and managing ecotourism in order to both maximize potential benefits and minimize potential costs for people and the environment. Seminar format. Case studies used to assess the role of ecotourism in the sustainable development of natural resources. Prereq: TOUR 400, juniors or seniors only.

TOUR 767 - Social Impact Assessment**Credits:** 4

Provides a cross-disciplinary perspective on the issues, problems, and methods of Social Impact Assessment (SIA). Provides analytic approach and theoretical framework for the assessment of diverse events, including changes in the natural environment, the local economy, or dominant technology. SIA is required of most U.S. and Canadian federal- and state-sponsored projects that come under the National Environmental Protection Act, as well as all projects funded by international donor agencies. (Juniors and seniors only.) Writing intensive.

Attributes: Writing Intensive Course**TOUR 798 - Independent Study****Credits:** 1-4

Special assignments in readings, investigations, field problems. May include teaching experience. Prereq: permission.

TOUR 798W - Independent Study**Credits:** 1-4

Special assignments in readings, investigations, field problems. May include teaching experience. Prereq: permission. Writing intensive.

Attributes: Writing Intensive Course

TSAS Communication (COM)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

COM 209 - Expository Writing and Reading**Credits:** 4

The main course goal is to produce inquisitive capable and confident writers for written communication challenges in higher education and future careers. Particular focus is paid to practice in visual description, research, argument, revision and analytical reading. Instructors focus on writing as a process of learning, not a product of learning. Includes individual conferences with students to discuss their writing and drafts. Class sessions are driven by open discussion and group activities.

Attributes: Writing Skills(Discovery); Writing Intensive Course**COM 210 - Public Speaking****Credits:** 3

In a recent Graduate Management Admissions Council (GMAC) survey, 86% of recruiters for major employers claimed "communication skills" as the first trait they seek in new employees. That said, building confidence and practicing public communication is a way to stand out in both social situations and the workplace. In COM 210, we practice persuading, instructing and storytelling in an active atmosphere, all with an effort to build confidence in oratory, analyzing audiences and generating quality ideas.

COM 212 - Writing in the Workplace**Credits:** 3

Practice in various forms of technical and professional writing: technical instructions and descriptions, reports, proposals, business letters, and more. Applications relate to employees/employers, suppliers, customers, and others. The course emphasizes the importance of layout and design to effective communication.

COM 292 - Studies in Communications**Credits:** 1-3

Students who have the ability and adequate preparation to work independently may propose a contract to design a course or research project on a topic not available through existing course offerings. The purpose of this research or scholarly endeavor is to explore new areas in the student's field of study or to pursue course materials in greater depth. Work is supervised by an appropriate faculty/staff member and credit varies depending on the proposed project/research. Areas may include the art of persuasive speaking, writing, literature, or technical reporting. Permission required.

COM 591 - Studies in Communication**Credits:** 1-3

Students who have the ability and adequate preparation to work independently may propose a contract to design a course or research project on a topic not available through existing course offerings. The purpose of this research or scholarly endeavor is to explore new areas in the student's field of study or to pursue course materials in greater depth. Work is supervised by an appropriate faculty/staff member and credit varies depending on the proposed project/research. Areas may include the art of persuasive speaking, writing, literature, or technical reporting. Permission required.

TSAS Mathematics (MTH)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

MTH 202 - College Algebra**Credits:** 3

Review of elementary algebra, coordinate system, inequalities, roots, polynomials, factoring, radicals, and functions. A significant amount of class time is spent on problem solving in all concept areas. The course provides a solid foundation of algebraic topics including, logarithmic functions, exponential function, matrices, inverse functions and non-linear systems. Placement is based on satisfactory score on math assessment.

MTH 203 - Algebra and Trigonometry**Credits:** 3

Basic algebra topics, radicals, exponents, introduction to functions and graphs, simple applications of algebra. Trigonometric functions of angles; applications of right triangles, identities, and equations. 3 lec.

TSAS Social Science (SSCI)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

SSCI 201 - Human Relations**Credits:** 4

Learn theories of human behavior and develop skills for applying these concepts in the creation of more effective interpersonal and professional relationships.

SSCI 202 - Social Issues**Credits:** 4

Study of social problems in today's world. Particular emphasis on various viewpoints of their causes and solutions. Issues covered range from individual to worldwide.

SSCI 292 - Studies**Credits:** 1-4

Students who have the ability and adequate preparation to work independently may propose a contract to design a course or research project on a topic not available through existing course offerings. The purpose of this research is to explore new areas in the student's field of study or to pursue course material in greater depth. Work is supervised by an appropriate faculty/staff member and credit varies depending on the proposed project/research. Areas may include a specific social science topic. Course may be repeated up to a maximum of 8 credits.

SSCI 403 - Environmental Issues & Society**Credits:** 2

Course focuses on contemporary environmental problems and their relationship to society. Students examine the nature and extent of specific problems, such as pollution or global warming, and review current thinking about causes, possible interrelationships, and proposed solutions. 2 lec.

SSCI #404 - Leadership Effectiveness Grp P**Credits:** 2

By studying various theories of group development and leadership approaches, students explore the ways leaders influence group behavior and goal attainment. Students practice applying theories to specific situations and explore their own individual strengths and weaknesses as both leaders and group members.

TSAS Thompson School Applied Science (TSAS)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

TSAS 235 - Introductory Chemistry

Credits: 3

Introduces chemical concepts and principles, including chemical symbols, conversion factors, chemical calculations, chemical and physical properties and changes. Introduction to organic compounds—their structure, major reactions, and applications—followed by an elementary introduction to biomolecules and how they function in metabolism. Other topics include acids, bases, solutions, and radiation chemistry.

TSAS 405A - Computers in the Workplace/Focus on Software

Applications

Credits: 2

A foundation course in the practical use of computer technology with a focus on intermediate functions in software applications common in the workplace; word processing (styles, tables); refining spreadsheet (charts, linking and embedding objects/documents); presentations (working with images) and working between applications. Available only for students in Thompson School of Applied Science.

TSAS 405B - Computers in the Workplace II/Focus on Hardware, Internet, Applications and Security

Credits: 2

This half semester course focuses on hard disk management (folder structure in the latest version of Windows and in a networked environment), hardware (including various devices and output) selection criteria, basic computing networking (including the university's network), internet functions (Boolean search terms); safe computing (cloud tools, document sharing) and cyber security, and hardware teardown. Available only for students in the Thompson School of Applied Science.

TSAS 495 - Thompson School:Special Topics

Credits: 1-4

New or specialized courses not normally covered in regular course offerings. May involve one, two or more program areas within the Thompson School of Applied Science. Topics and prerequisites (if any) to be announced before registration. May be repeated up to 8 credits. May include a lab. Special fee on some sections. Some sections may be Cr/F.

UNHM Associate Degree English (ENG)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

ENG #301 - Introduction to College Composition and Reading

Credits: 4

Introduces students to academic standards of writing and reading at the college level through a variety of reading and writing tasks utilizing reflection, review and revision. Designed as a preparatory course for ENGL 401. Students are required to meet individually with instructors outside of class. May not be taken for credit toward a Bachelor's Degree. Special fee.

ENG #301A - Introduction to College Composition and Reading for ESL Students

Credits: 4

Introduces ESL/ESOL students to standards of academic English in listening, speaking, reading, and writing. Strengthens vocabulary and grammar skills. Designed as a preparatory course for ENGL 400. May not be taken for credit toward a Bachelor's Degree.

UNHM Independent Study (UMIS)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

UMIS 599 - Independent Study

Credits: 1-4

Independent study with the approval and sponsorship of UNHM faculty of material not covered in regular course offerings. Barring duplication of subject, may be repeated for credit up to a maximum of 8 credits.

UNHM Special Topics (UMST)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

UMST 401 - First Year Seminar

Credits: 1

The focus of this seminar is not on a specific academic subject or field of study; instead, the focus is on the student. This course is intentionally designed and proactively delivered for the purpose of promoting personal success-in college and in life after college—by fostering the development of skills or strategies that are both applicable and valuable across subjects. The course focuses on the following topics: college expectations and opportunities, campus resources, learning styles and strategies including lecture note-taking, test taking, memory and concentration; life management, goal setting, educational planning, career decision-making, health maintenance, diversity and instructor/student relationships. The course integrates personal growth, academic and career success with problem solving, critical and creative thinking.

UMST 402 - Transfer Seminar

Credits: 1

The Transfer Seminar focuses on students adjustment to being at UNH Manchester. By incorporating topics such as campus resources, financial literacy, internship and career planning, self-reflection, and information literacy, the goal of this course is to foster the development of skills or strategies that are both applicable and valuable across disciplines as well promoting personal success during and after college.

UMST 500 - Internship

Credits: 1-4

The UNHM internship places students in a variety of business and organizational settings under the direction of a faculty adviser and workplace supervisor. Students fulfill the obligations of the workplace internship plan, as well as complete individually-designed projects of academic merit under the direction of UNH faculty. Open to matriculated students with a 2.5 GPA or better. Students must receive approval of the UNHM internship coordinator. May be taken from 1-4 elective credits per semester, to a maximum of 8 credits. Credit/Fail.

UMST #501 - Money and Independence**Credits:** 1

This course provides students with an objective, neutral and current introduction to personal financial literacy. Students develop the skills necessary to establish good financial habits and a healthy financial future. This course helps students to become familiar with fundamental financial concepts including budgeting, credit, contracts, student loans, identity theft and planning for the future. No credit for students who have completed UMST 599 Financial Literacy and Advocacy or UMST 599 Money Management and Independence.

UMST 521 - Tutor Development**Credits:** 3

This interdisciplinary course, team-taught by the Director and Assistant Director of the Learning Center, is intended to prepare undergraduates for working as peer tutors. Students will study theories of adult development, learn several approaches to tutoring in their discipline(s), and practice their tutoring and communication skills. Cannot be repeated. Prereq: permission of instructor is required.

Attributes: Writing Intensive Course**UMST 523 - Shared Learning****Credits:** 2

Shared Learning aims to teach students about theories of collaborative learning, tutoring, and mentoring and to provide opportunities for the students to apply the theories. Students discuss ethical issues, conflict resolution, and differences in styles or goals. They develop and practice effective communication skills, including reflective listening and constructive feedback.

UMST 525 - Exploring Leadership**Credits:** 1

Exploring Leadership seminar is an introductory course on the foundations of student development and leadership. There is a particular focus on student leadership with an emphasis on mentoring new students. The seminar is designed to enable students to formulate and articulate their own personal philosophy of leadership and a leadership action plan. This course is applicable to any student already involved or interested in college leadership. No credit for students who have completed UMST 599: Exploring Leadership.

UMST 526 - Social Justice and Student Leadership**Credits:** 1

An exploration of social justice through personal and institutional lenses to analyze power and privilege, discrimination and prejudice, inclusion and equity through the intersections of multiple identities of race, gender, sexual orientation, class, nationality, ethnicity, ability and religion to develop student leaders who will also promote an equitable and inclusive environment and serve as social change agents at the college, on the campus, and in a diverse global society.

UMST 531 - Engaging in the Community: Learning through Service**Credits:** 1-4

Students provide service to the community while engaging in meaningful experiences that build upon their skills and interests and help develop an awareness of civic issues and community needs. The primary purpose of the course is to work in the community to meet a community need. Student critically reflect on their experiences in a bi-weekly seminar through in-class discussions, readings, and journaling. Course may be repeated for a total of 8 credits.

UMST 581 - Exploring Your Career Options**Credits:** 1

This course is designed to teach students how to make informed decisions about their career aspirations. Students will learn to identify essential resources that will assist them in gaining a better understanding of opportunities available to them. Career choice is very personal, therefore each student will identify a minimum of two paths of interest to research. By comparing and contrasting options, participants will be better prepared to accomplish and own their academic and career goals. Letter grades are assigned. This course cannot be repeated for credit. Students who enrolled in UMST 599 Internship and Career Planning Seminar previously are not eligible to take this course for credit.

UMST 582 - Internship and Career Planning Seminar**Credits:** 1

This course is strongly encouraged for any student seeking internship and/or employment opportunities. Participants will research and evaluate opportunities related to their career interests, conduct informational interviews, create tailored resumes and cover letters, use LinkedIn as a networking and job search resource, and participate in employer-based resume reviews and mock interviews. This course is open to all students in all majors and is suited for students interning and/or seeking employment within the next six months. Letter grades are assigned. This course cannot be repeated for credit. Students who enrolled in UMST 599 Internship and Career Planning Seminar previously are not eligible to take this course for credit.

UMST 599 - Special Topics**Credits:** 1-4

Occasional offerings dependent on availability and interest of faculty, barring duplication of subject, may be repeated for credit.

UMST 701 - Student Leadership Academy Capstone**Credits:** 1

In this Student Leadership Academy course, students will articulate and translate their career/leadership competencies they have developed throughout their undergraduate career. These competencies include communication, teamwork, leadership, professionalism, and self-awareness. Students will take steps toward being career ready by learning about industries and employers, building their professional portfolio, developing relationships with leaders, and growing their leadership experiences. Students will complete the final requirements for the Student Leadership Academy, including their required project, portfolio, and presentation. Prereq: UMST 525.

UMST 799 - Pre-Pharmacy Concurrent Enrollment**Credits:** 1-20

Registration place-holder for students completing the fourth year of their B.A. Biology Program at Massachusetts College of Pharmacy and Health Studies in the Pre-Pharmacy articulation program.

Veterinary Technology (VTEC)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

VTEC 424 - Introduction to Veterinary Technology**Credits:** 2

An overview of the veterinary technology field. Topics in veterinary office practice management are covered, including, appointment scheduling, inventory control, financial transactions, client communication and regulatory, legal, and ethical aspects of veterinary practice. Other topics include veterinary technician and animal science career options, professional development and domestic animal management including breed identification, terminology, and husbandry.

VTEC 497 - Veterinary Technology Work Experience**Credits:** 0

Provides students supervised introductory hands-on experience in a veterinary medical facility. Students apply skills learned in animal handling and nursing, laboratory methods, client communication and practice management courses. Students are responsible for obtaining a position in an approved veterinary facility and need to complete a minimum of 80 hours of work to fulfill course requirements. Must have rabies vaccine series completed prior to the start of the semester. Open to veterinary technology students only. Prereq: AAS 449.

VTEC 565 - Pharmacology for Veterinary Technicians**Credits:** 4

This course provides study in the area of veterinary medicines emphasizing classes and actions of drugs, calculating dosages, proper administration, and dispensing of drugs. Topics include general pharmacology, calculating dosages, pharmacy regulation guidelines and record keeping. Case-based learning is utilized to correlate common diseases in companion animals with associated pharmacological agents. Specifically, disease pathogenesis, diagnosis, and treatment options are discussed along with pertinent technician interventions and evaluations. Prereq: AAS 228, MTH 202.

VTEC 575 - Veterinary Anesthesia and Surgical Assisting**Credits:** 4

Theory and practical techniques for providing safe and effective anesthesia to veterinary patients, and providing nursing care and assistance in all aspects of veterinary surgery. Veterinary dental care is covered as well. For veterinary technology majors only. Prereq: AAS 550, AAS 579, VTEC 565. Veterinary Technology majors only.

VTEC 579 - Small Animal Practicum for Veterinary Technicians**Credits:** 2

An applied, companion animal care class held off-campus at the NHSPCA and/or Cocheo Valley Humane Society. Students work as a team to provide nursing care to shelter animals. Care includes patient evaluation, administration of medication and fluids, wound management, collection and analysis of diagnostic samples, and medical record keeping. Species are primarily dogs and cats but may also include other small mammals and birds. Prereq: AAS 579. Veterinary Technology majors only.

VTEC 582 - Pet Access to Wellness Services (P.A.W.S.)**Credits:** 1

PAWS provides veterinary technology students a service learning opportunity. Students manage a wellness clinic for pets, developing staffing and appointment schedules and education materials, and performing appropriate procedures on pets. Students are also responsible for providing laboratory and diagnostic services to shelter pets as needed throughout the semester. 2 semesters of 1 credit each are required. Prereq: AAS 449, VTEC 439.

VTEC 583 - Large Animal Practicum**Credits:** 2

An applied large animal class covering basic veterinary nursing care and procedures, focusing on horses and cows. The majority of class time is spent practicing hands-on skills with animals. Restricted to veterinary technology students only. Prereq: AAS 421, AAS 250.

VTEC 595 - Veterinary Technology Internship**Credits:** 3

Provides students supervised hands-on experience in a veterinary medical facility within a clinical setting, students apply skills learned in animal handling and nursing, diagnostics and laboratory, client communication and practice management courses. Students are responsible for obtaining a position in an approved veterinary facility prior to the start of the semester. Open to veterinary technology students only. Prereq: AAS 550, AAS 579.

VTEC 599 - Comprehensive VTNE Review**Credits:** 4

Course will prepare veterinary technology students for the Veterinary Technician National Examination (VTNE). Topics include VRNE qualification and registration procedures and standardized test-taking strategies, but will primarily focus on a systematic review of the nine knowledge domains covered on the VTNE. Specific course content will vary based on yearly changes to VTNE content and based on students' performance on a VTNE readiness assessment at the start of the course. Prereq: AAS 439, AAS 579, AAS 550, VTEC 565. Special fee.

Women's Studies (WS)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

WS 401 - Introduction to Women's Studies**Credits:** 4

Interdisciplinary survey of the major areas of women's studies: women's history, cross-cultural perspectives, women in literature, psychology of women, etc. Basic principles and concepts fundamental to more advanced women's studies research. Topics vary. Required for major and minor. Writing intensive.

Attributes: Social Science (Discovery); Inquiry (Discovery); Writing Intensive Course

WS 401H - Honors/Introduction to Women's Studies**Credits:** 4

Interdisciplinary survey of the major areas of women's studies: women's history, cross-cultural perspectives, women in literature, psychology of women, etc. Basic principles and concepts fundamental to more advanced women's studies research. Topics vary. Required for major and minor. Writing intensive.

Attributes: Social Science (Discovery); Writing Intensive Course

WS 403 - Gender Interactions in College Sports Culture**Credits:** 2

An integrative view of growing up as an athlete in American culture. Analysis of major perspectives on human development and implications in sports and education. With emphasis on gender, sexual assault, and racism.

WS 405 - Gender, Power and Privilege**Credits:** 4

This course explores the diversity of women's lives through the dynamics of status, power, privilege, and inequality in contemporary United States. Students will examine women's diverse experiences by using the theoretical framework of the social construction of race, gender, economic class, and sexual orientation in historical context. We will examine categories of difference and the processes, philosophical developments, institutions, and conditions that lead to and rely on power and privilege in modern American society.

Attributes: Humanities(Disc)**WS 444 - Trans/Forming Gender****Credits:** 4

Using a social construction approach, students explore the multiple ways in which gender is constructed within the lives of children, women, men, and transgender people. Specific attention focuses on the social institutions and systems that encourage both the construction and reproduction of gender identity and expression across the lifespan. Students actively participate in identifying historical and current day factors and institutions that shape gender. Students explore the roles of families, schools, educational settings, media, the workplace, recreation activities, the medical system, religion, laws, and the laws and the legal system in the construction of gender.

Attributes: Social Science (Discovery); Inquiry (Discovery)**WS 444A - Race Matters****Credits:** 4

Class examines race categories in the United States and how these historically changing categories shape our diverse realities across racial, ethnic, gendered, classed, and national identities. Students examine race as a category of difference and explore the multiple ways that individuals claim racial identities. Specific attention focuses on how diverse women have made history in their own lives and in the lives of others by resisting the interlocking systems of oppression.

Attributes: Historical Perspectives(Disc); Inquiry (Discovery)**WS #444B - Score!: Gender and Diversity in Sports****Credits:** 4

Utilizing guest lectures, films, readings, projects and discussion, this writing intensive course provides first-year students with the opportunity to investigate the social, historic, economic and political factors that shape sports opportunities for girls and women in the United States. Students examine the extent to which sports experiences are the same for all girls and women in their diversity, as well as comparable to males across their differences. Writing intensive.

Attributes: Social Science (Discovery); Inquiry (Discovery); Writing Intensive Course**WS 444C - On the Roads to Equality****Credits:** 4

Looking beyond what is traditionally thought of as the women's rights movement in the United States, this course remaps women's history and activism to include a diversity of women's experiences. A multicultural examination of history focuses on women's leadership and participation in immigrant rights, labor, the Black Women's Club, economic justice, reproductive rights, self determination and feminist movements during the 19th and early 20th centuries. Writing intensive.

Attributes: Historical Perspectives(Disc); Inquiry (Discovery); Writing Intensive Course**WS 444D - Cyborgs, Avatars, and Feminists: Gender in the Virtual World****Credits:** 4

Utilizing feminist theoretical and critical investigations of gender and techno culture, students explore women's popular and theoretical conceptions of cyberspace. Students explore numerous digital communication systems within cyberspace and examine how and why a diversity of women utilize these systems. This course provides students with the opportunity to investigate the impact that advancements in virtual technology have in the lives of women.

Attributes: Environment,TechSociety(Disc); Inquiry (Discovery)**WS 505 - Survey in Women's Studies****Credits:** 4

In-depth study of topics not covered in regular course offerings. The course explores the breadth and depth of Women's Studies from a historical perspective. In order to understand Women's Studies currently, students look at the historical foundations that contribute social, political, and economic influences on the topics. Barring duplication of topic, may be repeated for credit.

Attributes: Historical Perspectives(Disc); Inquiry (Discovery)**WS 510 - Framing Feminism: Gender Politics in Film****Credits:** 4

This course examines the history of feminist struggle in the U.S. by critically viewing and analyzing diverse films from the 1970s to the present. Students learn about the three waves of feminism and the various sociocultural, economic, sexual and political issues faced by women in the long and ongoing quest to achieve gender equality. Students explore methods of historical inquiry and film criticism to enable complex analyses of historical developments and contemporary arrangements of power. Attention is paid to how multiple identities and forms of oppression intersect in women's diverse lived experiences.

Attributes: Historical Perspectives(Disc)**WS 515 - Game Girl: The Social Construction of Gender Identities in Video Games****Credits:** 4

This course examines the representations of girls and women in digital gaming environments and patterns of digital game play. Students explore how gender intersects with the broader contexts of digital games and the game industry. Specific attention focuses on the Girl's Game Movement and the extent to which females are influenced by female characters in video games and how they are influencing the creation of new representations of females in video games.

Attributes: Social Science (Discovery)**WS 595 - Special Topics****Credits:** 1-4

In-depth study of topics not covered in regular course offerings. Prereq: permission; WS 401.

WS 595W - Special Topics**Credits:** 1-4

In-depth study of topics not covered in regular course offerings. Prereq: permission; WS 401. Writing intensive.

Attributes: Writing Intensive Course

WS 632 - Feminist Thought**Credits:** 4

Theories of women's oppression and emancipation explored from various historical, political, cultural, and social perspectives. A major goal of the course is to increase awareness of historical and contemporary feminist approaches to understanding women's experiences, representations, and relative positions in societies. The course also considers the interrelation of theory and practice and the impact of past feminist theories on feminist movements. Prereq: WS 401 or WS 405. Writing intensive.

Attributes: Writing Intensive Course**WS 795 - Independent Study****Credits:** 1-4

For advanced students who have the preparation to carry out an individual project of supervised research on a specific women's studies topic. Preparation should include WS 401 or equivalent, and/or other women's studies courses. Barring duplication of topic, may be repeated for a maximum of 8 credits. Prereq: permission of instructor and women's studies coordinator.

WS 796 - Advanced Topics**Credits:** 4

Advanced or specialized topics not normally covered in regular course offerings. May be repeated, but not in duplicate areas. Prereq: permission.

WS 796W - Advanced Topics**Credits:** 1-4

Advanced or specialized topics not normally covered in regular course offerings. May be repeated, but not in duplicate areas. Prereq: permission. Writing intensive.

WS 797 - Internship**Credits:** 4

Students gain practical experience in a woman-focused agency or organization. Plan of study and requirements are developed together with a faculty adviser and the student's workplace adviser. Bi-monthly seminar with all internship students and instructor. Prereq: permission. WS majors or minors. May be repeated up to a maximum of 8 credits.

WS 798 - Colloquium**Credits:** 4

Intensive study of specialized topic for advanced students. Topics vary with instructor. Barring duplication of topic, may be repeated for credit. Required for WS majors. Writing intensive.

Attributes: Writing Intensive Course**WS 799 - Honors Thesis****Credits:** 4-8

With a faculty sponsor, students enrolled in the honors-in-major program develop an independent, investigative project in women's studies. Written thesis. Prereq: permission, majors only.

Zoology (ZOOL)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

ZOOL 400 - Professional Perspectives in Zoology**Credits:** 1

Presentations by departmental faculty provide an informal overview of various zoological topics and professional opportunities. The course acquaints students with faculty, provides information on departmental research projects, and facilitates early research involvement for students. Required for all first-year zoology majors. (Fall only). Cr/F.

ZOOL 401 - Human Biology**Credits:** 4

Elementary study of structure, function, and development of all systems of the body. No credit toward major or minor. Cannot be taken for credit after BMS 507 and BMS 508. Special fee. Lab.

Attributes: Biological Science(Discovery); Discovery Lab Course**ZOOL 406 - Evolution of Human Behavior****Credits:** 4

All species are subject to evolutionary forces and humans, including our vast array of behaviors, are no exception. We therefore explore human behavior in the context of evolution by natural selection, with a focus on current research in this field. By understanding the behavioral adaptations that allowed our human ancestors to better navigate the challenges of survival and reproduction, we can hope to understand our own actions on a more integrative, comprehensive level.

Attributes: Biological Science(Discovery)**ZOOL #412 - Biology of Animals****Credits:** 4

Fundamentals of modern animal biology from cells to organisms, including structure, function, genetics, development, ecology, and the diversity produced by animal evolution. Weekly demonstrations and virtual e-labs provide a hands-on introduction to the animal kingdom. Special fee. Lab. (Fall semester only.)

Attributes: Biological Science(Discovery); Discovery Lab Course**ZOOL #444 - Dogs to Dragons: Origins of Species****Credits:** 4

A freshman "inquiry" seminar introducing fundamental evolutionary concepts and mechanisms, as well as examining the nature of science, and the ways in which scientists use imagination and inference to better understand the natural world. Through evolutionary case studies ranging from the very real to the purely imaginary, students learn to compare and assess explanatory hypotheses, and to use creative, scientifically-disciplined inference as working scientists do. They also develop their abilities to decide what is or isn't science, and to judge the relevance and adequacy of evidence claimed to support hypotheses. The course begins by introducing the mechanism of natural selection through the engaging example of dog domestication, move from there to broader discussions of speciation (including species definitions, and case studies of speciation in progress). The central portion of the course focuses on issues of definitions (what is a "hypothesis" anyway?), and developing increasingly sophisticated and well-informed judgments about different sorts of biological information. In the final section, we explore proper and improper roles of imagination and creativity in science: how (and why) real scientists use fictional species, and how to tell the difference between fictions and frauds while leaving room for humor and invention. Writing intensive.

Attributes: Biological Science(Discovery); Inquiry (Discovery); Writing Intensive Course**ZOOL 518 - Vertebrate Morphology****Credits:** 5

Evolutionary and comparative examination of vertebrate anatomy. Covers the structure of the major systems at both the macroscopic and microscopic levels. Prereq: BIOL 411 and BIOL 412 or equivalent. Special fee. Lab.

ZOOL 529 - Developmental Biology**Credits:** 4

Introduces developmental biology, examining basic developmental mechanisms and their evolutionary contexts. Principles and tools of the trade, overview of major developmental events in various phyla, current areas of research and other special topics. Labs include different ways to observe development (from low- to high-tech), and work with selected live material. Prereq: BIOL 411 and BIOL 412 or equivalent. No credit if credit earned for ZOOL 729. Special fee. Lab.

ZOOL 542 - Ornithology**Credits:** 4

Identification and biology of birds, especially those of northeastern United States. Involves field trips, laboratory work, and lectures. Prereq: one semester of biology. (Spring semester only.)

ZOOL 600 - Field Experience**Credits:** 1-4

A supervised experience providing the opportunity to apply academic experience in settings associated with future professional employment and/or related graduate opportunities. Must be approved by a faculty advisor selected by the student. May be repeated to a maximum of 8 credit hours. Prereq: permission. Cr/F.

ZOOL 610 - Principles of Aquaculture**Credits:** 4

Introduces the culture practices employed for production of aquatic organisms. Topics include ecological and environmental considerations, selective breeding, nutrition, diseases, processing, and marketing. Emphasis on finfish. Prereq: BIOL 411 and BIOL 412 or equivalent.

ZOOL #611 - Principles of Aquaculture Lab**Credits:** 2

Laboratory exercises in aquaculture covering the use of chemical reagents to monitor water quality; brood stock feeding and management; use of anesthesia and fish handling; spawning marine finfish; culturing algae, rotifers and *Artemia* for marine larviculture; larviculture of marine finfish; assessing fish growth; hatchery hygiene. Includes site visits to local production facilities. Prereq: BIOL 411 and BIOL 412 or equivalent. Coreq: ZOOL 610.

Co-requisite: ZOOL 610**ZOOL 613 - Animal Behavior****Credits:** 5

Introduces the naturalistic study of animal behavior. Emphasizes the evolution, development, physiology, and ecology of behavior. Topics include the genetic and acquired bases of behavior, neuroethology and behavioral endocrinology, communication, orientation, foraging strategies, reproductive ecology, and the evolution of altruistic behavior. Prereq: BIOL 412 or equivalent. Lab. Writing intensive. Special fee.

Attributes: Writing Intensive Course**ZOOL 625 - Principles of Animal Physiology****Credits:** 3

Introduces the principles of animal function. The major systems (digestion, metabolism, respiration, circulation, osmotic and ionic regulation, nerve-muscle function, endocrine control) are covered with emphasis on functional mechanisms at the cell and tissue levels. Prereq: one year of introductory biology is required.

ZOOL 626 - Animal Physiology Laboratory**Credits:** 2

Basic training in the measurement of function in animals, data analysis and expression, and the development of scientific communication skills. Special fee. Writing intensive.

Co-requisite: ZOOL 625**Attributes:** Writing Intensive Course**ZOOL 628 - Marine Invertebrate Evolution and Ecology****Credits:** 5

Stresses the rich diversity of marine invertebrates by integrating phylogenetic trends with physiological and behavioral adaptation, and with ecological and symbiotic interactions. Offers a comparative survey of invertebrates from protozoans to protochordates; deals with aspects of form and function, development, evolution, classification, ecology, and natural history. Students work with live and preserved animals. Extensive dissections and a field component are required. Prereq: BIOL 411 and BIOL 412. Special fee. Lab. (Not offered every year.)

ZOOL 690 - Evolution**Credits:** 4

Biological evolution is the changes within populations of organisms that extend beyond the lifetime of individuals. Darwin's mechanism of evolution by natural selection, and other evolutionary forces, explain the diverse adaptations of organisms to different environments. Topics include principles of heredity, sources and maintenance of variation, adaptation, speciation, classification, development, the history of life and the earth, and current controversies. Prereq: BIOL 411 and BIOL 412 or equivalent. Writing intensive.

Attributes: Writing Intensive Course**ZOOL 708 - Stream Ecology****Credits:** 4

Ecological relationships of organisms in flowing water; streams as ecosystems. Lectures on physical and chemical features of streams, floral and faunal communities, and factors controlling populations and behavior of stream organisms. Lab exercises employ both field and laboratory experimental techniques. Special fee. Lab. (Not offered every year.)

ZOOL 710 - Ichthyology**Credits:** 4

Introduces the evolution, systematics, anatomy, physiology, and ecology of fishes, with emphasis on New England species. Prereq: principles of biology or equivalent. Lab. (Offered in alternate years.) Special fee.

ZOOL #721 - Aquatic Invasive Species**Credits:** 4

Capstone course for a limited number of biological science majors to work closely with and help teach a Discovery course for non-majors in biology. Involves lectures, discussions, and laboratory and field exercises and write-ups focusing on managing aquatic invasive species based on an understanding of their ecology. Special fee.

ZOOL 726 - Conservation Behavior**Credits:** 4

Conservation biology is well established as a crucial bridge between basic biology and resource management. Recently, biologists have begun to recognize the importance of the link between conservation and animal behavior. Management strategies can have very real impacts on the behavior of animals; likewise, animal behavior (in captivity and the wild) should inform our approach to conservation in a variety of contexts. This interdisciplinary course explores the causes and consequences of this relationship. Prereq: ZOOL 613, NR 433, or NR 640. Writing intensive.

Attributes: Writing Intensive Course**ZOOL 733 - Behavioral Ecology****Credits:** 4

Behavioral adaptations of animals to their environment, including the evolution of behavior and behavioral genetics; foraging and competition for resources; reproductive ecology, mating systems and parental care; and the evolution of cooperative behavior. Examples include both vertebrates and invertebrates. Emphasizes critical understanding of concepts as exhibited in oral and written exercises. Students conduct independent investigations. Prereq: ZOOL 713 or permission. Lab. (Offered in alternate years.) Writing intensive.

Attributes: Writing Intensive Course**ZOOL 736 - Genes and Behavior****Credits:** 4

Genes and behavior examines the genetic underpinnings of animal behavior, and how behavior evolves on a genetic level. The course primarily relies on readings from the primary literature, using examples from laboratory model organisms, animals in their natural habitats, and humans. Topics include aggressiveness, social behavior, personality, parental care, communication, mating behavior, novelty seeking behavior, and foraging. This interdisciplinary course examines these behaviors at multiple levels, including genomics, population genetics, molecular genetics, epigenetics, endocrinology, and neurobiology. Prereq: GEN 604 and ZOOL 713 or equivalent.

ZOOL 745 - Biology and Diversity of Insects**Credits:** 4

The lecture examines the unique biology and structure of insects, the most diverse group of organisms. The laboratory project is based on past public requests for an understanding of aquatic insect biodiversity in streams. Experience in sampling, sorting, and identifying aquatic insects is developed, and an understanding of biodiversity indices is developed for a formal report and presentation. Prereq: BIOL 411 and 412 or equivalent. Special fee. (Not offered every year).

ZOOL 750 - Biological Oceanography**Credits:** 4

Biological processes of the oceans, including primary and secondary production, trophodynamics, plankton diversity, zooplankton ecology, ecosystems and global ocean dynamics. Field trips on R/V Gulf Challenger and to the Jackson Estuarine Laboratory. Prereq: one year of biology or permission of the instructor. (Also offered as ESCI 750.) Special fee. Lab. (Not offered every year.)

ZOOL 772 - Fisheries Biology**Credits:** 3

Principles of fisheries science, with emphasis on techniques used to assess the biological characteristics of exploited fish populations, and the use of such information for fisheries management. Prereq: ZOOL 710 or equivalent; permission. (Not offered every year.)

ZOOL 773 - Physiology of Fish**Credits:** 4

Investigates the physiological processes responsible for maintaining homeostasis in fishes. Focuses on the function and regulation of the major organ systems during stress and environmental adaptation. Topics include reproduction, osmoregulation, digestion, endocrinology, and sensory perception.

ZOOL 777 - Neuroethology**Credits:** 3

Survey of fundamental concepts and recent discoveries in neurobiology. Topics include structure and function of neurons, development, cellular basis of behavior (sensory and motor systems), neuropharmacology, and neural plasticity (learning). Prereq: BIOL 411 and BIOL 412 or permission. Physiology (ZOOL 625) also desirable.

ZOOL 795 - Special Investigations**Credits:** 1-4

Independent study in various areas including but not limited to animal behavior, developmental biology, ecology, endocrinology, evolution, ichthyology, genetics, history of biology, invertebrate biology, neurobiology and behavior, protozoology, teaching practices, underwater research, vertebrate biology, and biological techniques. Course sections for advanced work, individual or group seminar. May include reading, laboratory work, organized seminars, and conferences. Prereq: permission of instructor needed.

ZOOL 795W - Special Investigations**Credits:** 1-4

Independent study in various areas including but not limited to animal behavior, developmental biology, ecology, endocrinology, evolution, ichthyology, genetics, history of biology, invertebrate biology, neurobiology and behavior, protozoology, teaching practices, underwater research, vertebrate biology, and biological techniques. Course sections for advanced work, individual or group seminar. May include reading, laboratory work, organized seminars, and conferences. Prereq: permission of instructor needed. Writing intensive.

Attributes: Writing Intensive Course**ZOOL 799 - Honors Senior Thesis****Credits:** 1-4

Working under the direction of a faculty sponsor, the student plans and carries out independent research resulting in a written thesis. Limited to students entering their senior year; required for students in the honors program or working toward honors-in-major. Prereq: permission. A two-semester sequence. 2-4 credits each semester; 8 credits maximum. IA (continuous grading) given at the end of the first semester. Writing intensive.

Attributes: Writing Intensive Course

Faculty Listing

The faculty listing in the catalogs are static and updated annually in the Fall. The 2018-2019 faculty listing in the catalogs will be updated in Fall 2018. The Fall 2017 faculty listing will appear in the 2018-2019 catalogs until that time.

A

Abbott, Katherine R

LECTURER

Sociology

B.S., 2007, M.S., 2010, Ph.D., Arizona State University, 2013

Abeles, Sigmund M

PROFESSOR EMERITUS

A.B., Univ of South Carolina, 1955

M.F.A., Barnard College, 1957

Aber, John D

PROFESSOR

Natural Resources & The Environment

B.S., 1971, M.F.S., 1973, Ph.D., Yale University, 1976

Abramson, Seth D

ASSISTANT PROFESSOR

English

B.A., Dartmouth College, 1998

J.D., Harvard Law School, 2001

M.F.A., University of Iowa, 2009

M.A., 2010, Ph.D., University of Wisconsin, 2016

Adamovich, Frank W

ASSOCIATE PROFESSOR EMERITUS

B.S., Fitchburg State College, 1960

M.S., Simmons College, 1968

Adams, Nancy E

EXTENSION EDUCATOR EMERITA

M.S., Michigan State University, 1977

Adams, Robert L A

ASSOCIATE PROFESSOR EMERITUS

B.A., Williams College, 1961

M.A., 1966, Ph.D., Clark University, 1971

Afolayan, Funso S

ASSOCIATE PROFESSOR

History

B.A., 1980, M.A., University of Ife, Nigeria, 1984

Ph.D., Obafemi Awolowo University, Nigeria, 1991

Aikens, Melissa L

ASSISTANT PROFESSOR

Biological Sciences

A.B., Bowdoin College, 2000

M.F.S., Yale University, 2004

Ph.D., University of Virginia, 2013

Akiyama, Sachiko

ASSISTANT PROFESSOR

Art and Art History

B.A., Amherst College, 1995

M.F.A., Boston University, 2002

Aktekin, Tevfik

ASSOCIATE PROFESSOR

Decisions Sciences

B.S., Yildiz Technical University, Turkey, 2002

M.B.A., 2004, Ph.D., George Washington University, 2009

Alexander, Kimberly S

LECTURER

History

B.A., Colby College, 1985

M.A., 1989, Ph.D., Boston University, 1999

Alexander, Lee

RESEARCH ASSOCIATE PROFESSOR EMERITUS

B.S., Marietta College, 1968

M.S., University of New Hampshire, 1980

Aliouche, El-Hachemi

ASSOCIATE PROFESSOR

Hospitality Management

B.S., 1980, M.A., 1982, Ph.D., University of New Hampshire, 1992

M.B.A., University of Pennsylvania, 1995

Alonzo, Roy S

PROFESSOR EMERITUS

A.S., Becker Junior Coll, 1951

B.S., Boston University, 1953

M.B.A., Western New England Univ, 1961

Ed.D., Nova College, 1978

Alperin, Holly L

CLINICAL ASSISTANT PROFESSOR

Kinesiology

B.S., Central Michigan Univ, 1999

M.Ed., Boston University, 2003

Amato-Wierda, Carmela C

ASSOCIATE PROFESSOR

Dean's Office - CEPS

B.A., Harvard University, 1988

Ph.D., Rensselaer Polytechnic Institute, 1993

Ames, Raina S

ASSOCIATE PROFESSOR

Theatre & Dance

B.A., 1990, M.Ed., Western Illinois University, 1999

M.F.A., Virginia Commonwealth University, 2002

Amsden, Katherine

ASSOCIATE PROFESSOR EMERITA

A.B., Sweet Briar College, 1953

M.S., Smith College, 1956

Ph.D., University of Southern California, 1967

Andam, Cheryl Marie P

ASSISTANT PROFESSOR

Molecular, Cellular, & Biomedical

B.S., University of The Phillipines, Philippines, 1998

M.S., State University of New York at Binghamton, 2007

Ph.D., University of Connecticut, 2011

Andersen, Kenneth K

PROFESSOR EMERITUS
B.S., Rutgers University, 1955
Ph.D., University of Minnesota, 1959

Anderson, Franz E

PROFESSOR EMERITUS
B.A., Ohio Wesleyan University, 1960
M.S., Northwestern University, 1962
Ph.D., University of Washington, 1967

Anderson, Janet L

LECTURER
Biological Sciences
B.A., 1991, M.S., 2003, Ph.D., University of New Hampshire, 2008

Andrade, Arturo S

ASSISTANT PROFESSOR
Biological Sciences
B.S., University of Michoacan, Mexico, 2001
Ph.D., National Polytechnic Institute of Toulouse, France, 2008

Andrew, David S

PROFESSOR EMERITUS
B.A., 1965, M.A., University of Michigan, 1968
Ph.D., Washington University, 1977

Andrew, Michael D

PROFESSOR EMERITUS
B.S., Cornell University, 1960
M.A.T., 1961, Ed.D., Harvard University, 1969

Andrews, Tama H

SENIOR LECTURER
Political Science
B.A., 1997, M.A., University of New Hampshire, 2001

Annicchiarico, Michael J

PROFESSOR
Music
B.M., University of New Hampshire, 1976
M.F.A., 1981, Ph.D., Brandeis University, 1993

Annis, William H

PROFESSOR EMERITUS
B.S., University of Maine, 1951
M.A.Agr., University of New Hampshire, 1959
Ed.D., Cornell University, 1961

Antosiewicz, Rose T

ASSOCIATE PROFESSOR EMERITA
A.B., Brown University, 1954
Ph.D., University of California - Los Angeles, 1971

Arcand, Carolyn L

LECTURER
Masters in Public Administration
B.S., Syracuse University, 2001
M.P.A., University of Southern Maine, 2006
M.S., 2011, Ph.D., University of Massachusetts - Boston, 2014

Armenti, Karla R

RESEARCH ASSISTANT PROFESSOR
Institute on Disability
B.A., Norwich University, 1981
M.S., 1995, Ph.D., University of Massachusetts - Lowell, 2001

Armstrong, Jennifer K

PRINCIPAL LECTURER
Philosophy
A.B., Colby College, 1985
MTS, Harvard Divinity School, 1987
M.A., University of Massachusetts - Amherst, 1991

Arnold, Gretchen

CLINICAL ASSISTANT PROFESSOR
Agriculture, Nutrition, & Food System
B.S., University of New Hampshire, 1993
M.S., University of New Haven, 2002

Arnoldy, Roger L

PROFESSOR EMERITUS
B.S., Saint Mary's Coll (Minn), 1956
M.S., 1959, Ph.D., University of Minnesota, 1962

Aronson-Shore, Carol

PROFESSOR
B.F.A., Boston University, 1963
M.A., University of Chicago, 1965

Arredondo, Robert

LECTURER
Engineering Technology Program

Arthanat, Sajay

ASSOCIATE PROFESSOR
Occupational Therapy
B.S., Santosh College Occupational Therapy, India, 1997
C.A.G.S., 2004, Ph.D., State University of New York at Buffalo, 2007

Asbjornsen, Heidi

ASSOCIATE PROFESSOR
Natural Resources & The Environment
B.A., Carleton College, 1989
M.S., 1993, Ph.D., Yale University, 1999

Ashcraft, Catherine M

ASSISTANT PROFESSOR
Natural Resources & The Environment
B.A., University of Pennsylvania, 1998
M., Yale University, 2002
Ph.D., Massachusetts Institute of Technology, 2011

Ashley, Charles H

ASSOCIATE PROFESSOR EMERITUS
A.B., Dartmouth College, 1957
M.Ed., University of New Hampshire, 1960
Ed.D., Boston University, 1969

Ashline, David J

RESEARCH ASSISTANT PROFESSOR
Molecular, Cellular, & Biomedical
B.S., State University of New York at Plattsburgh, 1993
Ph.D., University of Massachusetts - Lowell, 2003

Ashton-Savage, Audrey

PRINCIPAL LECTURER

Marketing

B.A., 1971, M.B.A., University of New Hampshire, 1978

Ashwell, Thomas W

PRINCIPAL LECTURER EMERITUS

B.A., 1988, M.A., 1989, Ph.D., University of Massachusetts - Amherst, 1994

Atallah, Shady S

ASSISTANT PROFESSOR

Natural Resources & The Environment

B.S., Holy Spirit University of Kaslik, Lebanon, 2003

M.S., American University of Beirut, 2006

M.S., University of California, 2009

Ph.D., Cornell University, 2014

MENGR, Holy Spirit University of Kaslik, Lebanon,

Auger, Philip A

EXTENSION EDUCATOR EMERITUS

B.S.F., University of New Hampshire, 1974

Aydelott, Kathrine C

ASSISTANT PROFESSOR

Research Learning Services

B.A., Colby College, 1990

M.A., 1995, Ph.D., University of Connecticut, 2005

M.L.I.S., Simmons College, 2006

Aytur, Semra A

ASSOCIATE PROFESSOR

Health Management & Policy

B.A., Brown University, 1991

M.P.H., Boston University, 1996

Ph.D., University of North Carolina, 2005

B**Babbitt, Kimberly J**

ASSOCIATE DEAN

Dean's Office - LS & A

B.S., University of New Hampshire, 1984

M.S., Texas A & M University, 1988

Ph.D., University of Florida, 1996

Baber, Kristine M

ASSOCIATE PROFESSOR EMERITA

B.A., Southern Illinois University - Carbondale, 1970

M.A., 1981, Ph.D., University of Connecticut, 1983

Bachrach, David S

PROFESSOR

History

B.A., Carleton College, 1994

M.A., 1997, Ph.D., University of Notre Dame, 2001

Baer-Bositis, Emily C

ASSISTANT PROFESSOR

Political Science

B.A., Georgetown University, 2011

Ph.D., University of Minnesota, 2017

Bailey, Brigitte G

PROFESSOR

English

B.A., University of Virginia, 1977

A.M., 1980, Ph.D., Harvard University, 1985

Baker, Alan L

ASSOCIATE PROFESSOR

Biological Sciences

B.A., State University of New York at Binghamton, 1965

Ph.D., University of Minnesota, 1973

Balderacchi, Arthur E

PROFESSOR EMERITUS

A.B., Duke University, 1960

M.F.A., University of Georgia, 1965

Baldwin, Kenneth C

PROFESSOR EMERITUS

B.S., Northeastern University, 1973

M.S., University of New Hampshire, 1977

Ph.D., University of Rhode Island, 1982

Ballestero, Thomas P

ASSOCIATE PROFESSOR

Civil and Environmental Engineering

B.S., 1975, M.S., Pennsylvania State University, 1977

Ph.D., Colorado State University, 1981

Balling, Ludwig C

PROFESSOR EMERITUS

B.A., Oberlin College, 1960

M.A., 1961, Ph.D., Harvard University, 1965

Banach, Mary

ASSOCIATE PROFESSOR

Social Work

B.A., University of Wisconsin - Milwaukee, 1975

M.S.W., New York University, 1978

D.S.W., Columbia University in the City of New York, 1995

Bao, Xiaoyan

ASSISTANT PROFESSOR

Accounting and Finance

B.A., Dongbei University, China, 1977

M.Acc., Southern Illinois University, 2003

Ph.D., University of Nebraska, 2013

Barber, Heather

ASSOCIATE PROFESSOR

Kinesiology

B.S., St. Lawrence University, 1978

M.S., Pennsylvania State University, 1982

Ph.D., University of Oregon, 1992

Barber, Nelson A

ASSOCIATE PROFESSOR

Hospitality Management

B.S., San Jose State University, 1978

A.O.S., Culinary Institute of America, 2004

M.S., Purdue University, 2005

Ph.D., Texas Tech University, 2008

Barcelona, Robert J

ASSOCIATE PROFESSOR
Recreation Management & Policy
B.A., University of Mississippi, 1993
M.S., 1995, Ph.D., Indiana University - Bloomington, 2001

Barkey, Dale P

PROFESSOR
Chemical Engineering
B.A., Clark University, 1979
M.S., University of Cincinnati, 1982
Ph.D., University of California - Berkeley, 1987

Barksdale, Pamela J

PRINCIPAL LECTURER EMERITA
B.A., 1989, M.A., 1990, M.A., University of New Hampshire, 1991

Barnaby, Roland T

EXTENSION EDUCATOR EMERITUS
B.Ed., Plymouth State University, 1963
M.Ed., University of New Hampshire, 1970

Barnett, Carole K

ASSOCIATE PROFESSOR
Management
B.A., 1989, M.A., 1992, Ph.D., University of Michigan, 1994

Barney, Dwight

ASSOCIATE PROFESSOR EMERITUS
B.S., 1967, M.S., University of New Hampshire, 1972

Barretto, Timothy E

PROFESSOR EMERITUS
B.A., 1974, M.A., University of New Hampshire, 1982

Barrows, Clayton W

PROFESSOR
Hospitality Management
B.S., 1982, M.S., 1987, Ed.D., University of Massachusetts - Amherst, 1990

Barstow, Thomas R

ASSISTANT PROFESSOR EMERITUS
B.S., 1961, M.Ed., Saint Lawrence Univ, 1965

Barth, Brian M

ASSISTANT PROFESSOR
Molecular, Cellular, & Biomedical
B.S., 2004, M.S., Colorado State University, 2005
Ph.D., University of Alaska, 2009

Bartlett, David S

RESEARCH PROFESSOR EMERITUS
B.A., Amherst College, 1971
M.S., 1976, Ph.D., University of Delaware, 1979

Bartos, Radim

PROFESSOR
Computer Science
M.S., Czech Technical University, Czech Republic, 1987
M.S., 1996, Ph.D., University of Denver, 1997

Bartow, Ann M

PROFESSOR
UNHL FP IP Center
B.S., Cornell University, 1985
J.D., University of Pennsylvania, 1990
LL.M., Temple University, 1997

Basterra, Maria

PROFESSOR
Mathematics & Statistics
B.S., University of Texas at Austin, 1992
M.S., 1993, Ph.D., University of Chicago, 1998

Bauer, Christopher F

PROFESSOR
Chemistry
B.S., University of Notre Dame, 1974
M.S., University of Illinois at Urbana-Champaign, 1976
Ph.D., Colorado State University, 1979

Baughman, Reagan A

ASSOCIATE PROFESSOR
Economics
B.A., Drew University, 1996
M.A., 1999, Ph.D., Syracuse University, 2001

Baum, William M

PROFESSOR EMERITUS
A.B., 1961, Ph.D., Harvard University, 1966

Baumgartner, Kabria S

ASSISTANT PROFESSOR
English
B.A., 2003, M.A., University of California - Los Angeles, 2005
Ph.D., University of Massachusetts - Amherst, 2011

Baxter, Charlene F

STATE EXTENSION SPECIALIST EMERITA
B.S., 1974, M.S., Cornell University, 1982

Bean, Gretchen H

CLINICAL ASSISTANT PROFESSOR
Social Work
B.A., University of New Hampshire, 1995
M.A., University of Chicago, 2002

Beasley, Joan B

RESEARCH ASSOCIATE PROFESSOR
Institute on Disability
B.A., City University of New York, 1976
M.Ed., Northeastern University, 1981
Ph.D., Brandeis University, 2000

Bechtell, Homer

PROFESSOR EMERITUS
B.S., Grove City College, 1951
M.A., 1956, Ph.D., University of Wisconsin, 1963

Becker, Mimi Larsen

ASSOCIATE PROFESSOR EMERITUS
B.A., Carleton College, 1957
M.A., 1989, Ph.D., Duke University, 1993

Bedker, Patricia D

ASSOCIATE PROFESSOR
Biological Sciences
B.S., University of Massachusetts - Amherst, 1976
M.S., University of New Hampshire, 1980
Ph.D., Cornell University, 1985

Beemer, Cristy A

ASSOCIATE PROFESSOR
English
B.A., Hofstra University, 1993
B.A., State University of New York, 1996
B.A., 2000, M.A., State University of New York at New Paltz, 2002
Ph.D., Miami University - Ohio, 2008

Beemer, Lawrence W

LECTURER
English
B.A., State University of New York at Purchase, 1996
M.A., State University of New York at New Paltz, 2002
Ph.D., Ohio University, 2011

Begis, Maggie D

CLINICAL ASSISTANT PROFESSOR
Agriculture, Nutrition, & Food System
B.S., 1998, M.S., Pennsylvania State University, 2001
Ph.D., Boston University, 2009

Begum, Momotaz

ASSISTANT PROFESSOR
Computer Science
B.S., Bangladesh University of Engin, 2003
M.S., Memorial University - Canada, 2005
Ph.D., Univ of Waterloo, 2010

Belford, Mary K

SENIOR LECTURER EMERITA
B.S., California State College in Pe, 1970
M.A., West Virginia University, 1972

Bell, Brent J

ASSOCIATE PROFESSOR
Kinesiology
B.A., University of New Hampshire, 1989
M.S., New England College, 1997
Ph.D., University of New Hampshire, 2005

Bell, Erin S

ASSOCIATE PROFESSOR
Civil and Environmental Engineering
B.C.E., Georgia Institute of Technology, 1996
M.S., 1998, Ph.D., Tufts University, 2003

Beller-McKenna, Daniel

ASSOCIATE PROFESSOR
Music
B.A., 1985, M.M., Temple University, 1988
Ph.D., Harvard University, 1994

Bellinger, Christina

ASSOCIATE PROFESSOR EMERITA
B.A., Windham College, 1975
M.S., Simmons College, 1978
M.A., University of New Hampshire, 1997

Benassi, Victor A

PROFESSOR EMERITUS
B.S., California State College in Pe, 1969
M.A., City University of New York, 1973
Ph.D., City College, New York, Ny, 1974

Benchetrit, Assaf

ASSISTANT PROFESSOR
Theatre & Dance
B.F.A., 2012, B.S., Montclair State College, 2012
M.F.A., Hollins College, 2014

Bennett, Albert B

PROFESSOR EMERITUS
B.S., Maine Maritime Academy, 1954
B.S., 1958, M.A., University of Maine, 1959
Ed.D., University of Michigan, 1966

Bennett, Jessie L

ASSISTANT PROFESSOR
Recreation Management & Policy
B.S., Green Mountain College, 2004
M.S., Brigham Young University, 2010
Ph.D., Indiana University - Bloomington, 2013

Bennett, Karen Patricia

FULL EXTENSION STATE SPECIALIST/PROFESSOR
Natural Resources
B.S., 1979, M.S., University of New Hampshire, 1992

Benoit, Jean

PROFESSOR
Civil and Environmental Engineering
B.S., University of Montreal, Canada, 1977
M.S., 1980, Ph.D., Stanford University, 1984

Benson, David F

LECTURER
Mathematics & Statistics
B.S., Ursinus College, 2009
M.S., 2012, Ph.D., University of New Hampshire, 2016

Berda, Erik B

ASSOCIATE PROFESSOR
Chemistry
B.S., Pennsylvania State University, 2003
Ph.D., University of Florida, 2008

Berenguier, Nadine S

PROFESSOR
Languages, Literatures, & Cultures
D.E.U.G., University of Paris IV Sorbonne, France, 1976
M.A., University of Pittsburgh, 1983
Ph.D., Stanford University, 1988

Bergeron, R Daniel

PROFESSOR EMERITUS
B.S., 1966, Ph.D., Brown University, 1973

Berglund, Per

PROFESSOR

Physics

B.S., Lund University, Sweden, 1988

Ph.D., University of Texas at Austin, 1993

Berlinsky, David L

PROFESSOR

Agriculture, Nutrition, & Food System

B.S., Michigan State University, 1977

M.S., University of New Hampshire, 1981

Ph.D., University of Rhode Island, 1989

Berndtson, William E

PROFESSOR EMERITUS

B.S., University of Connecticut, 1966

Ph.D., Cornell University, 1971

Berst, John R

ASSISTANT PROFESSOR

Theatre & Dance

B.A., State University of New York, 1989

M.F.A., Purdue University, 1999

Berube, Scott R

PRINCIPAL LECTURER

Accounting and Finance

B.S., 2002, M.S., University of New Hampshire, 2003

Bigornia, Sherman J

ASSISTANT PROFESSOR

Agriculture, Nutrition, & Food System

M.A., 2004, Ph.D., Boston University, 2012

B.S., University of California - San Diego,

Birch, Francis S

PROFESSOR EMERITUS

A.B., Harvard University, 1958

M.S., University of Wisconsin, 1964

Ph.D., Princeton University, 1969

Birch, Thomas D

PROFESSOR

Business Administration

B.A., Kenyon College, 1977

M.A., 1980, Ph.D., Indiana University - Bloomington, 1983

Blakemore, Richard P

PROFESSOR EMERITUS

B.S., 1964, M.S., University at Albany, 1965

Ph.D., University of Massachusetts - Amherst, 1975

Bloser, Peter F

RESEARCH ASSOCIATE PROFESSOR

Space Science Center

A.B., Princeton University, 1994

Ph.D., Harvard University, 2000

Bobick, Melvin T

PROFESSOR EMERITUS

A.B., 1949, M.A., 1952, Ph.D., University of Illinois at Chicago, 1958

Bochert, Mark L

PRINCIPAL LECTURER

Computer Science

B.A., University of Southern Maine, 1986

Ph.D., 1995, M.S., University of New Hampshire, 2004

Boettcher, Margaret S

ASSOCIATE PROFESSOR

Earth Sciences

B.S., Brown University, 1998

Ph.D., Massachusetts Institute of Technology, 2005

Bolander, Steven F

DEAN AND PROFESSOR EMERITUS

B.S., Wesleyan College, 1966

M.B.A., University of Colorado at Boulder, 1967

Ph.D., Kent State University, 1972

Bolian, Charles E

ASSOCIATE PROFESSOR EMERITUS

B.A., Mississippi State University, 1965

Ph.D., University of Illinois at Urbana-Champaign, 1975

Bolker, Jessica A

PROFESSOR

Biological Sciences

B.S., Yale University, 1986

Ph.D., University of California - Berkeley, 1993

Bolster, W Jeffrey

PROFESSOR EMERITUS

B.A., Trinity College - Conn, 1976

M.A., Brown University, 1984

Ph.D., Johns Hopkins University, 1992

Bonaparte-Krogh, Paul M

EXTENSION SPECIALIST EMERITUS

B.A., University of Connecticut, 1977

M.Ed., Cambridge College, Ma, 1983

Bonica, Mark J

ASSISTANT PROFESSOR

Health Management & Policy

B.A., University of Massachusetts - Amherst, 1992

M.S., Univ Colorado/Denver, 1999

M.B.A., University of Massachusetts - Amherst, 2000

Ph.D., George Mason University, 2013

Bonnice, William E

ASSOCIATE PROFESSOR EMERITUS

B.E., Syracuse University, 1951

M.S., 1960, Ph.D., University of Washington, 1962

Bonzani, Paul

CLINICAL ASSISTANT PROFESSOR

Occupational Therapy

B.S., New York University, 1979

M.H.S., University of Florida, 2007

Boozer-Blasco, Claudia Ruth

EXTENSION EDUCATOR EMERITA

B.S., University of Rhode Island, 1972

M.Ed., University of New Hampshire, 1988

Borda, Jennifer L

ASSOCIATE PROFESSOR
Communication
B.A., Villanova University, 1995
M.A., 1998, Ph.D., Pennsylvania State University, 2002

Bornstein, Steven P

ASSOCIATE PROFESSOR
Communication Sciences & Disorders
B.S., 1975, M.A., Northeastern University, 1977
Ph.D., University of Connecticut, 1981

Borrer, Arthur C

PROFESSOR EMERITUS
B.S., 1956, M.S., Ohio State University, 1958
Ph.D., Florida State University, 1961

Bostic, Heidi L

DEAN
Dean's Office - Liberal Arts
B.A., University of Nebraska, 1993
M.A., 1994, Ph.D., Purdue University, 2000

Bothner, Wallace A

PROFESSOR EMERITUS
B.A., State University of New York at Binghamton, 1963
Ph.D., University of Wyoming, 1967

Boucher, Adam N

SENIOR LECTURER
Mathematics & Statistics
B.S., 2001, M.S., 2003, Ph.D., Rensselaer Polytechnic Institute, 2008

Boucher, Ronald J

LECTURER
Hospitality Management
A.O.S., Culinary Institute of America, 1978

Boudreau, Marc A

ASSISTANT PROFESSOR
Chemistry
B.S., Mount Allison University, 1997
B.S., University of Victoria, Canada, 2001
Ph.D., University of Alberta, Canada, 2007

Boudreau, Scott D

LECTURER
Thompson School of Applied Science
B.S.F., University of New Hampshire, 1999

Boulton, Elizabeth P

ASSOCIATE PROFESSOR
Agriculture, Nutrition, & Food System
D.V.M., University of Georgia, 1980

Boylan, Amy

ASSOCIATE PROFESSOR
Classics, Humanities & Ital Studies
B.A., University of California - Los Angeles, 1992
M.A., San Francisco State University, 1997
M.A., 2000, Ph.D., University of California - Los Angeles, 2007

Boysen, Andrew A

PROFESSOR
Music
B.M., University of Iowa, 1991
M.M., Northwestern University, 1993
D.F.A., 1998, D.M.A., University of Rochester, 1998

Bozak, John C

PROFESSOR EMERITUS
B.S., University of Connecticut, 1962
M.F., Yale University, 1963

Bradt, Shane R

ASSOCIATE STATE SPECIALIST/PROFESSOR
Natural Resources
B.S., Nazareth College, 1996
M.S., 2000, Ph.D., University of New Hampshire, 2012

Braswell, Angela M

CLINICAL ASSISTANT PROFESSOR
Nursing
A.D.N., New Hampshire Community Techni, 1999
M.S., University of New Hampshire, 2006
Certificate, Metropolitan St Col, 2013
B.A., University of New Hampshire,

Bresnahan, Megan M

ASSISTANT PROFESSOR
Academic and Community Engagement

Bressett, Lauren L

ASSISTANT EXTENSION EDUCATOR EMERITA
B.S., Keene State College (Nh), 1975

Brettschneider, Marla B

PROFESSOR
Political Science
B.A., State University of New York at Binghamton, 1986
M.A., 1988, Ph.D., New York University, 1993

Brewer, Jennifer F

ASSOCIATE PROFESSOR
Geography
A.B., 1989, B.A., University of Michigan, 1989
M.S., University of Maine, 2002
Ph.D., Clark University, 2007

Brewer, Kathryn B

ASSISTANT PROFESSOR
Social Work
B.F.A., New York University, 2001
M.S.W., Fordham University, 2008
M.Phil., Columbia University in the City of New York, 2013

Brick, Danielle J

ASSISTANT PROFESSOR
Marketing
B.A., Amherst College, 2008
Ph.D., Duke University, 2016

Briggs, Janet C

ASSISTANT PROFESSOR EMERITUS
B.S., University of Massachusetts - Amherst, 1962

Brito, Andre Fonseca De

ASSOCIATE PROFESSOR
Agriculture, Nutrition, & Food System
D.V.M., 1996, M.S., Federal University of Minas Gerais, Brazil, 1999
Ph.D., University of Wisconsin - Madison, 2004

Britton, Dennis A

ASSOCIATE PROFESSOR
English
B.A., University of Southern California, 1998
M.A., 2000, Ph.D., University of Wisconsin, 2007

Brock, Wendy L

EXTENSION STATE SPECIALIST EMERITA
B.S., State University of New York at Plattsburgh, 1971
M.S., University of Nebraska, 1977

Bromberg, Daniel E

ASSOCIATE PROFESSOR
Political Science
B.A., University at Albany, 2001
M.P.A., University of Vermont, 2006
Ph.D., Rutgers University, 2009

Bronstein, Arna B

ASSOCIATE PROFESSOR
Languages, Literatures, & Cultures
B.A., Colgate University, 1975
M.A., 1978, Ph.D., University of Pennsylvania, 1986

Brooks, Courtney E Q

CLINICAL ASSOCIATE PROFESSOR
UNHL JD Instruction
B.A., University of Massachusetts - Amherst, 1998
J.D., Univ of San Francisco, 2001

Broussard, C Anne

ASSOCIATE DEAN
Dean's Office - Health & Human Svcs
B.A., University of Texas at Austin, 1974
M.S.W., Louisiana State University, 1977
Ph.D., Washington State University, 1986

Brouwer Burg, Marieka E

LECTURER
Anthropology
B.A., University of Wisconsin - Madison, 2005
M.A., 2008, Ph.D., Michigan State University, 2011

Brown, Benjamin Cliff

ASSOCIATE PROFESSOR
Sociology
B.A., Earlham College, 1987
M.A., 1992, Ph.D., Emory University, 1996

Brown, Bonnie L

PROFESSOR
Biological Sciences
B.S., University of Alabama Birmingham, 1981
Ph.D., Old Dominion University, 1989

Brown, Deborah G

PROFESSOR EMERITA
B.A., Wellesley College, 1963
M.Ed., 1975, Ph.D., University of New Hampshire, 1976
M.F.A., Warren Wilson College, 1991

Brown, Roger S

ASSOCIATE PROFESSOR EMERITUS
A.B., Emory University, 1966
M.A., 1969, Ph.D., University of Kansas, 1971

Brown, Warren R

ASSOCIATE PROFESSOR EMERITUS
B.A., Willamette University, 1966
M.A., 1972, Ph.D., Claremont Graduate University, 1977

Browne, Gretchen S

CLINICAL ASSISTANT PROFESSOR
Kinesiology
B.S., Georgia Southern University, 1985
M.Ed., Valdosta State College, 1995

Brucker, Debra L

RESEARCH ASSISTANT PROFESSOR
Institute on Disability
B.A., 1991, M.A., University of Delaware, 1995
Ph.D., Rutgers University, 2007

Brunet, Stephen A

ASSOCIATE PROFESSOR
Classics, Humanities & Ital Studies
B.A., Pomona College, 1976
M.A., University of Pittsburgh, 1978
Ph.D., University of Texas at Austin, 1998

Bryce, Julia G

PROFESSOR
Earth Sciences
B.A., University of Virginia, 1993
Ph.D., University of California - Santa Barbara, 1998

Bstieler, Ludwig A

PROFESSOR
Marketing
M.S., 1989, Ph.D., University of Innsbruck, Austria, 1997

Buchbinder, Orly

ASSISTANT PROFESSOR
Mathematics & Statistics
B.S., 1998, M.S., 2005, Ph.D., Technion- Israel Institute of Technology, Israel, 2010

Buckley, Louise A

ASSOCIATE PROFESSOR
Research Learning Services
B.A., 1979, M.A., St. John's University - New York, 1981
M.L.S., Rutgers University, 1992

Budd, Jordan C

EXECUTIVE DIRECTOR RUDMAN CENTER
UNHL Rudman Center
B.A., Harvard University, 1983
J.D., Harvard Law School, 1986

Buob, Thomas Edward

EXTENSION EDUCATOR EMERITUS
 B.S., Christian Brothers University, 1970
 M.S., University of New Hampshire, 1979

Burakowski, Elizabeth A

RESEARCH ASSISTANT PROFESSOR
 Earth Systems Research Center
 B.A., Wellesley College, 2003
 M.S., 2007, Ph.D., University of New Hampshire, 2013

Burdick, David M

RESEARCH ASSOCIATE PROFESSOR
 Natural Resources & The Environment
 B.S., Hobart and William Smith College, 1977
 Ph.D., Louisiana State University, 1988

Burdin, Rachel S

ASSISTANT PROFESSOR
 English
 B.A., University of North Carolina at Chapel Hill, 2010
 M.A., 2014, Ph.D., Ohio State University, 2016

Burger, John F

PROFESSOR EMERITUS
 B.A., Grinnell College, 1962
 M.S., 1965, Ph.D., University of Arizona, 1971

Burke, Cynthia A

CLINICAL ASSISTANT PROFESSOR
 Agriculture, Nutrition, & Food System
 B.S., 1990, M.B.A., University of New Hampshire,

Burke, Joanne D

CLINICAL PROFESSOR
 Agriculture, Nutrition, & Food System
 B.S., University of Rhode Island, 1975
 M.Ed., Tufts University, 1977
 Ph.D., University of New Hampshire, 2001

Burns, Carol

PROFESSOR EMERITUS
 B.S., Syracuse University, 1963
 Diploma, American Academy of Art, 1965
 M.F.A., University of Utah, 1969

Burrows, Dorothy M

ASSISTANT EXTENSION EDUCATOR EMERITA
 B.A., University of Massachusetts - Amherst, 1970

Burvikova, Ekaterina V

LECTURER
 Languages, Literatures, & Cultures
 B.A., 2005, M.A., 2007, Ph.D., State Pushkin Institute, 2012

Bush, Judith J

EXTENSION EDUCATOR EMERITA
 B.S., Oregon State University, 1963
 M.A., University of Connecticut, 1965

Buteau, Sue Manah

EXTENSION EDUCATOR EMERITA
 B.S., University of Maine, Farmingto, 1971
 M.S., Wageningen Agric University, T, 1977
 M.B.A., Plymouth State University, 1992
 B.S., Granite State College, 1999

Butkiewicz, Thomas J

RESEARCH ASSISTANT PROFESSOR
 Center for Coastal & Ocean Mapping
 B.S., Ithaca College, 2005
 M.S., 2007, Ph.D., University of North Carolina, 2010

Byam, Martha A

CLINICAL ASSOCIATE PROFESSOR
 Social Work
 B.A., University of New Hampshire, 1975
 M.S.W., University of Utah, 1979

C

Cacarillo, Aimee L

SENIOR LECTURER
 Theatre & Dance
 A., Edith Cowan Univ, Australia, 2003
 Diploma, Western Australia Academy of Performing Arts, Australia, 2003
 Diploma, Edith Cowan Univ, Australia, 2003

Calarco, John R

PROFESSOR EMERITUS
 B.S., George Washington University, 1963
 M.S., 1965, Ph.D., University of Illinois at Urbana-Champaign, 1969

Calculator, Stephen N

PROFESSOR EMERITUS
 B.A., State University of New York at Oswego, 1974
 M.S., State University of New York at Geneseo, 1975
 Ph.D., University of Wisconsin, 1980

Calder, Brian R

RESEARCH ASSOCIATE PROFESSOR
 Center for Coastal & Ocean Mapping
 M.S., 1994, Ph.D., Heriot-Watt University, Edinbu, 1997

Caldwell, Elizabeth E

LECTURER
 Psychology
 B.S., University of Iowa, 1995
 M.A., 2000, Ph.D., Kent State University, 2004

Came, Rosemarie E

ASSOCIATE PROFESSOR
 Earth Sciences
 B.S., 1994, M.A., Boston College, 1998
 M.A., 2002, Ph.D., Massachusetts Institute of Technology, 2005

Campagna, Rachel L

ASSISTANT PROFESSOR
 Management
 B.A., Allegheny College, 2000
 M., Ohio State University, 2005
 Ph.D., Washington University - St Louis, 2011

Campbell, Molly C

SENIOR LECTURER

English

B.A., 2006, M.A.T., University of New Hampshire, 2007

Capozzoli, Michelle Hopkins

LECTURER

Mathematics & Statistics

B.S., Bridgewater State University, 1992

M.S., 1995, Ph.D., University of New Hampshire, 1999

Cappiello, Joyce D

ASSISTANT PROFESSOR

Nursing

B.S., Marycrest College, 1971

M.S., Boston College, 1977

Ph.D., Swansea University, 2010

Caputo, Christine A

ASSISTANT PROFESSOR

Chemistry

B.S., Carleton University, 2001

M.S., McGill University, Canada, 2004

Ph.D., University of Western Ontario, Canada, 2009

Caramihalis, Charles A

PROFESSOR

Thompson School of Applied Science

B.S., 1981, M.O.E., University of New Hampshire, 1987

Cardinali, Michael C

LECTURER

Art and Art History

B.F.A., State University of New York at Purchase, 2001

M.F.A., Mass College of Art, 2006

Carey, Gale B

PROFESSOR EMERITA

B.S., University of Massachusetts - Amherst, 1974

M.S., University of Wisconsin, 1976

Ph.D., University of California - Davis, 1981

Carey, Tomasen M

SENIOR LECTURER

English

B.A., 1987, M.Ed., University of New Hampshire, 1992

Cariens, Benjamin S

ASSOCIATE PROFESSOR

Art and Art History

B.A., College of William and Mary, 1991

M.F.A., Boston University, 1993

MTS, Harvard University, 1999

Carnicelli, Thomas A

PROFESSOR EMERITUS

A.B., Princeton University, 1958

M.A., 1960, Ph.D., Harvard University, 1966

Caron, Rosemary M

PROFESSOR

Health Management & Policy

B.A., Regis College, 1990

Ph.D., Dartmouth College, 1996

M.P.H., Boston University, 1998

Carr, Russell T

PROFESSOR

Chemical Engineering

B.S., Brigham Young University, 1980

M.S., 1983, Ph.D., University of Rochester, 1984

Carroll, John E

PROFESSOR EMERITUS

A.B., La Tech Univ, 1966

M.A., Western Michigan University, 1968

Ph.D., Michigan State University, 1974

Carson, Jessica A

RESEARCH ASSISTANT PROFESSOR

Carsey School

B.A., 2007, M.A., University of New Hampshire, 2009

Carter, Elizabeth A

ASSISTANT PROFESSOR

Political Science

B.A., Whitman College, 1997

M.A., 2003, M.P.A., University of Washington, 2004

M.A., 2005, Ph.D., University of California - Berkeley, 2012

Carter, Michael J

ASSOCIATE PROFESSOR

Electrical & Computer Eng Dept

B.S.E., University of Michigan, 1975

M.S., Stanford University, 1976

Ph.D., University of Michigan, 1984

Carter, Vernon B

ASSOCIATE PROFESSOR

Social Work

A.A., Orange County Community College, 1968

B.A., State University of New York, 1970

M.S.W., University of New Hampshire, 1998

Ph.D., Boston College, 2003

Cashman, Holly R

ASSOCIATE PROFESSOR

Languages, Literatures, & Cultures

B.A., Hood College, 1994

M.A., 1997, Ph.D., University of Michigan, 2001

Castro-Ponce, Clara Esther

LECTURER

Languages, Literatures, & Cultures

M.A., 1990, Ph.D., Brown University, 2001

B.A., University of Puerto Rico,

Cavicchi, Jon R

PRINCIPAL LECTURER
UNHL Library
B.A., Stonehill College, 1981
J.D., 1984, LL.M., Franklin Pierce Law Center, 1999
Ph.D., IIS University, India, 2011

Celikkol, Barbaros

PROFESSOR EMERITUS
B.S., Elon University, 1964
M.S., Stevens Institute of Technology, 1967
Ph.D., University of New Hampshire, 1972

Cerullo, John J

PROFESSOR EMERITUS
B.A., 1971, M.A., 1976, Ph.D., University of Pennsylvania, 1980

Chadwick, Timothy J

LECTURER
Computer Science
B.S., Wentworth Institute of Technology, 2003
M.S., Northeastern University, 2007

Chagnon, Matthew C

PROFESSOR
Thompson School of Applied Science
A.A.S., 1979, B.S., 1986, M.S., University of New Hampshire, 1988

Chamberlin, Kent A

PROFESSOR
Electrical & Computer Eng Dept
B.S.E.E., 1974, M.S.E.E., 1976, Ph.D., Ohio University, 1982

Chandler, Donald S

PROFESSOR
Biological Sciences
A.A., Shasta College, 1969
B.S., University of California - Davis, 1971
M.S., University of Arizona, 1973
Ph.D., Ohio State University, 1976

Chandran, Benjamin D G

PROFESSOR
Physics - Joint Positions
B.A., Yale University, 1990
M.A., 1994, Ph.D., Princeton University, 1997

Chapman, Craig T

ASSISTANT PROFESSOR
Chemistry
B.S., Stockton University, 2003
Ph.D., University of Oregon, 2010

Chapman-Bosco, Laurie

PROFESSOR
Thompson School of Applied Science
B.S., 1986, M.O.E., University of New Hampshire, 1995

Charntikov, Sergios

ASSISTANT PROFESSOR
Psychology
M.A., 2002, M.A., California State University, S, 2009
Ph.D., University of Nebraska, 2015

Charpentier, Michel H

ASSOCIATE PROFESSOR
Computer Science
B.S., 1993, M.S., 1993, Ph.D., National Polytechnic Institute of Toulouse, France, 1997

Chasteen, N Dennis

PROFESSOR EMERITUS
A.S., Mott Community College, 1962
A.B., University of Michigan, 1965
M.S., 1966, Ph.D., University of Illinois at Urbana-Champaign, 1969

Chaston, John M

ASSOCIATE PROFESSOR
Languages, Literatures, & Cultures
B.A., 1980, M.A., Brigham Young University, 1982
Ph.D., University of Texas, 1987

Chavajay, Juan Pablo

ASSOCIATE PROFESSOR
Psychology
M.A., University de San Carlos, Guatemala, 1989
M.A., 1995, Ph.D., University of California - Santa Cruz, 1999

Chavez, Daniel

ASSISTANT PROFESSOR
Languages, Literatures, & Cultures
B.S., Instituto Tech Monterrey, 1991
M.A., 1994, M.A., Ohio University, 1999
Ph.D., University of Michigan, 2002

Cheever, Deborah J

EXTENSION SPECIALIST EMERITUS
B.S., Keene State College (Nh), 1977
M.O.E., University of New Hampshire, 1985

Chen, Jianhong

ASSISTANT PROFESSOR
Management
B.A., 2006, M.A., Shandong University, China, 2009
Ph.D., Drexel University, 2014

Chen, Szu-Feng

ASSOCIATE PROFESSOR
Theatre & Dance
B.F.A., National Taipei University of Technology, Taiwan, 2000
M.F.A., University of Texas, 2008

Chen, Xiao

ASSISTANT PROFESSOR
Decisions Sciences
B.S., Tianjin University, 2012
Ph.D., University of Minnesota, 2018

Chen, Xuanmao

ASSISTANT PROFESSOR
Molecular, Cellular, & Biomedical
B.S., Nanchang University, China, 1997
M.S., Fudan University, China, 2000
Ph.D., University of Tuebingen, Germany, 2006

Chini, Gregory P

PROFESSOR
Mechanical Engineering
B.S., University of Virginia, 1993
M.S., 1996, Ph.D., Cornell University, 1999

Chirila, Ileana D

ASSISTANT PROFESSOR
Languages, Literatures, & Cultures
B.A., University of Craiova, Romania, 1996
M.A., University of Kentucky, 2004
M.A., 2007, Ph.D., Duke University, 2012

Chiu, Monica Elizabeth

INTERIM ASSOCIATE VP COMMUNITY EQUITY DIVERSITY
English
B.A., St. Catherine University, 1987
M.A., State University of New York at Binghamton, 1992
Ph.D., Emory University, 1996

Cho, Eun Kyeong

ASSOCIATE PROFESSOR
Education
B.A., 1991, M.A., Ewha Womans University, Korea, 1993
Ed.M., 2001, Ed.D., Columbia University in the City of New York, 2005

Christie, Andrew D

ASSOCIATE PROFESSOR
Philosophy
A.B., Princeton University, 1974
M.S.L., Yale University, 1979
Ph.D., Massachusetts Institute of Technology, 1983

Chu, Brian Wei-Kuo

PROFESSOR
Art and Art History
B.F.A., 1991, M.F.A., Queens College of the City University of New York, 1993

Chu, Feixia

ASSOCIATE PROFESSOR
Molecular, Cellular, & Biomedical
B.S., Wuhan University, China, 1995
M.S., University of South Florida, 1998
Ph.D., University of California - San Francisco, 2004

Chummun, Divisha

LECTURER
Languages, Literatures, & Cultures
B.A., Mount Holyoke College, 2012
M.A., 2016, Ph.D., Boston University, 2018

Churchard, Timothy J

PRINCIPAL LECTURER EMERITUS
B.A., University of New Hampshire, 1967
M.Ed., Salem State College, 1973
C.A.G.S., 1984, B.A., University of New Hampshire, 2008

Churchill, Joan W

ASSOCIATE PROFESSOR EMERITA
B.A., Ripon College, 1966
M.F.A., Carnegie Mellon University, 1968

Cicccone, Stephen J

ASSOCIATE PROFESSOR
Accounting and Finance
B.S., 1994, M.S., University of Florida, 1994
Ph.D., Florida State University, 2000

Clairmont, Richard E

PRINCIPAL LECTURER
Classics, Humanities & Ital Studies
B.A., University of New Hampshire, 1971
M.A., University of Virginia, 1973
Ph.D., Univ of Chicago-Loyola, 1983

Clark, Mary M

PROFESSOR EMERITA
B.A., University of New Hampshire, 1962
Ph.D., University of Massachusetts - Amherst, 1978

Clark, Maryann

LECTURER
Decisions Sciences
B.S., Bryant University, 1988

Clark, Ronald R

PROFESSOR EMERITUS
B.S.E.E., University of New Hampshire, 1956
M.S., Yale University, 1957
Ph.D., Syracuse University, 1963

Clarke, Stephanie L

CLINICAL ASSISTANT PROFESSOR
Molecular, Cellular, & Biomedical
B.S., University of New Hampshire, 2007
M.S., Saint Josephs Coll, 2015

Clement, Bruce A

EXTENSION EDUCATOR EMERITUS
B.S., University of New Hampshire, 1968
M.S., University of Connecticut, 1980

Clemmons, James H

PROFESSOR
Physics - Joint Positions
B.S., University of Illinois at Urbana-Champaign, 1982
M.A., 1983, Ph.D., University of California - Berkeley, 1992

Clifford, Virginia W

EXTENSION EDUCATOR EMERITA
B.S., 1956, M.S., University of New Hampshire, 1958

Clyde, William C

PROFESSOR
Earth Sciences
B.A., Princeton University, 1990
M.S., 1993, Ph.D., University of Michigan, 1997

Coffin, Jaed M

ASSISTANT PROFESSOR
English
B.A., Middlebury College, 2002
M.F.A., University of Southern Maine, 2009

Cohn, Ellen S

PROFESSOR

Psychology

B.A., Clark University, 1974

M.A., 1976, Ph.D., Temple University, 1978

Coleman, Betsy S

LECTURER

Computer Science

B.S., 1984, M.S., University of New Hampshire, 2013

Colliander, John D

SENIOR LECTURER

Accounting and Finance

B.A., University of New Hampshire, 1967

M.A., Lehigh University, 1968

J.D., 1971, LL.M., Boston University, 1975

Collins, John J

ASSOCIATE PROFESSOR

Molecular, Cellular, & Biomedical

B.A., Colgate University, 1976

Ph.D., University of Wisconsin, 1984

Collins, Karen E

ASSOCIATE PROFESSOR

Kinesiology

A.B., Princeton University, 1994

M.S., University of New Hampshire, 1998

Ph.D., University of North Carolina, 2002

Collins, Michael Robin

PROFESSOR

Civil and Environmental Engineering

B.S., 1970, M.S., Virginia Polytechnic Institute and State University, 1972

Ph.D., University of Arizona, 1985

Conaway, Carol B

ASSOCIATE PROFESSOR EMERITA

A.B., Bryn Mawr College, 1970

S.M., 1981, Ph.D., Massachusetts Institute of Technology, 1994

Condon, Patricia B

ASSISTANT PROFESSOR

Technolog//Scholarship/Publishing

M.A., 2005, M.L.I.S., Univ of Southern Miss, 2005

Ph.D., Simmons College, 2015

Congalton, Russell G

PROFESSOR

Natural Resources & The Environment

B.S., Rutgers University, 1979

M.S., 1981, Ph.D., Virginia Polytechnic Institute and State University, 1984

Connell, James J

ASSOCIATE PROFESSOR

Physics - Joint Positions

B.A., 1981, M.A., 1983, Ph.D., Washington University - St Louis, 1988

Connolly, Vincent J

ASSOCIATE PROFESSOR

Education

B.A., Loyola University - Maryland, 1988

M.S.Ed., 1993, Ed.D., Johns Hopkins University, 2004

Conroy, Andrew B

PROFESSOR

Thompson School of Applied Science

B.S., University of New Hampshire, 1986

M.S., Northwest Missouri State University, 1987

Ph.D., University of New Hampshire, 2001

Contarino, Michael

ASSOCIATE PROFESSOR EMERITUS

B.A., Connecticut College, 1976

Ph.D., Harvard University, 1984

Contosta, Alexandra R

RESEARCH ASSISTANT PROFESSOR

Earth Systems Research Center

B.A., Villanova University, 1998

Ph.D., University of New Hampshire, 2001

M.S., Antioch New England, 2005

Conway, Karen Smith

PROFESSOR

Economics

B.A., Eastern Illinois University, 1982

Ph.D., University of North Carolina at Chapel Hill, 1987

Cook, Jenni Carbaugh

PROFESSOR

Music

B.M., Bradley University, 1995

M.M., 1997, D.M.A., University of Illinois at Urbana-Champaign, 2001

Cook, Raymond A

ASSOCIATE PROFESSOR

Civil and Environmental Engineering

A.B., 1981, B.S., University of Illinois at Urbana-Champaign, 1981

M.S., 1991, Ph.D., Cornell University, 1992

Cook, Summer B

ASSOCIATE PROFESSOR

Kinesiology

B.S., East Stroudsburg University, P, 1999

M.S., 2002, Ph.D., Syracuse University, 2009

Cooke, Suzanne M

LECTURER

Science

B.A., Smith College, 2008

M.A., College of William and Mary, 2012

Cooper, Barbara T

PROFESSOR EMERITA

B.A., 1966, M.A., 1967, Ph.D., University of Wisconsin, 1974

Copeland, Arthur H

PROFESSOR EMERITUS

B.S., 1949, M.A., University of Michigan, 1950

Ph.D., Massachusetts Institute of Technology, 1954

Coppens, Andrew D

ASSISTANT PROFESSOR

Education

B.S., University of New Hampshire, 2004

M.S., 2010, Ph.D., University of California, 2015

Corcoran, Ellen P

ASSOCIATE PROFESSOR EMERITA
B.A., Bryn Mawr College, 1962
M.A.T., 1968, Ph.D., New York University, 1972

Corvey, Candace R

VICE PRESIDENT EMERITA
B.S., Wake Forest University, 1970
M.Ed., North Carolina State University, 1972
M.B.A., Harvard University, 1980

Cote, Richard H

PROFESSOR
Molecular, Cellular, & Biomedical
B.S., Tufts University, 1974
Ph.D., University of Wisconsin, 1980

Couse, Leslie J

EXECUTIVE DIRECTOR-ENGAGEMENT & FACULTY DEVELOPMENT
Engagement and Faculty Development
B.S.Ed., State University of New York at Cortland, 1980
M.S.Ed., State University of New York at Brockport, 1980
M.S., Russell Sage College, 1993
Ph.D., Syracuse University, 2001

Cowen, Sharon B

B.S., 1975, M.S., Ohio State University, 1981

Cox, Patricia H

CLINICAL ASSISTANT PROFESSOR
Social Work
B.S., Trinity College - Conn, 1995
M.S.Ed., Bank St College of Ed, 2000
M.S.W., University of New Hampshire, 2008

Craig, Patricia J

ASSOCIATE PROFESSOR
Recreation Management & Policy
B.S., University of Scranton, 1987
M.Ed., Temple University, 1997
Ph.D., University of New Hampshire, 2010

Crepeau, Elizabeth L

PROFESSOR EMERITA
B.S., 1966, M.A., 1988, Ph.D., University of New Hampshire, 1994

Croce, Ronald V

PROFESSOR
Kinesiology
B.S., Brooklyn College of the City University of New York, 1973
M.Ed., Temple University, 1975
Ph.D., University of New Mexico, 1983

Crosby, Peter R

LECTURER EMERITUS
B.A., Keene State College (Nh), 1971
AMLS, University of Michigan, 1974
A.A.S., University of New Hampshire, 1977

Cross, Charlotte W

FULL EXTENSION STATE SPECIALIST/PROFESSOR
Youth and Family
B.S., University of Maine, 1970
M.S., Oregon State University, 1978

Crow, Garrett E

PROFESSOR EMERITUS
A.B., Taylor University, 1965
M.S., 1968, Ph.D., Michigan State University, 1974

Cui, Wenjin

ASSISTANT PROFESSOR
Languages, Literatures, & Cultures
B.A., Renmin University of China, 2002
M.A., Peking University, China, 2005
Ph.D., New York University, 2013

Cullen, Kelly L

ASSOCIATE PROFESSOR
Natural Resources & The Environment
B.A., Ithaca College, 1992
M.S., West Virginia University, 1996
Ph.D., Colorado State University, 1999

Culligan, Kevin M

RESEARCH ASSISTANT PROFESSOR
Molecular, Cellular, & Biomedical
B.S., University of California - San Diego, 1994
Ph.D., Oregon State University, 2000

Curran-Celentano, Joanne

PROFESSOR
Agriculture, Nutrition, & Food System
B.S., 1976, M.S., Rutgers University, 1978
Ph.D., University of Illinois at Urbana-Champaign, 1982

Curren, Leslie J

SENIOR LECTURER
Biological Sciences
B.A., Amherst College, 2005
Ph.D., Michigan State University, 2012

Curry, Susan A

SENIOR LECTURER
Classics, Humanities & Ital Studies
B.A., Grinnell College, 1998
M.A., University of Kansas, 2001
M.A., 2007, Ph.D., Indiana University, 2009

D**Daley, Patrick J**

ASSOCIATE PROFESSOR EMERITUS
B.A., University of North Dakota, 1972
M.A., 1975, Ph.D., University of Iowa, 1983

Damon, John F

EXTENSION EDUCATOR EMERITUS
M.S., North Carolina State University, 1973

Daniel, Jo Sias

PROFESSOR
Civil and Environmental Engineering
B.S., University of New Hampshire, 1994
M.S., 1996, Ph.D., North Carolina State University, 2001

Danko, Thomas

ASSOCIATE EXTENSION EDUCATOR EMERITUS
M.S., University of New Hampshire, 1965

Dave, Eshan V

ASSOCIATE PROFESSOR
Civil and Environmental Engineering
B.E., Sardar Patel University, India, 2001
M.S., 2003, Ph.D., University of Illinois at Urbana-Champaign, 2009

Davis, Jennifer M

SENIOR LECTURER
UNHL Graduate Instruction
B.A., University of Massachusetts - Amherst, 1990
J.D., Suffolk University, 1996

Davis, John Matthew

ASSOCIATE PROFESSOR
Earth Sciences
B.S., Montana State University, 1987
M.S., 1990, Ph.D., New Mexico Institute of Mining and Technology, 1994

Davis, Thomas M

PROFESSOR
Agriculture, Nutrition, & Food System
B.S., California Polytechnic State University - San Luis Obispo, 1980
Ph.D., University of California - Davis, 1985

Dawson, John F

PROFESSOR EMERITUS
B.S., Antioch College, 1958
Ph.D., Stanford University, 1963

Deen, Phillip D

SENIOR LECTURER
Humanities
B.A., Texas A & M University, 1994
M.A., 1996, Ph.D., Southern Illinois University - Carbondale, 2004

DeJoie, John

LECTURER
Social Work
B.A., North Adams St Coll, 1981
M.S.W., Simmons College, 1985

Del Hierro, Marcos J

ASSISTANT PROFESSOR
English
B.A., Baylor University, 2006
M.A., El Paso Univ of Texas, 2009
Ph.D., Texas A & M University, 2014

DeMitchell, Todd A

PROFESSOR
Education
B.A., 1969, M.A.T., University of La Verne, 1973
Ed.D., University of Southern California, 1979
M.A., University of California - Davis, 1990

Denis, Clyde L

PROFESSOR EMERITUS
B.S., University of Illinois at Urbana-Champaign, 1973
M.S., 1976, Ph.D., University of Washington, 1982

Denman, Margaret-Love G

ASSOCIATE PROFESSOR EMERITA
B.A., 1961, M.A., University of Mississippi, 1967

Desmond, Cecile G

CLINICAL ASSISTANT PROFESSOR
Psychology
Ph.D., Boston University, 2012

DeSoye, Caitlin A

LECTURER
Accounting and Finance
B.S., Bentley University, 2005
J.D., Suffolk University, 2012

Desrosiers, Denise S

LECTURER
English as a Second Language
B.A., Mount Holyoke College, 2003
M.A., University of California - Los Angeles, 2009

Desrosiers, Richard V

ASSOCIATE PROFESSOR EMERITUS
A.B., Boston College, 1960
M.A., University of Wisconsin, 1961
Ph.D., University of North Carolina, 1969

DeTurk, Mark S

ASSOCIATE PROFESSOR
Music
B.S.E., Princeton University, 1972
B.M., University of Wisconsin, 1975
M.M., Ohio State University, 1982
Ph.D., University of Wisconsin, 1988

Devasher, Divya Madhavi

ASSISTANT PROFESSOR
Political Science
B.A., Stanford University, 2006
Ph.D., Yale University, 2014

deVries, Willem A

PROFESSOR
Philosophy
B.A., Haverford College, 1972
M.A., 1975, Ph.D., University of Pittsburgh, 1981

Dibb, Jack E

RESEARCH ASSOCIATE PROFESSOR
Earth Systems Research Center
B.S., University of Puget Sound, 1981
Ph.D., 1983, M.A., State University of New York at Binghamton, 1988

Dickinson, Joseph

PROFESSOR EMERITUS

Diefendorf, Jeffrey M

PROFESSOR EMERITUS
A.B., Stanford University, 1967
M.A., 1968, Ph.D., University of California - Berkeley, 1975

Dietz, Laura M

ASSISTANT PROFESSOR
Computer Science
Ph.D., Max Planck Institute, 2011

Dijkstra, Jennifer A

RESEARCH ASSISTANT PROFESSOR
Center for Coastal & Ocean Mapping
B.A., University of New Brunswick, C, 1995
M.S., University of Bremen, Germany, 2000
Ph.D., University of New Hampshire, 2007

Diller, Ann

PROFESSOR EMERITA
B.A., Maryville College -TN, 1960
M.A., Univ of Tulsa, 1962
Ed.D., Harvard University, 1971

Diller, Karl C

PROFESSOR EMERITUS
B.A., University of Pittsburgh, 1961
M.Ed., 1964, Ph.D., Harvard University, 1967

Dillon, Ann E

CLINICAL ASSISTANT PROFESSOR
Institute on Disability
B.S., 1975, M.Ed., University of New Hampshire, 1998

Dillon, Michele M

INTERIM DEAN
Sociology
B.Soc.Sci., 1980, M.Soc.Sci., University College Dublin, Ireland, 1983
M.A., 1987, Ph.D., University of California - Berkeley, 1989

Dinapoli, Pamela P

PROFESSOR
Nursing
B.S.N., Thomas Jefferson University of, 1981
M.S.N., University of Pennsylvania, 1984
Ph.D., University of Massachusetts - Lowell, 2000

Dingman, S Lawrence

PROFESSOR EMERITUS
A.B., Dartmouth College, 1960
M.A., 1961, Ph.D., Harvard University, 1970

Dion, Maeve L

ASSISTANT PROFESSOR
Security Studies
B.A., 1996, B.S., Eckerd College, 1996
J.D., George Mason University, 2006

Dobbins, Lori E

PROFESSOR
Music
B.A., San Jose State University, 1980
M.F.A., California Institute of the Arts, 1982
Ph.D., University of California - Berkeley, 1990

Dodge, Arthur G

EXTENSION EDUCATOR EMERITUS
M.S.F., Harvard University, 1960

Dodge, Peter

ASSOCIATE PROFESSOR EMERITUS
B.A., Swarthmore College, 1948
M.A., 1950, Ph.D., Harvard University, 1961

Dolan, Elizabeth M

ASSOCIATE PROFESSOR EMERITA
B.A., University of California - Santa Barbara, 1971
M.A., Michigan State University, 1973
Ph.D., Virginia Polytechnic Institute and State University, 1980

Dole, Sumner A

EXTENSION EDUCATOR EMERITUS
M.P.A., University of New Hampshire, 1987

Donahue, Ann Elizabeth

ASSOCIATE PROFESSOR
Student Academic Services
B.A., University of New Hampshire, 1994
M.L.S., Southern Connecticut State University, 1995
ALM, Harvard University, 2005

Dorsey, Kurk

PROFESSOR
History
B.A., Cornell University, 1987
M.A., Northwestern University, 1989
Ph.D., Yale University, 1994

Dorsey, Marion Girard

ASSOCIATE PROFESSOR
History
B.A., Stanford University, 1993
J.D., Harvard University, 1997
M.A., 1999, M.Phil., 2001, Ph.D., Yale University, 2002

Doucet, Lorraine D

ASSOCIATE PROFESSOR EMERITA
B.A., Notre Dame College, 1961
M.A., Rivier College, 1968
Ph.D., Clark University, 1974

Dowd, Eleanne Solorzano

ASSOCIATE PROFESSOR
Decisions Sciences
B.S., 1993, M.S., University of Florida, 1995
Ph.D., University of South Carolina, 1999

Dowd, Matthew J

SENIOR LECTURER
Philosophy
B.A., 1996, M.A., University of New Hampshire, 1998
Ph.D., Southern Illinois University, 2016

Downs, Richard E

PROFESSOR EMERITUS
B.S., Harvard University, 1942
Certificate, Univ Paris, 1949
Ph.D., Univ of Leiden, 1956

Drake, Allen D

ASSOCIATE PROFESSOR EMERITUS
B.S., University of Rhode Island, 1967
S.M., Massachusetts Institute of Technology, 1968
A.M., Harvard University, 1971
Ph.D., Tufts University, 1978

Draper, Nora R A

ASSISTANT PROFESSOR
Communication
B.P.A., 2007, M.A., Carleton University, 2009
M.A., 2011, Ph.D., University of Pennsylvania, 2014

Draper, Ralph W

ASSOCIATE PROFESSOR EMERITUS
B.S., 1965, M.S.M.E., University of Maine, 1970

Drugan, Robert C

PROFESSOR
Psychology
B.A., Susquehanna University, 1979
M.A., 1981, Ph.D., University of Colorado at Boulder, 1984

Drumheller, Grant H

PROFESSOR
Art and Art History
B.F.A., 1976, M.F.A., Boston University, 1978

Druskat, Vanessa G U

ASSOCIATE PROFESSOR
Management
B.A., Indiana University - Bloomington, 1982
M.A., Columbia University in the City of New York, 1988
Ph.D., Boston University, 1996

Drysdale, Alasdair Duncan

PROFESSOR EMERITUS
B.A., 1971, M.A., University of Durham, United Kingdom, 1972
Ph.D., University of Michigan, 1977

Du, Shuili

ASSOCIATE PROFESSOR
Marketing
B.A., Tsinghua Univ Beijing, China, 1996
M.A., Fudan University, China, 2002
D.B.A, Boston University, 2007

Dubnick, Melvin J

PROFESSOR
Political Science
B.S., Colorado State University, 1968
M.A., 1969, Ph.D., University of Colorado at Boulder, 1974

Ducey, Mark J

PROFESSOR
Natural Resources & The Environment
B.A., 1990, M.F.S., 1992, Ph.D., Yale University, 1996

Duncan, Cynthia M

PROFESSOR EMERITA
B.A., Stanford University, 1970
M.A., 1981, Ph.D., 1985, Ph.D., University of Kentucky, 1985

Durkis-Stokes, Jessica M

SENIOR LECTURER
UNHL Graduate Instruction
B.A., University of New Hampshire, 2000
J.D., Vermont Law School, So Royalto, 2004

Dusek, R Valentine

PROFESSOR EMERITUS
B.A., Yale University, 1963
Ph.D., University of Texas at Austin, 1972

Dutta, Devkamal

ASSOCIATE PROFESSOR
Management
B.Eng., Birla Inst of Tech, 1986
M.A.F., Indian Institute of Finance, 1991
Ph.D., University of Western Ontario, Canada, 2007

Dwyer, Joseph Richard

PROFESSOR
Physics - Joint Positions
B.S., University of California, 1986
Ph.D., 1994, M.S., University of Chicago, 1998

E**Earle, Andrew G**

ASSISTANT PROFESSOR
Management
B.A., Western Washington University, 2002
M.A., Washington State University, 2006
M.B.A., 2008, Ph.D., University of Oregon, 2013

Earle, Sarah E

LECTURER
English as a Second Language
B.A., Concordia University, Montreal, 2005
M.F.A., University of New Hampshire, 2014

Eaton, Alan T

EXTENSION STATE SPECIALIST/PROFESSOR EMERITUS
B.S., University of Massachusetts - Amherst, 1972
M.S., Virginia Polytechnic Institute and State University, 1975
Ph.D., North Carolina State University, 1978

Ebadi, Alireza

LECTURER
Mechanical Engineering
B.S., Shariff University of Technology, Iran, 2010
Ph.D., University of New Hampshire, 2016

Echt, Olof E

PROFESSOR EMERITUS
Diploma, Free University of Berlin, Germany, 1975
Ph.D., University of Konstanz, Germany, 1979

Eckert, Robert T

PROFESSOR EMERITUS
B.S., 1967, M.S., SUNY College of Environmental Science and Forestry, 1974
Ph.D., Ohio State University, 1978

Eckstein, Robert P

SENIOR LECTURER
Psychology
B.A., City University of New York, 1998
M.S., Loyola University - Maryland, 2000

Edmonds, Robert Lee

PROFESSOR EMERITUS

B.S., 1965, M.S., SUNY College of Environmental Science and Forestry, 1969

Edwards, John C

PROFESSOR EMERITUS

B.S., 1950, M.A., 1952, Ph.D., Northwestern University, 1963

Edwards, Katie M

ASSOCIATE PROFESSOR

Psychology

B.S., Athens State University, 2005

M.S., 2007, Ph.D., Ohio University, 2011

Edwards, Ruth S

ASSOCIATE PROFESSOR EMERITA

B.M., 1949, M.M., Northwestern University, 1950

Eggers, Walter F

PROFESSOR EMERITUS

B.A., Duke University, 1964

Ph.D., University of North Carolina at Chapel Hill, 1971

Eke Rubini, Burcu

LECTURER

Decisions Sciences

B.S., Middle East Tech Univ, 2002

M.A., Southern Illinois University, 2004

M.S., 2006, Ph.D., Arizona State University, 2010

Elmslie, Bruce T

PROFESSOR

Economics

B.S., Westminster College - Utah, 1983

Ph.D., University of Utah, 1988

Elsawa, Sherine F

ASSISTANT PROFESSOR

Molecular, Cellular, & Biomedical

B.S., Alexandria University, 1992

M.S., Florida Intl University, 1998

Ph.D., University of North Carolina, 2003

Elson, Jean

LECTURER EMERITA

M.A., 1996, Ph.D., Brandeis University, 2000

B.A., , M.Ed., Boston University,

Emison, Patricia A

PROFESSOR

Art and Art History

B.A., Bryn Mawr College, 1978

M.A., 1980, M.Phil., 1982, Ph.D., Columbia University in the City of New

York, 1985

Endrizzi, Susan I

SENIOR LECTURER

Theatre & Dance

B.F.A., Butler University, 1994

England, Richard W

PROFESSOR EMERITUS

B.A., Oakland University, 1965

M.A., 1967, Ph.D., University of Michigan, 1974

Enos, Chris

ASSOCIATE PROFESSOR EMERITUS

A.A., Foothill College, 1965

B.A., San Francisco State University, 1969

M.F.A., San Francisco Art Institute, 1971

Erickson, Peter S

PROFESSOR

Agriculture, Nutrition, & Food System

B.S., University of Massachusetts - Amherst, 1982

M.S., University of Maine, 1984

Ph.D., University of Illinois, 1989

Ernakovich, Jessica G

ASSISTANT PROFESSOR

Natural Resources & The Environment

B.S., Calif State Polytechnic Univ a, 2002

Ph.D., Colorado State University, 2014

Eshbach, Robert W

ASSOCIATE PROFESSOR

Music

B.A., Yale University, 1973

M.M., The New England Conservatory of Music, 1976

Estes, George O

PROFESSOR EMERITUS

B.S., 1958, M.S., University of Maine, 1960

Ph.D., Oregon State University, 1969

Etebari, Ahmad

PROFESSOR

Accounting and Finance

B.A., Teheran Business College, Iran, 1973

M.B.A., Texas A & M University, 1975

Ph.D., University of North Texas, 1979

Evans, Elizabeth J

CLINICAL ASSISTANT PROFESSOR

Nursing

B.S., 2002, M.S., 2004, DNP, University of New Hampshire, 2015

Evans, Risa

SENIOR LECTURER

UNHL JD Instruction

B.A., Barnard College, 1986

J.D., Yale University, 1993

Evans, Tonya M

PROFESSOR

UNHL JD Instruction

J.D., Howard University (Dc), 1998

Exline, Eleta C

ASSOCIATE PROFESSOR

Technolog//Scholarship/Publishing

B.A., Smith College, 1995

C.A.S., 2005, M.S., Syracuse University, 2005

M.A., University of New Hampshire, 2014

F**Fabrizio, Richard F**

EXTENSION EDUCATOR EMERITUS
MVA, University of Massachusetts - Amherst, 1959

Fagerberg, Wayne R

PROFESSOR EMERITUS
B.S., University of Wyoming, 1967
M.A., 1972, Ph.D., University of South Florida, 1975

Fairchild, Elizabeth A

RESEARCH ASSOCIATE PROFESSOR
Biological Sciences
B.A., 1991, M.S., 1998, Ph.D., University of New Hampshire, 2002

Falvey, Janet E

PROFESSOR EMERITA
B.S., University of Maryland, 1977
M.A., University of New Hampshire, 1980
Ph.D., Pennsylvania State University, 1983

Fan, Stephen S T

PROFESSOR EMERITUS
B.S., 1957, M.S., 1960, Ph.D., Stanford University, 1962

Farag, Ihab H

PROFESSOR EMERITUS
B.S., Cairo University, Egypt, 1967
M.S., 1970, D.Sc., Massachusetts Institute of Technology, 1976

Farrell, James M

PROFESSOR
Communication
B.A., Bridgewater State University, 1979
M.A., University of Maine, 1982
Ph.D., University of Wisconsin - Madison, 1988

Farrugia, Charles J

RESEARCH PROFESSOR
Space Science Center
B.S., University of Malta, 1966
Diploma, University of London, United Kingdom, 1978
M.S., University of Bern, Switzerland, 1978
Diploma, University of Munich, Germany, 1982
Ph.D., University of Bern, Switzerland, 1984

Favazza, Alex T

LECTURER
Music
B.M., Middle Tenn St Univ, 2009
M.M., Univ of Southern Miss, 2015
Ph.D., Florida State University, 2018

Feintuch, Burt

PROFESSOR
Center for the Humanities
B.A., Pennsylvania State University, 1971
M.A., 1972, Ph.D., University of Pennsylvania, 1975

Feldman, David V

ASSOCIATE PROFESSOR
Mathematics & Statistics
B.A., Yale University, 1977
Ph.D., Wesleyan University, 1987

Fensom, Gail A

ASSOCIATE PROFESSOR
English
B.A., University of Rhode Island, 1970
M.A., Oklahoma State University, 1973
Ph.D., University of New Hampshire, 2007

Ferber, Michael K

PROFESSOR EMERITUS
B.A., Swarthmore College, 1966
M.A., 1969, Ph.D., Harvard University, 1975

Ferguson, Lauren A

LECTURER
Recreation Management & Policy
B.S., Colorado State University, 2008
M.S., 2015, Ph.D., Pennsylvania State University, 2018

Ferguson, Michael D

ASSISTANT PROFESSOR
Recreation Management & Policy
B.S., 2009, M.S., West Virginia University, 2012
Ph.D., Pennsylvania State University, 2016

Fernald, Peter S

PROFESSOR EMERITUS
A.B., Amherst College, 1958
M.S., Springfield College, 1959
Ph.D., Purdue University, 1963

Ferrara, Michael

DEAN
Dean's Office - Health & Human Svcs
B.S., Ithaca College, 1980
M.A., Michigan State University, 1983
Ph.D., Pennsylvania State University, 1990

Fertik, Harriet H

ASSISTANT PROFESSOR
Classics, Humanities & Ital Studies
B.A., University of Chicago, 2008
Ph.D., University of Michigan, 2014

Fetzer, Susan Jane

PROFESSOR
Nursing
B.A., 1973, B.S.N., University of Connecticut, 1975
M.S.N., University of Alabama, 1979
M.B.A., Southern New Hampshire University, 1990
Ph.D., Adelphi University, 1998

Field, Thomas G

PROFESSOR OF LAW EMERITA

Fink, Stephen L

PROFESSOR EMERITUS
B.S., Union College - New York, 1954
Ph.D., Case Western Reserve University, 1959

Finkelhor, David

PROFESSOR

Sociology

B.A., 1968, M.Ed., Harvard University, 1971

Ph.D., University of New Hampshire, 1978

Fischer, Shawna M

ASSISTANT PROFESSOR

Physics

B.S., Occidental College, 2005

M.S., 2008, Ph.D., Brown University, 2013

Fisher, Carol J

PRINCIPAL LECTURER

Theatre & Dance

B.A., University of South Florida, 1979

M.A., Arizona State University, 1981

Fisher, George T

ASSOCIATE PROFESSOR EMERITUS

B.S., Iowa State University, 1950

M.S., 1952, Ph.D., Rutgers University, 1954

Fisher, Lester A

PROFESSOR EMERITUS

B.A., University of Maine, 1966

M.A., University of New Hampshire, 1970

Ph.D., Brown University, 1976

Fitch, Nathan F

SENIOR LECTURER

Kinesiology

B.A., Union College - New York, 1993

B.S., 1998, M.S., University of New Hampshire, 2007

Fitzpatrick, Ellen F

PROFESSOR

History

B.A., Hampshire College, 1974

Ph.D., Brandeis University, 1981

Fjelstad, Per E

LECTURER

Communication

B.A., The Evergreen State College, O, 1984

M.A., University of Washington, 1989

Ph.D., Pennsylvania State University, 1995

Flesher, Kenneth L

PROFESSOR

Thompson School of Applied Science

B.S., University of Pittsburgh, 1981

M.S., University of New Hampshire, 1994

Fleszar, Aleksandra I

ASSOCIATE PROFESSOR EMERITA

B.A., State University of New York at Buffalo, 1969

M.A., 1972, Ph.D., Ohio State University, 1984

Flippo, Tara R

CLINICAL ASSISTANT PROFESSOR

Kinesiology

B.A., Hampshire College, 1994

M.A., Vermont College of Fine Arts, 2000

Forbes, F William

PROFESSOR EMERITUS

A.B., Stanford University, 1965

M.A., 1967, Ph.D., University of Arizona, 1971

Forbes, Terry G

RESEARCH PROFESSOR EMERITUS

B.S., Purdue University, 1968

Ph.D., 1970, M.S., University of Colorado at Boulder, 1978

Ford, Roger A

ASSOCIATE PROFESSOR

UNHL JD Instruction

S.B., Massachusetts Institute of Technology, 2002

J.D., University of Chicago, 2005

Forest, David A

ASSOCIATE PROFESSOR EMERITUS

A.S., Wentworth Institute of Technology, 1964

B.S., 1968, M.S., Northeastern University, 1974

Foster, Diane L

PROFESSOR

Mechanical Engineering

B.S., University of Massachusetts - Amherst, 1989

M.S., University of Maine, 1991

Ph.D., Oregon State University, 1996

Foucart, Francois V O

ASSISTANT PROFESSOR

Physics

MENGR, Ecole Centrale Paris (France), 2004

MENGR, Universite libre de Bruxelles, 2005

Ph.D., Cornell University, 2011

Fowler, Benjamin P

ASSOCIATE PROFESSOR EMERITUS

B.A., Campus Free College, Boston, 1976

M.B.A., 1978, C.A.G.S., University of New Hampshire, 1993

Fox, Richard D

SENIOR LECTURER

Art and Art History

B.F.A., University of Massachusetts - Amherst, 1990

M.F.A., Mass College of Art, 1994

Foxall, Thomas L

PROFESSOR

Biological Sciences

B.S., Lebanon Valley College, 1968

M.S., University of Bridgeport, 1977

Ph.D., University of New Hampshire, 1980

Frank, Johannes T

PRINCIPAL LECTURER EMERITUS

Staatsexamen, Free University of Berlin, Germany, 1974

M.A., University of Wisconsin - Madison, 1985

Frankel, Barbara R

ASSOCIATE PROFESSOR

Human Development & Family Studies

B.A., University of Wisconsin, 1970

M.S., University of Louisville, 1976

Ph.D., Purdue University, 1988

Freear, John

PROFESSOR EMERITUS
B.A., 1963, M.A., Cambridge University, England, 1967
M.A., University of Kent, United Kingdom, 1969

Freedman, Diane P

PROFESSOR
English
A.B., 1977, M.A.T., Cornell University, 1978
M.A., Boston University, 1982
Ph.D., University of Washington, 1989

Frey, Serita D

PROFESSOR
Natural Resources & The Environment
B.A., 1988, M.S., University of Virginia, 1992
Ph.D., Colorado State University, 1999

Friedman, Mary Adamo

PRINCIPAL LECTURER
Natural Resources & The Environment
B.S., Western Illinois University, 1981
M.S., University of Illinois, 1990
Ph.D., University of New Hampshire, 2010

Frierson, Cathy A

PROFESSOR
History
B.A., University of North Carolina at Chapel Hill, 1975
A.M., 1978, Ph.D., Harvard University, 1985

Frolking, Stephen E

RESEARCH PROFESSOR
Earth Systems Research Center
B.S., 1980, Ph.D., 1983, M.S., University of New Hampshire, 1993

Frye, Jennifer M

CLINICAL ASSISTANT PROFESSOR
Recreation Management & Policy
B.S., 2001, M.S., University of Southern Maine, 2005

Frye, Matthew S

CLINICAL ASSISTANT PROFESSOR
Recreation Management & Policy
B.S., 2002, M.S., University of New Hampshire, 2012

Fuld, Kenneth

DEAN AND PROFESSOR EMERITUS
B.A., Northeastern University, 1971
Ph.D., Dartmouth College, 1976

Furey, Nathaniel B

ASSISTANT PROFESSOR
Biological Sciences
B.S., University of New England, 2009
M.S., Texas A & M University, 2012
Ph.D., University of British Columbia, 2016

Fussell, Barry K

PROFESSOR
Mechanical Engineering
B.S., 1975, M.S., 1980, Ph.D., Ohio State University, 1987

G**Galvin, Antoinette B**

RESEARCH PROFESSOR
Space Science Center
B.S., Purdue University, 1974
Ph.D., 1976, M.S., University of Maryland, 1982

Gamtso, Carolyn B

ASSOCIATE PROFESSOR
Library & Media Services
B.A., Coll of The Holy Cross, 1989
M.A., Indiana University, 1991
M.L.I.S., University of Rhode Island, 1997

Garcia-Rasilla, Carmen

ASSOCIATE PROFESSOR
Languages, Literatures, & Cultures
Ph.D., Universidad de Valladolid, Spain, 1990
M.A., 1991, Ph.D., Johns Hopkins University, 1997

Gardner, James V

RESEARCH PROFESSOR
Center for Coastal & Ocean Mapping
B.S., San Diego State Univ, 1967
M.A., 1969, Ph.D., Columbia University in the City of New York, 1973

Gardner, Kevin H

PROFESSOR
Civil and Environmental Engineering
B.S., Union College, 1989
M.S., 1991, Ph.D., Clarkson University, 1996

Garland, Lynn B

EXTENSION EDUCATOR EMERITA
M.S., University of New Hampshire, 1979

Garland, Virginia E

ASSOCIATE PROFESSOR EMERITA
B.A., University of South Carolina, 1969
M.A.T., Harvard University, 1972
Ph.D., University of Connecticut, 1981

Garnas, Jeffrey R

ASSISTANT PROFESSOR
Natural Resources & The Environment
B.A., University of Colorado at Boulder, 1999
M.S., University of Maine, 2005
Ph.D., Dartmouth College, 2009

Garofalo, Piero

ASSOCIATE PROFESSOR
Classics, Humanities & Ital Studies
B.A., University of Wisconsin - Madison, 1988
M.A., 1991, Ph.D., University of California - Berkeley, 1996

Garvey, John B

PRINCIPAL LECTURER
UNHL Daniel Webster Scholars Progra
A.B., Harvard University, 1974
J.D., Suffolk University, 1978

Gass, Michael A

PROFESSOR

Kinesiology

B.A., St. Olaf College, 1978

M.A., University of Northern Colorado, 1979

Ph.D., University of Colorado at Boulder, 1986

Gaudard, Marie A

PROFESSOR EMERITA

A.B., Mount Holyoke College, 1973

Ph.D., University of Massachusetts - Amherst, 1977

Gaudette, Henri E

PROFESSOR EMERITUS

B.A., University of New Hampshire, 1959

M.S., 1962, Ph.D., University of Illinois at Chicago, 1963

Ge, Liming

PROFESSOR

Mathematics & Statistics

B.S., Beijing University, China, 1984

M.S., Qufu Normal University, China, 1987

Ph.D., University of Pennsylvania, 1995

Gerard, Jeanne G

LECTURER

Business Administration

B.A., University of Massachusetts - Amherst, 1972

M.S., Bank St College of Ed, 1976

M.S., University at Albany,

Gercke, Nicole T

LECTURER

Classics, Humanities & Ital Studies

B.A., Dartmouth College, 1998

M.A., Middlebury College, 2008

Ph.D., Brown University, 2015

Gerhard, Glen C

PROFESSOR EMERITUS

B.S.E.E., Syracuse University, 1956

M.S., 1958, Ph.D., Ohio State University, 1963

Germaschewski, Kai K

ASSOCIATE PROFESSOR

Physics

Diploma, 1998, Ph.D., Heinrich Heine University Düsseldorf, Germany, 2001

Germaschewski, Yin

ASSISTANT PROFESSOR

Economics

B.A., Wuhan University, China, 2003

M.A., University of New Hampshire, 2005

M.A., 2010, Ph.D., Indiana University, 2013

Ghayoomi, Majid

PROFESSOR

Civil and Environmental Engineering

B.S., University of Tehran, Iran, 2004

M.S., Shariff University of Technology, Iran, 2006

Ph.D., University of Colorado at Boulder, 2011

Gibbons, Michelle G

ASSISTANT PROFESSOR

Communication

B.A., Vassar College, 2000

M.A., 2007, Ph.D., University of Pittsburgh, 2010

Gibson, Brett M

ASSOCIATE DEAN

Dean's Office - Liberal Arts

B.A., University of Minnesota, 1991

M.S., Bucknell University, 1995

Ph.D., University of Nebraska, 1999

Gibson, John F

ASSOCIATE PROFESSOR

Mathematics & Statistics

B.A., St. John's College, 1988

Ph.D., Cornell University, 2002

Gilbert, Joseph P

LECTURER

English as a Second Language

B.A., 2006, M.F.A., University of New Hampshire, 2013

Gildersleeve, A Michael

PRINCIPAL LECTURER

Computer Science

B.A., Dartmouth College, 1989

M.S., University of New Hampshire, 2002

Gillespie, Maureen

SENIOR LECTURER

Psychology

B.A., University of New Hampshire, 2006

M.A., 2008, Ph.D., Northeastern University, 2011

Gilman, Francis E

ASSOCIATE EXTENSION EDUCATOR EMERITUS

B.S., University of Maine, 1958

Gingras, Rene J

PROFESSOR

Thompson School of Applied Science

B.S., University of New Hampshire, 1975

M.S., Virginia Polytechnic Institute and State University, 1997

Giordano, Jennifer A

ASSOCIATE PROFESSOR

Resource Acquisition and Discovery

B.A., University of New Hampshire, 1991

M.L.S., Simmons College, 1998

M.B.A., University of New Hampshire, 2005

Girdner, Shelley R

PRINCIPAL LECTURER

English

B.A., University of Virginia, 1997

M.A., University of New Hampshire, 2000

Gire, Judith Ann

LECTURER EMERITUS

Givan, Curtis V

PROFESSOR EMERITUS
A.B., 1960, M.A., Stanford University, 1961
Ph.D., Harvard University, 1968

Glass, Christopher

RESEARCH PROFESSOR
Ocean Process Analysis Lab
B.S., Queen's University, Belfast, 1979
Ph.D., University of Glasgow, United Kingdom, 1985

Glauber, Rebecca K

ASSOCIATE PROFESSOR
Sociology
B.A., University of Massachusetts - Amherst, 2000
M.A., 2005, Ph.D., New York University, 2007

Glutting, Joan H

CLINICAL ASSOCIATE PROFESSOR
Psychology
B.A., University of New Hampshire, 1987
M.A., 1993, Ph.D., Vanderbilt University, 1995

Glynn, Christopher D

ASSISTANT PROFESSOR
Decisions Sciences
M.S., 2014, Ph.D., Duke University, 2016

Gold, Janet N

PROFESSOR EMERITA
B.A., Albertus Magnus College, 1971
M.Ed., Worcester State College, 1981
Ph.D., University of Massachusetts - Amherst, 1990

Goldberg, Michael D

PROFESSOR
Economics
B.S., Lehigh University, 1980
Ph.D., New York University, 1991

Goldstein, Gary S

ASSOCIATE PROFESSOR EMERITUS
B.A., State University of New York at Buffalo, 1971
M.A., 1976, Ph.D., University of New Hampshire, 1980

Golinski, Jan V

PROFESSOR
History
B.A., 1979, M.A., Cambridge University, England, 1983
Ph.D., University of Leeds, United Kingdom, 1984

Golomski, Casey

ASSISTANT PROFESSOR
Anthropology
B.A., Saint Norbert College, 2006
Ph.D., Brandeis University, 2013

Goodberry, James C

ASSOCIATE PROFESSOR EMERITUS
A.A., Onondaga Comm Coll, 1968
B.S., State University of New York at Oswego, 1970
M.Ed., University of New Hampshire, 1974

Goodman, Raymond J

PROFESSOR EMERITUS
B.S., Texas State University, 1967
M.P.A., 1975, Ph.D., Cornell University, 1979

Goodridge, Lyndon E

PROFESSOR EMERITUS
B.S., 1965, M.S., University of Georgia, 1966
Ph.D., Purdue University, 1971

Goodspeed, Charles H

ASSOCIATE PROFESSOR EMERITUS
B.S.C.E., 1967, M.S.C.E., Worcester Polytechnic Institute, 1969
Ph.D., University of Cincinnati, 1972

Goodwin, Casey S

SENIOR LECTURER
Music
B.M., 2001, M.A., University of New Hampshire, 2006

Gordon, Bernard K

PROFESSOR EMERITUS
B.A., 1953, M.A., New York University, 1955
Ph.D., University of Chicago, 1959

Gottel, Debra A

CLINICAL ASSISTANT PROFESSOR
Nursing
M.H.S., Keene State College (Nh), 1990
M.S.N., Western Governor's University, 2012

Gottwald, Sheryl R

CLINICAL ASSISTANT PROFESSOR
Communication Sciences & Disorders
B.S., Northeastern University, 1976
M.S., Pennsylvania State University, 1977
Ph.D., Temple University, 1990

Gough, Robert A

LECTURER
Management
A.B., Bates College, 1968
M.A., 1971, Ph.D., Duke University, 1975

Gould, Eliga H

PROFESSOR
History
A.B., Princeton University, 1983
M.Sc., University of Edinburgh, United Kingdom, 1987
M.A., 1988, Ph.D., Johns Hopkins University, 1993

Grady, James Edward

ASSOCIATE DIRECTOR EMERITUS
B.S., University of New Hampshire, 1972

Graham, Karen J

PROFESSOR
Mathematics & Statistics
B.A., State University of New York at Cortland, 1975
M.S., University of New Hampshire, 1983
M.A., State University of New York at Cortland, 1986
Ph.D., University of New Hampshire, 1986

Graham, Suzanne E

ASSOCIATE PROFESSOR

Education

B.S., Brown University, 1985

Ed.M., 1990, Ed.D., Harvard University, 1997

Grandy, Andrew Stuart

ASSOCIATE PROFESSOR

Natural Resources & The Environment

B.S., The Evergreen State College, O, 1995

M.S., University of Maine, 1998

Ph.D., Michigan State University, 2005

Gravink, Jill K

CLINICAL ASSISTANT PROFESSOR

Recreation Management & Policy

M.S., 2007, B.S., University of New Hampshire,

Greabe, John M

PROFESSOR

UNHL JD Instruction

B.A., Dartmouth College, 1985

J.D., Harvard Law School, 1988

Greenberg, Arthur

PROFESSOR

Chemistry

B.S., Fairleigh Dickinson University, 1967

M.A., 1970, Ph.D., Princeton University, 1971

Greenslade, Kathryn J

ASSISTANT PROFESSOR

Communication Sciences & Disorders

B.S., Vanderbilt University, 2001

M.S., University of Arizona, 2007

Ph.D., University of Washington, 2015

Greenslade, Margaret E

ASSOCIATE PROFESSOR

Chemistry

B.A., Bryn Mawr College, 1998

Ph.D., University of Pennsylvania, 2005

Gregory, Paula J

EXTENSION EDUCATOR EMERITA

B.Ed., 1971, M.O.E., Keene State College (Nh), 1977

Grenier, Michelle A

ASSOCIATE PROFESSOR

Kinesiology

B.S., University of Massachusetts - Amherst, 1978

M.S., 1995, Ph.D., University of New Hampshire, 2004

Gress, David L

PROFESSOR EMERITUS

A.S., Vincennes University, 1963

B.S., 1966, M.S., 1968, Ph.D., Purdue University, 1976

Griffith, Jennifer A

ASSISTANT PROFESSOR

Management

B.A., 2008, M.S., 2011, Ph.D., University of Oklahoma, 2013

Grimm, Curt D

RESEARCH ASSOCIATE PROFESSOR

Carsey School

B.A., University of New Hampshire, 1979

M.A., 1985, Ph.D., State University of New York at Binghamton, 1991

Grinde, Roger B

ASSOCIATE PROFESSOR

Decisions Sciences

B.A., Carroll College, 1984

M.S., Oregon State University, 1986

Ph.D., Pennsylvania State University, 1993

Griswold, Lou Ann

ASSOCIATE PROFESSOR

Occupational Therapy

B.S., 1979, M.S., Colorado State University, 1986

Ph.D., University of New Hampshire, 1995

Grizzle, Raymond Edward

RESEARCH PROFESSOR

Biological Sciences

B.S., Florida State University, 1972

M.S., University of Central Florida, 1981

Ph.D., Rutgers University, 1988

Gross, Charles W

PROFESSOR EMERITUS

B.A., 1965, M.B.A., Michigan State University, 1967

Ph.D., University of Colorado at Boulder, 1972

Gross, Todd Stuart

PROFESSOR

Mechanical Engineering

B.S., Carnegie Mellon University, 1975

Ph.D., Northwestern University, 1981

Gruen, Thomas W

PROFESSOR

Marketing

B.A., Gordon College, 1977

M.B.A., 1980, M.S., Indiana University, 1995

M.A., Gordon College, 1997

Ph.D., Indiana University, 1997

Grunkemeyer, Vanessa L

LECTURER

Agriculture, Nutrition, & Food System

B.S., Rutgers University, 2003

D.V.M., Cornell University, 2007

Guerdat, Kate G

ASSOCIATE STATE SPECIALIST

Youth and Family

Ed.D., North Carolina State University, 2011

Guerdat, Todd C

ASSISTANT PROFESSOR

Agriculture, Nutrition, & Food System

B.S., University of North Carolina, 1999

M.S., 2008, Ph.D., North Carolina State University, 2012

Gullace, Nicoletta F

ASSOCIATE PROFESSOR

History

B.A., University of Rochester, 1983

M.A., 1987, Ph.D., University of California - Berkeley, 1993

Gullion, Laurie

CLINICAL ASSOCIATE PROFESSOR EMERITA

B.S., 1976, M.S., University of Massachusetts - Amherst, 1991

Gunlogson, Elizabeth M

ASSOCIATE PROFESSOR

Music

B.A., Luther College, 1993

M.M., Indiana University, 1996

D.M., Florida State University, 2006

Gunn, John Steven

RESEARCH ASSISTANT PROFESSOR

Natural Resources & The Environment

B.S., University of Maine, 1991

M.F.S., Yale University, 1996

Ph.D., University of New Brunswick, C, 2004

Guo, Lin

ASSOCIATE PROFESSOR

Marketing

B.A., 2001, M.A., Renmin University of China, 2004

Ph.D., University of Arizona, 2010

Gupta, Nivedita Ranbir

PROFESSOR

Chemical Engineering

B.S.E.T., Indian Institutes of Technology, India, 1993

Ph.D., Pennsylvania State University, 1999

Gutman, Jonathan

PROFESSOR EMERITUS

B.A., Pomona College, 1960

M.S., Purdue University, 1962

Ph.D., University of South Carolina, 1967

Guyette, Julienne M

SENIOR LECTURER

Thompson School of Applied Science

A.S., Culinary Institute of America, 1990

B.S., University of Maine, 1997

M.Ed., Plymouth State University, 2015

Gwebu, Kholekile L

ASSOCIATE PROFESSOR

Decisions Sciences

B.S., National University of Lesotho, South Africa, 1998

M.B.A., 2002, Ph.D., Kent State University, 2006

H**Hackett, Robin Michelle**

ASSOCIATE PROFESSOR

English

B.A., University of California - Davis, 1986

M.A., Sonoma State University, 1993

Ph.D., City University of New York, 2000

Hadwin, Donald W

PROFESSOR

Mathematics & Statistics

B.S., Michigan State University, 1967

M.A., University of Wisconsin, 1968

Ph.D., Indiana University - Purdue University Fort Wayne, 1975

Haebler, Peter

ASSOCIATE DEAN EMERITUS

B.A., 1963, M.A., University of Massachusetts - Amherst, 1968

Ph.D., University of New Hampshire, 1976

Hageman, Elizabeth H

PROFESSOR EMERITA

B.S., Simmons College, 1963

M.A., Barnard College, 1964

Ph.D., University of North Carolina, 1971

Hagen, Margaret Pratt

EXTENSION SPECIALIST EMERITUS

B.S., Brown University, 1977

M.S., Colorado State University, 1986

Haines, Thomas W

ASSOCIATE PROFESSOR

English

B.A., Dartmouth College, 1990

M.J., University of California - Berkeley, 1994

Hale, Iago L

ASSOCIATE PROFESSOR

Agriculture, Nutrition, & Food System

B.A., Dartmouth College, 1997

M.S., 2007, Ph.D., University of California - Davis, 2011

Hall, Carrie L

ASSISTANT PROFESSOR

Biological Sciences

A.A., Community College of the Air Force, 2002

B.S., 2006, M.S., Univ of Tulsa, 2008

Ph.D., Idaho State University, 2011

Hall, Francine S

PROFESSOR EMERITA

B.A., Boston University, 1965

M.S., Southern Connecticut State University, 1968

Ph.D., University of Toronto, Canada, 1975

Hall, Meredith A

LECTURER EMERITA

B.A., Bowdoin College, 1993

M.A., University of New Hampshire, 1995

Halliday, Aria S

ASSISTANT PROFESSOR

Women's Studies Program

M.A., Purdue University, 2004

B.A., Davidson College, 2014

Ph.D., Purdue University, 2017

Halpern, Jeffrey M

ASSISTANT PROFESSOR

Chemical Engineering

B.S., 2003, Ph.D., Case Western Reserve University, 2010

Halpin, Patricia A

ASSOCIATE PROFESSOR

Science

B.S., Old Dominion University, 1983

M.S., 1995, Ph.D., University of Connecticut, 1996

Halstead, John M

PROFESSOR

Natural Resources & The Environment

B.A., University of Notre Dame, 1976

M.S., University of Massachusetts - Amherst, 1981

Ph.D., Virginia Polytechnic Institute and State University, 1989

Hamalainen, Hannah W

ASSISTANT PROFESSOR

Research Learning Services

B.A., Guilford College, 2005

M.L.I.S., University of North Carolina at Chapel Hill, 2011

Hambacher, Elyse L

ASSISTANT PROFESSOR

Education

B.A., University of Florida, 2005

M.A., Columbia University in the City of New York, 2006

Ph.D., University of Florida, 2013

Hamilton, Lawrence C

PROFESSOR

Sociology

B.A., University of California - Santa Barbara, 1970

M.A., 1974, Ph.D., University of Colorado at Boulder, 1978

Haney, James F

PROFESSOR

Biological Sciences

B.A., 1961, M.A., Miami University - Ohio, 1963

Ph.D., University of Toronto, Canada, 1970

Hanlon, Michael J

LECTURER

Accounting and Finance

B.S., Bentley College, 1997

M.B.A., University of New Hampshire, 2005

Hansen, Larry James

ASSOCIATE PROFESSOR EMERITUS

B.S., 1968, M.S., Brigham Young University, 1971

Ph.D., Florida State University, 1973

Hanson, Mary Katharine

PROFESSOR EMERITA

B.A., Connecticut College, 1973

M.Ed., University of New Hampshire, 1976

Hardy, Stephen H

PROFESSOR EMERITUS

A.B., Bowdoin College, 1970

M.S., 1976, M.A., 1978, Ph.D., University of Massachusetts - Amherst, 1980

Harkless, Gene E

ASSOCIATE PROFESSOR

Nursing

B.S.N., Duke University, 1976

M.S.N., Vanderbilt University, 1980

D.N.Sc., Boston University, 1991

Harper, Valerie L

ASSOCIATE PROFESSOR EMERITA

B.A., University of Rhode Island, 1980

M.S., Simmons College, 1982

M.A., Northeastern University, 1990

Harris, Benjamin

PROFESSOR

Psychology

B.A., Hampshire College, 1971

M.A., 1973, Ph.D., Vanderbilt University, 1975

Harris, J William

PROFESSOR

History

B.S., Massachusetts Institute of Technology, 1968

M.A., 1976, Ph.D., Johns Hopkins University, 1982

Harris, Larry

PROFESSOR

Biological Sciences

B.A., 1965, Ph.D., University of California - Berkeley, 1970

Harrison-Buck, Eleanor

ASSOCIATE PROFESSOR

Anthropology

B.S., Skidmore College, 1994

M.A., 2001, Ph.D., Boston University, 2007

Hart, John L

PROFESSOR EMERITUS

B.A., New College, 1969

M.S., University of Michigan, 1974

M., University of Massachusetts - Amherst, 1994

Harter, Robert D

PROFESSOR EMERITUS

B.S., 1961, M.S., Ohio State University, 1962

Ph.D., Purdue University, 1966

Hartman, Cindy L

ASSISTANT PROFESSOR

Recreation Management & Policy

M.S., 2011, Ph.D., Clemson University, 2015

B.S., Texas A & M University,

Harvey, N Paul

PROFESSOR

Management

B.S., University of Connecticut, 2000

M.B.A., State University of New York at Binghamton, 2002

Ph.D., Florida State University, 2006

Harzewski, Stephanie

SENIOR LECTURER
English
B.A., Vassar College, 1996
M.A., Rutgers University, 1998
Ph.D., University of Pennsylvania, 2006

Haskins, Robert C

PROFESSOR
Music
B.M., 1982, M.M., Johns Hopkins University, 1984
Diploma, Guildhall School M&D, London, 1986
M.M., Johns Hopkins University, 1992
M.A., 1996, D.M.A., 1997, Ph.D., University of Rochester, 2004

Hasseldine, David J

PROFESSOR
Accounting and Finance
B.C., 1985, M.C., University of Canterbury, New Zealand, 1987
Ph.D., Indiana University, 1997

Hassey, William A

PRINCIPAL LECTURER
Management
B.S., Univ of Massachusetts - Lowell, 1966
M.S., Keene State College (Nh), 1973
Ed.D., Boston University, 1979

Hatcher, Philip John

PROFESSOR
Computer Science
B.S., 1978, M.S., Purdue University, 1979
Ph.D., Illinois Institute of Technology, 1985

Hausner, Alejandro

SENIOR LECTURER
Computer Science
B.S., 1988, M.S., McGill University, Canada, 1991
M.S., Queen's University- Ca, 1993
Ph.D., Princeton University, 2001
Ph.D., Brown University, 2013

He, Zhaozhao

ASSISTANT PROFESSOR
Accounting and Finance
B.S., Shanghai University of International Business and Economics, China, 2008
M.B.A., University of Central Arkansas, 2009
Ph.D., University of Kansas, 2016

Healey, Kevin

ASSOCIATE PROFESSOR
Communication
B.A., Drew University, 1996
M.A., The New School, 2005
Ph.D., University of Illinois at Urbana-Champaign, 2011

Heath, Renee G

SENIOR LECTURER
Communication
B.S., Oregon State University, 1990
M.A., Washington State University, 1997
Ph.D., University of Colorado at Boulder, 2005

Hebert, David J

PROFESSOR EMERITUS
B.S., University of Maine, 1962
M.Ed., Duquesne University, 1964
Ph.D., Kent State University, 1967

Heisenberg, Jochen H

PROFESSOR EMERITUS
O, University of Munich, Germany, 1961
Diploma, University Heidelberg, Germany, 1964
Ph.D., University of Hamburg, Germany, 1966

Hemstock, Thomas E

SENIOR LECTURER
UNHL Library
B.A., Central Connecticut State Univ, 2003
M.L.S., Southern Connecticut State University, 2007
J.D., University of Connecticut, 2007

Henn, Mark J

PRINCIPAL LECTURER
Psychology
B.A., Coll of Wooster, 1983
M.A., 1986, Ph.D., University of New Hampshire, 1993

Hennessey, Barry J

ASSOCIATE PROFESSOR
Dean's Office/Administration
A.B., University of Wisconsin, 1967
Ph.D., Harvard University, 1972
M.L.S., Simmons College, 1974

Hennessey, William

PROFESSOR EMERITUS

Henny, Karen N

SENIOR LECTURER
Kinesiology
B.S., University of New Hampshire, 1988
A.S., N H Technical Inst, 1993

Henry, Robert M

ASSOCIATE PROFESSOR
Civil and Environmental Engineering
B.S., 1973, M.S., 1974, Ph.D., University of Pennsylvania, 1980

Herold, Marc W

ASSOCIATE PROFESSOR
Economics
M.Sc., University of Zurich, Switzerland, 1966
M.B.A., Swiss Federal Institute of Technology, Switzerland, 1968
M.B.A., 1970, Ph.D., University of California - Berkeley, 1979

Hersman, F William

PROFESSOR
Physics
B.S., University of Cincinnati, 1977
Ph.D., Massachusetts Institute of Technology, 1982

Hertz, Susan M

ASSOCIATE PROFESSOR
English
B.A., University of New Hampshire, 1978

Hess, Susan M

LECTURER

Psychology

B.S., Saint Lawrence Univ, 1978

M.Ed., Harvard University, 1983

Ed.D., Boston University, 1990

Hesse, Richard A

PROFESSOR EMERITUS

B.S., Indiana University of Pennsylvania, 1959

M.A., Temple University, 1964

Ph.D., Georgetown University, 1968

Hibschweiler, Rita A

PROFESSOR

Mathematics & Statistics

B.A., 1979, M.A., State University of New York at Buffalo, 1981

Ph.D., University at Albany, 1988

Higgs, Kathleen J

CLINICAL ASSISTANT PROFESSOR

Nursing

M.S., Western Governor's University, 2015

Hight, Eleanor M

PROFESSOR EMERITA

B.A., Skidmore College, 1970

A.A., 1977, A.M., 1977, Ph.D., Harvard University, 1986

Hiley, David R

PROFESSOR EMERITUS

B.A., Auburn University, 1966

M.A., 1969, Ph.D., University of Georgia, 1972

Hiller, Marc D

ASSOCIATE PROFESSOR

Health Management & Policy

B.S., 1972, M.P.H., 1974, Ph.D., University of Pittsburgh, 1978

Hinson, Edward K

ASSOCIATE PROFESSOR

Mathematics & Statistics

B.S., University of Florida, 1979

M.S., 1982, Ph.D., Northwestern University, 1985

Hobbie, Erik A

RESEARCH PROFESSOR

Earth Systems Research Center

B.S., Yale University, 1987

M.S., 1994, Ph.D., University of Virginia, 1997

Hochgraf, Frederick G

ASSOCIATE PROFESSOR EMERITUS

B., Rensselaer Polytechnic Institute, 1954

M.S., Cornell University, 1958

Hojjat, Seyed Ali

ASSISTANT PROFESSOR

Decisions Sciences

B.S., Shariff University of Technology, Iran, 2009

M.B.A., UMass- Dartmouth, 2011

Ph.D., University of California - Irvine, 2016

Holcombe, Julee Ann

ASSOCIATE PROFESSOR

Art and Art History

B.F.A., University of New Mexico, 1998

M.F.A., Maryland Institute, 2004

Hollis, Eileen H

CLINICAL ASSISTANT PROFESSOR

Nursing

B.S., University of New England, 2008

M.S., University of New Hampshire, 2010

Hollweg, Joseph V

PROFESSOR EMERITUS

B.S., 1965, M.S., 1965, Ph.D., Massachusetts Institute of Technology, 1968

Holtrop, Maurik W

PROFESSOR

Physics

B.S., University of New Hampshire, 1987

Ph.D., Massachusetts Institute of Technology, 1995

Holzniekemper, Alex

LECTURER

Languages, Literatures, & Cultures

B.A., 2006, M.A., University of Arizona, 2008

Ph.D., Ohio State University, 2014

Hood, Craig A

PROFESSOR EMERITUS

B.A., Boston University, 1975

B.A., Pennsylvania State University, 1979

M.F.A., Indiana University - Bloomington, 1981

Hopkins, Lori J

ASSOCIATE PROFESSOR

Languages, Literatures, & Cultures

B.A., University of Virginia, 1984

M.A., 1987, Ph.D., University of Wisconsin - Madison, 1993

Horvath, Jaroslav

ASSISTANT PROFESSOR

Economics

B.S., 2011, M.S., East Carolina University, 2011

M.A., 2012, Ph.D., Ohio State University, 2016

Hoskin, Marilyn B

DEAN AND PROFESSOR EMERITA

B.A., Mount Holyoke College, 1967

M.A., 1968, Ph.D., University of California - Los Angeles, 1973

Houle, James J

RESEARCH ASSISTANT PROFESSOR

Civil and Environmental Engineering

B.S., University of New Hampshire, 1995

M.A., School for International Train, 2003

Ph.D., University of New Hampshire, 2015

Houston, Barbara E

PROFESSOR EMERITA

B.A., 1963, M.A., 1966, Ph.D., University of Western Ontario, Canada, 1977

Houston, Robert E

PROFESSOR EMERITUS
B.S., 1949, M.S., Michigan State University, 1951
Ph.D., Pennsylvania State University, 1954

Houtenville, Andrew James

ASSOCIATE PROFESSOR
Economics Dept-Shared Position
B.A., Stockton University, 1988
M.A., 1991, Ph.D., University of New Hampshire, 1997

Howard, Daniel R

ASSISTANT PROFESSOR
Biological Sciences
A.A., Coll of The Sequoias, 1999
M.S., Northeastern State University, 2004
Ph.D., Univ of Tulsa, 2007

Howard, Theodore E

ASSOCIATE DEAN
Dean's Office - LS & A
B.S., University of Maine, 1972
M.F., Duke University, 1974
Ph.D., Oregon State University, 1982

Howe, Gerald W

EXTENSION SPECIALIST EMERITUS
M., Vermont Law School, So Royalto, 1983

Howell, David L

PROFESSOR EMERITUS
B.S., Michigan State University, 1964
M.Ed., Pennsylvania State University, 1968
Ph.D., Ohio State University, 1973

Howell, William H

PROFESSOR EMERITUS
B.A., Otterbein College, 1969
M.S., 1975, Ph.D., University of Rhode Island, 1980

Howey, Meghan L

PROFESSOR
Anthropology
B.A., University of Delaware, 2000
M.A., 2002, Ph.D., University of Michigan, 2006

Hoza, Jack E

PROFESSOR
Sign Language Interpreting
B.S., University of Northern Colorado, 1978
M.S., McDaniel College, 1991
Ph.D., Boston University, 2001

Hrabak, Estelle M

ASSOCIATE PROFESSOR
Molecular, Cellular, & Biomedical
B.S., Michigan State University, 1978
Ph.D., University of Wisconsin, 1992

Huang, Chia-Lin

RESEARCH ASSISTANT PROFESSOR
Space Science Center
Ph.D., Boston University, 2007

Huang, Ju-Chin

PROFESSOR
Economics
B.S., National Taiwan University, Taiwan, 1985
M.S., 1988, Ph.D., North Carolina State University, 1994

Hubbard, Colin D

PROFESSOR EMERITUS
B.S.Chem., 1961, Ph.D., Univ of Sheffield Eng, 1964

Huddleston, Mark W

UNH PRESIDENT EMERITUS
UNH President's Office
B.A., State University of New York at Buffalo, 1972
M.A., 1973, Ph.D., University of Wisconsin - Madison, 1978

Hughes Clarke, John E

PROFESSOR
Earth Sciences - Joint Positions
B.A., Oxford Univ-Eng, 1983
M.S., Southampton University, UK, 1984
Ph.D., Dalhousie University, Canada, 1988

Humphreys, Elizabeth P

RESEARCH ASSISTANT PROFESSOR
Institute on Disability
A.A., Cape Cod Comm College, 1976
B.A., Westfield State College, 1979
M.Ed., University of New Hampshire, 1997
Ph.D., University of North Carolina at Chapel Hill, 2013

Hupper, Veronica P

LECTURER
Mathematics & Statistics
B.A., Caldwell Coll for Women, 1996
M.S., 1999, Ph.D., University of New Hampshire, 2005

Hurn, Marcus B

PROFESSOR
UNHL JD Instruction
B.S., Missouri State University, 1974
J.D., Univ of Missouri-Kansas City, 1977

Hutson, John D

DEAN EMERITUS

I**Ikegami, Pamela B**

SENIOR LECTURER
Languages, Literatures, & Cultures
B.A., University of Colorado at Boulder, 1987
M.A., University of Hawaii Manoa, 1994
M.B.A., University of New Hampshire, 2016

Ingram, Lionel R

PRINCIPAL LECTURER EMERITUS
B.S., United States Military Academy, 1963
M.P.A., 1966, Ph.D., Harvard University, 1995

Innis, Daniel E

PROFESSOR
Hospitality Management
B.B.A., Ohio University, 1985
M.B.A., Miami University - Ohio, 1986
Ph.D., Ohio State University, 1991

Irwin, Manley R

PROFESSOR EMERITUS
A.B., Michigan State University, 1950
M.A., University of Michigan, 1954
Ph.D., Michigan State University, 1963

Isaacs, Anthony D

LECTURER
Sign Language Interpreting
B.S., 2000, B.A., Gallaudet University, 2004
M.S., McDaniel College, 2007

Isenberg, Philip A

RESEARCH PROFESSOR
Space Science Center
B.S., Massachusetts Institute of Technology, 1971
Ph.D., 1976, M.S., University of Chicago, 1976

J**Jablonski, Kathleen E**

EXTENSION EDUCATOR EMERITA
B.S., State University of New York at Plattsburgh, 1973
M.A., University of Maine, 1987

Jackman, Krista Law

SENIOR LECTURER
English
B.A., University of New Hampshire, 1991
M.A.T., Rivier College, 1993

Jackson, Robert Michael

SENIOR LECTURER
Communication
B.A., Univ of Arkansas, 1986
M.A., Central Washington University,, 1993
Ph.D., Rensselaer Polytechnic Institute, 2002

Jacobs, Jennifer M

PROFESSOR
Civil and Environmental Engineering
B.S., Brown University, 1987
M.S., Tufts University, 1993
Ph.D., Cornell University, 1997

Jaffee, Eleanor M

RESEARCH ASSISTANT PROFESSOR
Carsey School
B.A., State University of New York at Binghamton, 1996
M.S.W., 2003, Ph.D., University at Albany, 2012

Jago, Barbara J

ASSOCIATE PROFESSOR
Communication Arts and Science
B.A., Smith College, 1981
M.A., New York University, 1993
M.A., 1993, Ph.D., University of South Florida, 1998

Jahnke, Leland S

PROFESSOR EMERITUS
B.A., 1961, M.A., 1966, M.S., 1968, Ph.D., University of Minnesota, 1973

James, Beverly A

PROFESSOR EMERITA
B.A., Fla Atlantic Univ, 1979
Ph.D., University of Iowa, 1983

Jamieson, Anne L

LECTURER
Health Management & Policy
J.D., Mass School of Law, Andover MA, 2000
B.S.Ed., Worcester State College,

Jamison, Tyler B

ASSISTANT PROFESSOR
Human Development & Family Studies
B.A., Miami University - Ohio, 2006
M.S., 2008, Ph.D., University of Missouri - Columbia, 2012

Jansen, Edmund F

PROFESSOR EMERITUS
B.S., University of Illinois at Chicago, 1960
M.S., 1964, Ph.D., Nc State University, 1966

Janson-Sand, Colette H

ASSOCIATE PROFESSOR EMERITA
B.A., Bridgewater State University, 1967
M.S., 1970, Ph.D., University of New Hampshire, 1980

Jarema, Patricia M

LECTURER
Biological Sciences
A.A., Greenfield Comm Coll, 1995
B.S., University of Massachusetts - Amherst, 2000
M.S., 2008, Ph.D., University of New Hampshire, 2013

Jeong, Kyung Jae

ASSISTANT PROFESSOR
Chemical Engineering
B.S., Seoul National University, Korea, 2001
Ph.D., Purdue University, 2008

Jerard, Robert B

PROFESSOR EMERITUS
B.S., University of Vermont, 1969
M.S., Massachusetts Institute of Technology, 1970
Ph.D., University of Utah, 1977

Jin, Hong

ASSISTANT PROFESSOR
Computer Science
B.S., Shanghai University, China, 1997
M.S., 2001, Ph.D., University of Windsor, Ontario, Canada, 2010

Johnson, Elizabeth O

LECTURER
Agriculture, Nutrition, & Food System
B.S., University of New Hampshire, 2006
M.S., Granite State College, 2014

Johnson, Jeremiah W

ASSISTANT PROFESSOR
Mathematics
B.S., 2000, M.S., 2002, Ph.D., University of New Hampshire, 2010

Johnson, Joel E

ASSOCIATE PROFESSOR
Earth Sciences
B.S., University of Minnesota Duluth, 1996
M.S., University of Illinois at Urbana-Champaign, 1998
Ph.D., Oregon State University, 2004

Johnson, Kenneth M

PROFESSOR
Sociology
B.A., University of Michigan, 1972
M.A., 1975, Ph.D., University of North Carolina, 1980

Johnson, Kristen C

ASSISTANT PROFESSOR
Science
A.B., Dartmouth College, 1998
Ph.D., Massachusetts Institute of Technology, 2003

Johnson, Linda B

ASSOCIATE PROFESSOR EMERITUS
B.A., 1971, M.L.S., University of Arizona, 1974
M.A., Santa Clara University, 1988

Johnson, Nancy M

PROFESSOR EMERITA
B.S., University of New Hampshire, 1979
M.Ed., University of Maine, 1984

Johnson, Paul C

ASSOCIATE PROFESSOR EMERITUS
B.S., Emory and Henry College, 1968
Ph.D., Cornell University, 1974

Johnson, Richard P

PROFESSOR
Chemistry
B.S., 1972, Ph.D., Syracuse University, 1976

Joiner, Sarah L

LECTURER
Chemistry
B.S., Gannon University, 2010
Ph.D., University of New Hampshire, 2015

Jolley, Robert E

ASSOCIATE PROFESSOR EMERITUS
B.A., Allegheny College, 1966
M.S.W., Boston University, 1972
Ph.D., Smith College, 1982

Jonas, Michael

ASSOCIATE PROFESSOR
Computer Science
B.S., 1987, M.S., College of William and Mary, 1989
Ph.D., Tufts University, 2003

Jones, Lisa M

RESEARCH ASSOCIATE PROFESSOR
Psychology
B.A., University of Virginia, 1992
M.A., 1997, Ph.D., University of Rhode Island, 1999

Jones, Paul R

PROFESSOR EMERITUS
A.B., Albion College, 1952
Ph.D., University of Illinois at Urbana-Champaign, 1956

Jones, Stephen H

RESEARCH ASSOCIATE PROFESSOR
Natural Resources & The Environment
B.S., University of Maine, 1976
M.S., 1980, Ph.D., University of Wisconsin, 1983

Jones, Wayne E

INTERIM PROVOST & VICE PRESIDENT FOR ACADEMIC AFFAIRS
Dean's Office - CEPS
Ph.D., University of North Carolina, 1991
B.S., Saint Michael's College, 1997

Jonsson, Bror F

RESEARCH ASSISTANT PROFESSOR
Ocean Process Analysis Lab
M.S., University of Alexandria, Alexandria, Egypt, 1998
M.S., 1999, Ph.D., Stockholm University, 2005

Jorda, Karl

PROFESSOR EMERITUS

Jorgensen, Nathan A

ASSISTANT PROFESSOR
Music
B.M., University of Kansas, 1999
M.M., University of Missouri - Columbia, 2003
D.M.A., University of Kansas, 2010

Jusseume, Sarah B

LECTURER
English as a Second Language
B.S., University of New Hampshire, 2001
M.A., University of Massachusetts - Boston, 2012

K**Kaen, Fred R**

PROFESSOR EMERITUS
B.S., Lehigh University, 1963
M.B.A., 1968, Ph.D., University of Michigan, 1972

Kalargyrou, Valentini

ASSOCIATE PROFESSOR
Hospitality Management
B.B.A., Athens University of Economics and Business, 1990
M.Sc., 2005, Ph.D., University of Nevada - Las Vegas, 2009

Kalinowski, Michael

ASSOCIATE PROFESSOR EMERITUS
B.A., Bennington College, 1970
M.Ed., 1972, Ed.D., University of Massachusetts - Amherst, 1976

Kallmerten, Pamela S

CLINICAL ASSOCIATE PROFESSOR
Nursing
B.S., Colby-Sawyer College, New Lond, 1989
M.S., Northeastern University, 1997
DNP, University of New Hampshire, 2016

Kang, Jae O

ASSOCIATE PROFESSOR EMERITUS
B.S., Salve Regina University, 1973
M.S., 1977, Ph.D., University at Albany, 1984

Karaivanova, Katerina D

LECTURER
Psychology
B.A., Kenyon College, 2010
M.A., 2013, M.S., 2016, Ph.D., University of New Hampshire, 2016

Karkour, Islam R M H

LECTURER
Languages, Literatures, & Cultures
B.S., Al-Azhar University, Egypt, 2005
M.A., University of Manchester, England, 2011
Ph.D., University of New Hampshire, 2018

Karson, Marvin J

PROFESSOR EMERITUS
B.B.A., City College, New York, Ny, 1959
M.A., Johns Hopkins University, 1961
Ph.D., Nc State University, 1967

Kaufmann, Richard L

PROFESSOR EMERITUS
B.S., California Institute of Technology, 1957
M.S., 1958, Ph.D., Yale University, 1960

Kayaalp, Mehmet

ASSISTANT PROFESSOR
Electrical & Computer Eng Dept
B.S., 2008, M.S., TOBB Univer of Econ & Engineer, 2010
Ph.D., State University of New York at Binghamton, 2015

Kaye, David J

PROFESSOR
Theatre & Dance
B.S., Castleton State College, 1984
M.F.A., Brandeis University, 1993

Kayser, John R

ASSOCIATE PROFESSOR
Political Science
B.A., University of New Hampshire, 1962
M.A., Ohio State University, 1964
Ph.D., Claremont Graduate University, 1969

Kazura, Kerry

ASSOCIATE PROFESSOR
Human Development & Family Studies
B.A., University of Southern Maine, 1989
M.S., 1992, Ph.D., Auburn University, 1995

Keesee, Amy M

ASSOCIATE PROFESSOR
Physics - Joint Positions
B.S., Davidson College, 2000
M.S., 2003, Ph.D., West Virginia University, 2006

Keim, Christina J

SENIOR LECTURER
Agriculture, Nutrition, & Food System
B.S., 1998, M.Ed., University of New Hampshire, 2009

Kelley, Ann M

ASSOCIATE PROFESSOR EMERITA
Diploma, Peter Bent Brigham Hosp, 1955
B.S., 1959, M.S., Boston University, 1966

Kempster, William G

PROFESSOR
Music
B.A., University of New England, 1978
D.M.A., University of Alberta, Canada, 1999

Kerns, Georgia M

ASSOCIATE PROFESSOR EMERITA
B.S.E., 1969, M.Ed., University of Delaware, 1975
M.Ed., University of New Hampshire, 1983
Ph.D., University of Kansas, 1987

Kertzer, Robert

PROFESSOR EMERITUS
B.S., Brooklyn College of the City University of New York, 1960
M.S., University of Illinois at Urbana-Champaign, 1961
Ph.D., Michigan State University, 1965

Khanlari, Moein

ASSISTANT PROFESSOR
Marketing
B.S., Shariff University of Technology, Iran, 2005
M.B.A., University of Tehran, Iran, 2009
Ph.D., University of Alberta, Canada, 2016

Khleif, Bud B

PROFESSOR EMERITUS
B.A., Hebrew University, 1952
M.A., University of Michigan, 1954
Ph.D., Johns Hopkins University, 1957

Kidambi, Phani N

LECTURER
Analytics & Data Science

Kidwell, Mardi J

ASSOCIATE PROFESSOR
Communication
B.A., University of California - Santa Cruz, 1986
M.A., 1998, Ph.D., University of California - Santa Barbara, 2003

Kieronski, Roberta P

ASSISTANT PROFESSOR EMERITA
B.S., Southern Connecticut State University, 1969
M.S., University of New Hampshire, 1971

Kies, Christopher R

PROFESSOR

Music

B.M., The New England Conservatory of Music, 1973

M.F.A., 1977, Ph.D., Brandeis University, 1984

Kilbride, Richard C

LECTURER

Accounting and Finance

B.A., Colorado College, 1978

M.B.A., Dartmouth College, 1980

Kilcrease, Kelly

ASSOCIATE PROFESSOR

Business Administration

B.A., University of Florida, 1986

M.B.A., Tampa College, 1988

Ph.D., Union Institute & University, 1992

Kim, Bo Rin

ASSISTANT PROFESSOR

Social Work

B.A., Yonsei University, Seoul, Korea, 2003

M.A., Seoul National University, Korea, 2005

M.S.W., 2007, Ph.D., University of Michigan, 2014

Kim, Inchan

ASSISTANT PROFESSOR

Decisions Sciences

B.B.A., Hyupsung University, S Korea, 2006

M.S., Yonsei University, Seoul, Korea, 2009

Ph.D., University of Oklahoma, 2015

Kim, Soo Hyon

ASSISTANT PROFESSOR

English

B.A., Korea University, Seoul, 2005

M.A., University of Illinois at Urbana-Champaign, 2008

Ph.D., Michigan State University, 2013

Kim, Young Jo

ASSISTANT PROFESSOR

Chemical Engineering

Ph.D., University of Missouri - Columbia, 2010

Kimball, Robert O

ASSOCIATE PROFESSOR EMERITUS

B.S., 1941, M.A., University of New Hampshire, 1952

Kinghorn, Deborah A

PROFESSOR

Theatre & Dance

B.A., SUNY College at Fredonia, 1976

M.F.A., Trinity University -Texas, 1981

Kinner, Nancy E

PROFESSOR

Civil and Environmental Engineering

B.A., Cornell University, 1976

M.S., 1980, Ph.D., University of New Hampshire, 1983

Kinsey, Brad L

PROFESSOR

Mechanical Engineering

B.S., University of Michigan, 1992

M.S., 1998, Ph.D., Northwestern University, 2001

Kirkpatrick, John T

SENIOR VICE PROVOST & DEAN OF STUDENTS

Dean of Students

B.A., Colby College, 1977

M.A., 1979, Ph.D., University of New Hampshire, 1983

Kirsch, Nicholas J

ASSOCIATE PROFESSOR

Electrical & Computer Eng Dept

B.S., University of Wisconsin - Madison, 2003

M.S., 2006, Ph.D., Drexel University, 2009

Kislat, Fabian

ASSISTANT PROFESSOR

Physics

Ph.D., Humbolt University of Berlin, Germany, 2011

Kistler, Lynn M

PROFESSOR

Physics - Joint Positions

B.S., Harvey Mudd College, 1981

M.S., 1983, Ph.D., University of Maryland, 1987

Klein, Anita S

ASSOCIATE PROFESSOR

Biological Sciences

B.A., University of Rochester, 1975

Ph.D., Michigan State University, 1981

Klenotic, Jeffrey F

ASSOCIATE PROFESSOR

Communication

B.A., Pennsylvania State University, 1985

M.A., 1988, Ph.D., University of Massachusetts - Amherst, 1996

Knezevic, Marko

ASSOCIATE PROFESSOR

Mechanical Engineering

B.S., 2004, M.S., University of Novi Sad, Serbia, 2004

Ph.D., Drexel University, 2009

Knight, Lewis

ASSOCIATE PROFESSOR EMERITUS

B.A., Amherst College, 1957

M.A.T., Harvard University, 1961

Ed.D., Stanford University, 1971

Knight, Suzann E

EXTENSION PROFESSOR AND SPECIALIST EMERITA

B.S., University of Massachusetts - Amherst, 1972

M.A., Keene State College (Nh), 1978

M.S., University of New Hampshire, 1991

Knowles, Clark E

PRINCIPAL LECTURER

English

B.A., George Mason University, 1988

M.A., University of New Hampshire, 1998

M.F.A., Bennington College, 2005

Knowles, William F

PRINCIPAL LECTURER

Accounting and Finance

B.S., University of New Hampshire, 1985

M.S., University of Massachusetts - Amherst, 1986

Komonchak, Bernadette

ASSOCIATE PROFESSOR EMERITA

B.S., State University of New York at Plattsburgh, 1954

M.A., 1967, Ph.D., University of Arizona, 1974

Konzett, Delia C

PROFESSOR

English

B.A., Georgia State University, 1989

M.A., 1991, Ph.D., University of Chicago, 1997

Konzett, Matthias B

SENIOR LECTURER

English

M.A., University of Innsbruck, Austria, 1985

M.A., 1988, Ph.D., Emory University, 1991

Ph.D., University of Chicago, 1995

Korkolis, Ioannis

ASSOCIATE PROFESSOR

Mechanical Engineering

Diploma, 1998, M.S., National Tech Univ. of Athens, 2002

Ph.D., University of Texas at Austin, 2009

Kovach, Adrienne I

ASSISTANT PROFESSOR

Natural Resources & The Environment

B.S., University of Kansas, 1990

Ph.D., North Carolina State University, 1998

Kowalski, Stanley P

SENIOR LECTURER

UNHL Intl Tech Transfer Institute

B.S., Pennsylvania State University, 1975

B.S., University of Pittsburgh, 1980

Ph.D., Cornell University, 1989

J.D., Franklin Pierce Law Center, 2005

Kraft, L Gordon

PROFESSOR EMERITUS

B.S., University of Pennsylvania, 1971

M.S., University of New Hampshire, 1973

Ph.D., University of Connecticut, 1977

Kramlinger, Elizabeth M

LECTURER

Thompson School of Applied Science

B.S., 1987, A.A.S., University of New Hampshire, 2011

Krasner, James N

PROFESSOR

English

B.A., Hampshire College, 1983

M.A., University of Pennsylvania, 1985

Ph.D., University of Pittsburgh, 1989

Kraus, John D

DIRECTOR EMERITUS

B.A., Norwich University, 1964

O, 1976, Ph.D., University of Iowa, 1978

Krysiak, Barbara H

ASSOCIATE PROFESSOR EMERITA

B.Ed., University of Massachusetts - Lowell, 1958

M.Ed., 1963, C.A.G.S., Boston University, 1974

Ed.D., Northeastern University, 1981

Krzanowski, James E

PROFESSOR

Mechanical Engineering

B.E., Stevens Institute of Technology, 1978

M.S., 1981, Ph.D., Massachusetts Institute of Technology, 1983

Kucharek, Harald A

RESEARCH PROFESSOR

Space Science Center

Ph.D., Technical University of Munich, 1984

M.S., University of Regensburg, Germany, 1986

Ph.D., Technical University of Munich, 1989

Kukenberger, Michael R

ASSISTANT PROFESSOR

Management

B.A., University of Maine, 1998

M.B.A., University of New Hampshire, 2005

Ph.D., University of Connecticut, 2012

Kun, Andrew L

ASSOCIATE PROFESSOR

Electrical & Computer Eng Dept

B.S., 1992, M.S., 1994, Ph.D., University of New Hampshire, 1997

Kuo, Shan S

PROFESSOR EMERITUS

B.S., National Chung-Chen Univ, 1944

M.S., Ohio State University, 1948

M.S., Harvard University, 1954

D, Yale University, 1958

Kushner, Richard

SENIOR LECTURER EMERITUS

B.A., American International Coll, 1969

Ph.D., 1974, M.A., University of New Hampshire, 1974

Kwiatkowski, Kyle P

ASSISTANT PROFESSOR

Civil and Environmental Engineering

B.S., Syracuse University, 2009

M.S., University of Colorado at Boulder, 2015

L**Labbe, Michelle Marie**

CLINICAL ASSISTANT PROFESSOR
Molecular, Cellular, & Biomedical
B.S., University of New Hampshire, 1996
M.B.A., Southern New Hampshire University, 2011

Lachance, Rachel A

SENIOR LECTURER
English as a Second Language
B.A., 2004, M.A.T., Boston University, 2006

LaCourse, John R

PROFESSOR
Electrical & Computer Eng Dept
B.A., 1974, M.S., 1977, Ph.D., University of Connecticut, 1981

Laflamme, David J

RESEARCH ASSISTANT PROFESSOR
Inst for Health Policy & Practic
B.S., Plymouth State University, 1989
M.P.H., Tulane University, 1997
Ph.D., Johns Hopkins University, 2003

Lahiri, Smita

LECTURER
Anthropology
B.A., Bryn Mawr College, 1992
M.A., 1997, Ph.D., Cornell University, 2002

Laird, Jo

ASSOCIATE PROFESSOR
Earth Sciences
B.A., University of California - San Diego, 1969
Ph.D., California Institute of Technology, 1977

Lambert, Robert H

PROFESSOR EMERITUS
B.S., Saint Lawrence Univ, 1952
M.A., 1954, Ph.D., Harvard University, 1963

Lammers, Richard B

RESEARCH ASSISTANT PROFESSOR
Earth Systems Research Center
B.S., 1989, M.S., 1990, Ph.D., University of Toronto, Canada, 1998

Lamper, Kari D

LECTURER
Psychology
B.A., University of New Hampshire, 2000
M.S.W., Boston College, 2002
M.A., 2010, M.S.T., 2013, Ph.D., University of New Hampshire, 2013

Lan, Tu

ASSISTANT PROFESSOR
Geography
B.S., Peking University, China, 2006
M.S., University of Hong Kong, 2007
Ph.D., University of North Carolina, 2014

Landau, Cynthia

VISITING PROFESSOR EMERITA
J.D., Franklin Pierce Law Center, 1980

Lane, Peter J

PROFESSOR
Management
B.A., University of New Hampshire, 1981
M.B.A., University of Massachusetts - Amherst, 1992
Ph.D., University of Connecticut, 1996

Lanier, Douglas M

PROFESSOR
English
B.A., Stetson University, 1977
M.A., 1980, Ph.D., Duke University, 1988

Lannamann, John W

ASSOCIATE PROFESSOR
Communication
B.S., Babson College, 1977
M.A., 1980, Ph.D., University of Massachusetts - Amherst, 1983

Larkin, Edward T

PROFESSOR
Languages, Literatures, & Cultures
B.A., Saint Peter's University, 1971
M.A., St. John's College, 1980
Ph.D., University of Pennsylvania, 1986

LaRoche, Dain P

ASSOCIATE PROFESSOR
Kinesiology
B.S., University of New Hampshire, 1996
M.S., University of Massachusetts - Amherst, 1998
Ph.D., University of Utah, 2004

Larson, Barbara K

ASSOCIATE PROFESSOR EMERITA
B.A., Stanford University, 1962
M.A., Harvard University, 1964
M.Phil., 1974, Ph.D., Barnard College, 1975

Lashmore, David S

RESEARCH PROFESSOR
Material Science Program
B.S., University of Florida, 1969
M.S., Michigan Tech Univ, 1970
Ph.D., University of Virginia, 1977

Laudano, Andrew P

ASSOCIATE PROFESSOR EMERITUS
B.S., 1974, M.S., Southern Connecticut State University, 1976
Ph.D., University of California - San Diego, 1981

Laue, Thomas M

PROFESSOR EMERITUS
B.A., Johns Hopkins University, 1971
Ph.D., University of Connecticut, 1981

Lauer, Josh C

ASSOCIATE PROFESSOR
Communication
B.A., Indiana University of Pennsylvania, 1992
M.L.I.S., University of Pittsburgh, 1997
M.A., 2005, Ph.D., University of Pennsylvania, 2008

LaValley, Kenneth J

DEAN
Administration
B.S., University of New Hampshire, 1993
M.S., 1996, Ph.D., University of Rhode Island, 2005

Lazdowski, Yvette J

ASSISTANT PROFESSOR
Business Administration
B.S., Franklin Pierce College, 1984
M.B.A., Plymouth State University, 2004
D.B.A, Argosy University- CA, 2007

LeBlanc, Christopher D

ASSISTANT PROFESSOR
Engineering Technology Program
B.S., University of Massachusetts - Amherst, 1997
B.S., University of Massachusetts - Lowell, 1997
M.S., University of Vermont, 2007

LeBlanc, Ronald D

PROFESSOR EMERITUS
B.S., United States Air Force Academy, 1971
B.A., 1977, M.A., 1979, Ph.D., University of Washington, 1984

Lee, Jade C

ASSISTANT PROFESSOR
Education
B.A., Stanford University, 2000
M.A., Brooklyn College of the City University of New York, 2002
Ph.D., Emory University, 2011

Lee, Lina

PROFESSOR
Languages, Literatures, & Cultures
B.A., Fu Jen Catholic University, China, 1979
M.A., University of North Texas, 1986
Ph.D., University of Texas at Austin, 1992

Lee, Martin A

PROFESSOR EMERITUS
B.S., Stanford University, 1966
Ph.D., University of Chicago, 1971

Lee, Thomas D

ASSOCIATE PROFESSOR
Natural Resources & The Environment
B.S., SUNY College of Environmental Science and Forestry, 1973
M.S., University of Alberta, Canada, 1976
Ph.D., University of Illinois at Urbana-Champaign, 1980

Leese, Michael S

ASSISTANT PROFESSOR
History
B.A., 2003, M.A., University of Connecticut, 2004
Ph.D., University of Michigan, 2014

Leichtman, Michelle D

PROFESSOR
Psychology
B.A., Wellesley College, 1985
M.A., 1991, Ph.D., Cornell University, 1994

Lema, Kimberly Jeanne

RESEARCH ASSOCIATE PROFESSOR
Family Research Lab
B.A., 1994, M.A., Rhode Island College, 1996
Ph.D., University of Rhode Island, 1999

Lembree, Ashlyn J

PRINCIPAL LECTURER
UNHL Clinic
B.A., University of Vermont, 1991
J.D., 1996, MIP, Franklin Pierce Law Center, 2008

Lemons, Sofia N

LECTURER
Computer Science
B.S., 2005, M.S., Ball State University, 2007
M.A.T., University of New Hampshire, 2013

Lemos, Scott R

LECTURER
Economics

Lent, Robin S

LECTURER EMERITA
B.A., Washington University, 1968
M.S., Barnard College, 1970
M.A., University of New Hampshire, 1988

Lepler, Jessica M

ASSOCIATE PROFESSOR
History
B.A., Tulane University, 2000
M.A., 2005, Ph.D., Brandeis University, 2008

Lerch, Barbara A

ASSOCIATE PROFESSOR EMERITA
B.A., University of Maine at Augusta, 1969
M.L.S., Sch of General Studies, 1972
M.A., University of New Hampshire, 1982

Lessard, Marc R

ASSOCIATE PROFESSOR
Physics - Joint Positions
Ph.D., Dartmouth College, 1997
B.S., University of New Hampshire,

Lesser, Michael P

RESEARCH PROFESSOR
Molecular, Cellular, & Biomedical
A.S., George Washington University, 1977
B.A., 1983, M.S., University of New Hampshire, 1985
Ph.D., University of Maine, 1989

Letscher, Robert T

ASSISTANT PROFESSOR
Earth Sciences - Joint Positions

Levesque, Rebecca S

EXTENSION EDUCATOR EMERITA
B.S., Granite State College, 1996
M.Ed., Notre Dame College, 1999

Levesque, Vanessa R

LECTURER

Sustainability Institute

B.A., Dartmouth College, 1995

M.S., University of Vermont, 2004

Ph.D., University of Maine, 2014

Lewis, Frederick C

ASSOCIATE PROFESSOR EMERITUS

B.S., 1963, M.S., Southern Connecticut State University, 1967

Ph.D., Ohio State University, 1970

Lewis, James B

ASSOCIATE PROFESSOR

Health Management & Policy

B.A., University of Pittsburgh, 1972

M.M., Northwestern University, 1974

D.Sc., Johns Hopkins University, 1985

Li, Anyin

ASSISTANT PROFESSOR

Chemistry

B.S., Beijing Normal University, 2008

Ph.D., Purdue University, 2014

Li, Gonghu

ASSOCIATE PROFESSOR

Chemistry

B.S., Hebei Normal University, China, 1997

M.S., Chinese Academy of Sciences, China, 2000

Ph.D., University of Iowa, 2005

Li, Huimin

ASSISTANT PROFESSOR

Accounting and Finance

B.S., Southwestern University of Finance and Economics, 2005

M.Sc., Southern Illinois University, 2007

Ph.D., Georgia State University, 2014

Li, Jun

ASSOCIATE PROFESSOR

Management

B.S., 1995, M.S., Beijing University, China, 1999

Ph.D., Texas A & M University, 2004

Li, Linyuan

PROFESSOR

Mathematics & Statistics

B.S., Xuzhou Teachers College, China, 1985

M.S., East China Normal University, China, 1988

M.S., University of New Mexico, 1997

Ph.D., Michigan State University, 2002

Li, Yaning

ASSOCIATE PROFESSOR

Mechanical Engineering

B.S., Shanghai Jiao Tong University, China, 2000

M.S., 2006, Ph.D., University of Michigan, 2007

Licciardi, Joseph M

PROFESSOR

Earth Sciences

B.A., State University of New York at Geneseo, 1992

M.S., 1995, Ph.D., Oregon State University, 2000

Lieber, Rochelle

PROFESSOR

English

A.B., Vassar College, 1976

Ph.D., Massachusetts Institute of Technology, 1980

Lightbody, Anne F

ASSOCIATE PROFESSOR

Earth Sciences

B.S., 1999, M.S., Yale University, 1999

M.S., 2004, Ph.D., Massachusetts Institute of Technology, 2007

Limbirt, David E

PROFESSOR EMERITUS

B.S., Iowa State University, 1964

M.S., 1965, Ph.D., Case Western Reserve University, 1969

Lin, Dacheng

RESEARCH ASSISTANT PROFESSOR

Space Science Center

B.E., 2002, B.S., University of Science and Technology, 2003

Ph.D., Massachusetts Institute of Technology, 2009

Lindblade, Carl E

SENIOR LECTURER

Hospitality Management

B.A., 1964, A.B., Tufts University, 1964

Linden, Allen B

ASSOCIATE PROFESSOR EMERITUS

B.A., Wayne State University, 1957

M.A., 1960, Ph.D., Barnard College, 1969

Linder, Ernst

PROFESSOR

Mathematics & Statistics

Diploma, University of Zurich, Switzerland, 1978

M.S., Union College - New York, 1980

Ph.D., Pennsylvania State University, 1987

Lindsay, Bruce E

PROFESSOR EMERITUS

B.A., King's College - Pennsylvania, 1971

M.S., 1973, Ph.D., University of Massachusetts - Amherst, 1976

Lippmann, Thomas C

ASSOCIATE PROFESSOR

Earth Sciences

B.A., Linfield College, 1985

M.S., 1989, Ph.D., Oregon State University, 1992

Litvaitis, John A

PROFESSOR EMERITUS

B.S., University of New Hampshire, 1975

M.S., Oklahoma State University, 1978

Ph.D., University of Maine, 1984

Litvaitis, Marianne K

PROFESSOR

Natural Resources & The Environment

B.S., 1980, M.S., Clemson University, 1982

Ph.D., University of Maine, 1985

Liu, Eugenia C

ASSISTANT PROFESSOR

Research Learning Services

M.L.S., State University of New York at Buffalo, 2014

B.A., Georgia State University,

Liu, Ningyu

ASSOCIATE PROFESSOR

Physics

B.S., 1998, M.S., Zhejiang University, China, 2001

Ph.D., Pennsylvania State University, 2006

Liu, Yixin

ASSOCIATE PROFESSOR

Accounting and Finance

B.A., Nankai University, China, 1998

M.S., Southern Illinois University, 2000

Ph.D., University of Iowa, 2007

Lockwood, Mary Katherine K

CLINICAL ASSOCIATE PROFESSOR

Molecular, Cellular, & Biomedical

B.S., Davidson College, 1977

M.S., Pennsylvania State University, 1981

Ph.D., University of California, 1989

Loder, Theodore Charles

PROFESSOR EMERITUS

B.A., University of Rochester, 1962

M.S., Lehigh University, 1965

Ph.D., University of Alaska, 1971

Lofty, John

PROFESSOR EMERITUS

B.Ed., University of London, United Kingdom, 1969

M.A., Tennessee State University, 1978

Ph.D., University of Michigan, 1986

Loneragan, Judith E

EXTENSION SPECIALIST EMERITA

M.O.E., University of New Hampshire, 1979

Long, Elena A

ASSISTANT PROFESSOR

Physics

B.S., Juniata College, 2006

M.A., 2008, Ph.D., Kent State University, 2012

Long, Valerie A

EXTENSION PROFESSOR AND SPECIALIST EMERITA

B.S., University of Maine, 1979

M.O.E., University of New Hampshire, 1981

Lopate, Clifford

RESEARCH ASSOCIATE PROFESSOR

Space Science Center

B.A., Swarthmore College, 1982

Ph.D., 1983, M.S., University of Chicago, 1988

Lord, Susan A

CLINICAL ASSOCIATE PROFESSOR

Social Work

B.A., University of New Hampshire, 1975

M.S.W., Smith College, 1979

Ph.D., University of New Hampshire, 2004

Lord, William G

EXTENSION PROFESSOR AND SPECIALIST EMERITUS

M.S., University of Massachusetts - Amherst, 1972

Lovell, Michele S

CLINICAL ASSISTANT PROFESSOR

Nursing

B.S., 1990, M.S., University of New Hampshire, 2006

Loy, James Brent

PROFESSOR EMERITUS

B.S., Oklahoma State University, 1963

M.S., 1965, Ph.D., Colorado State University, 1967

Lu, Yan

ASSOCIATE PROFESSOR

History

B.A., Fudan University, China, 1982

M.A., Michigan State University, 1989

M.A., 1993, Ph.D., Cornell University, 1996

Lugalla, Joe L P

PROFESSOR EMERITUS

B.A., 1982, M.A., University of Dar-Es-Salaam, Tanzania, 1983

Diploma, University of Kassel, Germany, 1990

Ph.D., University of Bremen, Germany, 1990

Lugaz, Noe E

RESEARCH ASSOCIATE PROFESSOR

Space Science Center

M.S., 2003, Ph.D., University of Michigan, 2007

Lukens, Edithanna N

PROFESSOR EMERITA

B.A., Coll of Wooster, 1967

M.A., 1968, Ph.D., University of Chicago, 1973

Lunak, Michal

ASSISTANT STATE SPECIALIST/PROFESSOR

Food and Agriculture

B.S., University of Agriculture, Prague, 1991

M.S., University of Minnesota, 1995

Ph.D., Iowa State University, 2000

Luppold, Deborah

FULL EXTENSION STATE SPECIALIST/PROFESSOR

Youth and Family

B.S., University of Massachusetts - Amherst, 1975

M.S., Boston University, 1979

Lusenhop, Richard W

CLINICAL ASSISTANT PROFESSOR

Social Work

B.A., University of Wisconsin, 1992

M.S.W., Smith College, 1995

M.A., 2003, Ph.D., Brandeis University, 2010

Lyon, Alynna J

ASSOCIATE PROFESSOR

Political Science

B.A., 1991, M.A., New Mexico State University at Alamogordo, 1993

Ph.D., University of South Carolina, 1999

Lyon, Mark E

ASSOCIATE PROFESSOR

Mathematics & Statistics

B.S., 2002, M.S., Brigham Young University, 2003

Ph.D., California Institute of Technology, 2009

Lyons, Anthony P

RESEARCH PROFESSOR

Center for Coastal & Ocean Mapping

M.S., 1991, Ph.D., Texas A & M University, 1995

M**MacFarlane, Lisa**

PROFESSOR

English

A.B., Princeton University, 1979

M.A., 1983, Ph.D., University of Michigan, 1987

MacHardy, William E

PROFESSOR EMERITUS

B.S., 1958, M.Ed., University of Maine, 1965

M.S., Univ of Nebraska Omaha, 1966

Ph.D., University of Rhode Island, 1970

MacLea, Kyle S

ASSISTANT PROFESSOR

Science

A.B., Cornell University, 1997

Ph.D., Dartmouth College, 2003

Macmanes, Matthew D

ASSISTANT PROFESSOR

Molecular, Cellular, & Biomedical

A.A.S., Broome Comm College, 1999

B.S., University of Michigan, 2005

Ph.D., University of California - Berkeley, 2011

MacMillan, John J

LECTURER

Thompson School of Applied Science

B.A., Boston College, 1974

M.B.A., University of New Hampshire, 1996

Macpherson, Andrew M

SENIOR LECTURER

Political Science

B.A., Mercyhurst College, 1999

M.A., London School of Economics, 2000

Maddocks, William O

CLINICAL ASSISTANT PROFESSOR

Carsey School

B.S., Southeastern Mass Univ, 1990

M.S., Southern New Hampshire University, 1996

Madigan, Sean W

LECTURER

English

B.S., 2002, M.A., 2005, Ph.D., University of Delaware, 2009

Maes, Deborah B

EXTENSION FIELD SPECIALIST EMERITUS

B.S., Keene State College (Nh), 1975

M.Ed., Plymouth State University, 1987

Magnifico, Alecia M

ASSISTANT PROFESSOR

English

B.A., Swarthmore College, 2000

M.S., 2007, Ph.D., University of Wisconsin - Madison, 2010

Magnusson, Matthew F

LECTURER

Computer Science

B.S., 1997, M.B.A., University of New Hampshire, 2005

M.S., Georgia Institute of Technology, 2017

Mahmud, MD Shaad

ASSISTANT PROFESSOR

Electrical & Computer Eng Dept

B.S., American International University Bangladesh (AIUB), 2012

M.S., 2016, Ph.D., University of Massachusetts - Dartmouth, 2018

Mahoney, Lise L

RESEARCH ASSISTANT PROFESSOR

Agriculture, Nutrition, & Food System

M.S., 2007, Ph.D., University of New Hampshire, 2014

Mair, Robert G

PROFESSOR

Psychology

A.B., 1972, Sc.M., 1975, Ph.D., Brown University, 1979

Malarte-Feldman, Claire L

PROFESSOR EMERITA

D, 1970, Licence, 1971, Maitrise, Universite Paul Valery, France, 1972

Ph.D., University of California - Davis, 1984

Malley, James P

PROFESSOR

Civil and Environmental Engineering

B.S., Rutgers University, 1980

M.S., 1984, B.S., 1987, Ph.D., University of Massachusetts - Amherst, 1988

Mallory, Bruce L

PROFESSOR EMERITUS

B.A., 1971, M.Ed., Allegheny College, 1972

Ph.D., George Peabody College of Vanderbilt University, 1979

Malloy, Joanne M

RESEARCH ASSOCIATE PROFESSOR

Institute on Disability

B.A., University of Massachusetts - Amherst, 1976

M.S., Univ of Tenn Knoxville, 1981

Ph.D., University of New Hampshire, 2011

Malone, Mary Frances

ASSOCIATE PROFESSOR

Political Science

B.A., Saint Joseph's University, 1995

M.A., 2000, Ph.D., 2004, Ph.D., University of Pittsburgh, 2004

Manalo, Alberto B

ASSOCIATE PROFESSOR

Natural Resources & The Environment

B.S., University of The Phillipines, Philippines, 1976

M.S., 1978, Ph.D., Kansas State University, 1985

Mangan, Michael A

PRINCIPAL LECTURER

Psychology

B.A., Oregon State University, 1985

M.A., Humboldt State University, 1994

M.A., 1997, Ph.D., University of New Hampshire, 2000

Manseau, Melissa A

LECTURER

Theatre & Dance

B.A., University of New Hampshire, 1996

M.M., University of Northern Iowa, 1999

March, Thomas A

PROFESSOR EMERITUS

B.S., 1974, M.A., Cornell University, 1977

Margolin, Aaron B

PROFESSOR

Molecular, Cellular, & Biomedical

B.S., 1982, Ph.D., University of Arizona, 1986

Margolin, Davida L

LECTURER

Molecular, Cellular, & Biomedical

A.A.S., 1980, B.F.A., Rochester Institute of Technology, 1981

B.S., 2005, M.A., University of New Hampshire, 2011

Marino, Mary B

SENIOR LECTURER

Theatre & Dance

B.A., University of New Hampshire, 1999

Marone, Adele J

CLINICAL ASSOCIATE PROFESSOR

Molecular, Cellular, & Biomedical

B.S., Adelphi University, 1985

B.S., 1998, M.S., University of New Hampshire, 2007

Marschner, Sarah Jane

PRINCIPAL LECTURER EMERITA

B.A., 1972, B.A., University of Rhode Island, 1972

Marshall, Grover E

ASSOCIATE PROFESSOR EMERITUS

A.B., Bowdoin College, 1951

M.A., 1954, Ph.D., Princeton University, 1971

Marti-Olivella, Jaume

ASSOCIATE PROFESSOR

Languages, Literatures, & Cultures

Licenciatura, Univ of Barcelona, 1976

M.A., University of Illinois at Urbana-Champaign, 1978

Licenciatura, Univ of Barcelona, 1983

Ph.D., University of Illinois at Urbana-Champaign, 1988

Martin, Mary E

RESEARCH ASSISTANT PROFESSOR

Earth Systems Research Center

A.A.S., 1977, Ph.D., University of New Hampshire, 1994

Martins Lima, Marta Raquel

ASSISTANT PROFESSOR

Agriculture, Nutrition, & Food System

B.S., 2003, Ph.D., University of Minho, Portugal, 2009

M.S., University of Porto, Portugal, 2010

Marx, Jerry D

ASSOCIATE PROFESSOR

Social Work

B.S., University of Southern Maine, 1981

M.S.W., 1984, D.S.W., Boston College, 1994

Masetti, Giuseppe

RESEARCH ASSISTANT PROFESSOR

Center for Coastal & Ocean Mapping

M., University of Pisa, Italy, 2003

M., University of Trieste, Italy, 2004

M., University of Genoa, Italy, 2008

M.S., University of New Hampshire, 2012

Ph.D., University of Genoa, Italy, 2013

Masucci, Peter F

PRINCIPAL LECTURER

Marketing

B.S., Boston University, 1970

M.B.A., Clark University, 1984

Mathieson, Arthur C

EMERITUS PROFESSOR

B.S., 1960, M.S., University of California - Los Angeles, 1961

Ph.D., University of British Columbia, Canada, 1965

Mathur, Virendra K

PROFESSOR EMERITUS

B.S., Angra University, India, 1949

B.S., Banaras Hindu University, 1953

M.S., 1961, Ph.D., University of Missouri - Rolla, 1970

Matteucci, Ann-Marie E

ASSISTANT PROFESSOR

Health Management & Policy

B.A., 1991, M.H.A., University of New Hampshire, 1996

M.A., 2013, Ph.D., Brandeis University, 2015

Matthias Powers, Collette M

SENIOR LECTURER

Computer Science

B.S., 1993, M.S., University of New Hampshire, 1997

Mattingly, David M

ASSISTANT PROFESSOR
Physics
B.A., Dartmouth College, 1996
Ph.D., University of Maryland, 2003

Mattingly, Marybeth J

RESEARCH ASSISTANT PROFESSOR
Carsey School
B.A., Dartmouth College, 1996
M.A., 2000, Ph.D., University of Maryland, 2005

Mautz, William W

PROFESSOR EMERITUS
B.S., Wisconsin Conservatory of Music, 1965
M.S., 1967, Ph.D., Michigan State University, 1969

Mawson, Julia Steed

EXTENSION EDUCATOR EMERITA
M.A.T., University of New Hampshire, 1978

Mayer, John D

PROFESSOR
Psychology
B.A., University of Michigan, 1975
M.A., 1979, Ph.D., Case Western Reserve University, 1982

Mayer, Larry A

PROFESSOR
Earth Sciences - Joint Positions
B.S., University of Rhode Island, 1973
Ph.D., University of California, 1979

Mayne, Howard R

PROFESSOR
Chemistry
B.S., 1974, M.S., 1975, Ph.D., University of Manchester, England, 1977

McBride, Mekeel D

PROFESSOR
English
B.A., Mills College (Calif), 1972

McCann, Francis D

PROFESSOR EMERITUS
A.B., Niagara University, 1960
M.A., Kent State University, 1962
Ph.D., Indiana University - Bloomington, 1967

McCann, Michael A

PROFESSOR
UNHL Assoc Dean, Academic Affairs
B.A., Georgetown University, 1998
J.D., University of Virginia, 2002
LL.M., Harvard Law School, 2005

McCarthy, Patrick F

LECTURER
Sign Language Interpreting
B.A., Gallaudet University, 1979
M.S., McDaniel College, 1985

McClain, John F

LECTURER
Mathematics & Statistics
B.S., Rutgers University, 2003
M.A., University of Texas, 2007
Ph.D., University of New Hampshire, 2015

McConnell, Mark L

PROFESSOR
Physics - Joint Positions
B.S., Case Western Reserve University, 1980
Ph.D., University of New Hampshire, 1987

McConnell, Maryse Searls

ASSOCIATE PROFESSOR EMERITUS
B.F.A., Cleveland Inst. of Art - Ohio, 1971
M.F.A., Alfred University, 1973

McCrone, Sharon M

INTERIM ASSOCIATE DEAN
Mathematics & Statistics
A.B., Dartmouth College, 1988
M.S., 1992, Ph.D., University of New Hampshire, 1997

McCurdy, Kathryn J

CLINICAL ASSISTANT PROFESSOR
Education
B.A., University of Kansas, 2004
M.A., University of Michigan, 2005
Ph.D., University of New Hampshire, 2016

McDowell, William H

PROFESSOR
Natural Resources & The Environment
B.A., Amherst College, 1975
Ph.D., Cornell University, 1982

McGaughy, Jill A

PROFESSOR
Psychology
B.A., Bradley University, 1991
M.A., 1993, Ph.D., Ohio State University, 1998

McGrath, Robert J

ASSOCIATE PROFESSOR
Health Management & Policy
B.S., University of New Hampshire, 1996
M.S., Harvard University, 1998
M.A., 2000, Ph.D., Brandeis University, 2006

McHugh, John P

ASSOCIATE PROFESSOR
Mechanical Engineering
B.S., 1978, Ph.D., University of Michigan, 1986

McIlroy, James M

LECTURER
Marketing
B.S., 1995, M.B.A., University of New Hampshire, 2002

McIntosh, Edward D

CAPTAIN EMERITUS

McIntyre, Gayle R

LECTURER

English as a Second Language

B.A., Laval University, Quebec, 1991

M.A., University of Manitoba, Canada, 2001

B.A., Laval University, Quebec,

McKinsey, Martin S

ASSOCIATE PROFESSOR

English

B.A., Hampshire College, 1977

M.A., Syracuse University, 1990

M.A., 1998, Ph.D., University of Virginia, 2001

McLarnon, Christopher R

LECTURER

Chemical Engineering

Ph.D., University of New Hampshire, 1996

McLaughlin, Kevin W

SENIOR LECTURER

Accounting and Finance

B.S.B.A., Northeastern University, 1994

M.S., Boston College, 1999

McLaughlin, Sean R

LECTURER

Recreation Management & Policy

B.A., Chico State College, 1995

M.S., University of New Hampshire, 2007

McMahon, Gregory

ASSOCIATE PROFESSOR

Classics, Humanities & Ital Studies

B.A., University of Kansas, 1975

M.A., Miami University - Ohio, 1979

Ph.D., University of Chicago, 1988

McNamara, Paul F

ASSOCIATE PROFESSOR

Philosophy

B.A., City University of New York, 1976

M.A., University of Missouri - Columbia, 1980

Ph.D., University of Massachusetts - Amherst, 1990

McNamee, Sheila

PROFESSOR

Communication

B.A., 1978, M.A., 1980, Ph.D., University of Massachusetts - Amherst, 1982

McPhee, Pamela Kerr

CLINICAL ASSISTANT PROFESSOR

Browne Center

B.S., University of New Hampshire, 1983

M.S.W., University of Connecticut, 1987

Meadows, Dennis L

PROFESSOR EMERITUS

B.A., Carleton College, 1964

Ph.D., Massachusetts Institute of Technology, 1969

Mebert, Carolyn J

ASSOCIATE PROFESSOR

Psychology

B.A., 1974, Ph.D., Boston University, 1978

Medina, Ricardo A

ASSOCIATE PROFESSOR

Civil and Environmental Engineering

B.S., Christian Brothers University, 1997

M.S., 1999, Ph.D., Stanford University, 2003

Meeker, Bonnie Sharon

EXTENSION SPECIALIST EMERITA

B.S., Oregon State University, 1957

M.S., University of New Hampshire, 1977

Meeker, Loren David

PROFESSOR EMERITUS

B.A., 1959, B.S., Oregon State University, 1959

M.S., 1962, Ph.D., Stanford University, 1965

M.S., Univ of Aston-England, 1969

Meiton, Fredrik A

ASSISTANT PROFESSOR

History

B.A., Lund University, Sweden, 2006

M.Phil., Oxford Univ-Eng, 2008

Ph.D., New York University, 2015

Mellyn, Elizabeth W

ASSOCIATE PROFESSOR

History

B.A., University of Chicago, 1999

M.A., 2002, Ph.D., Harvard University, 2007

Melvin, Donald W

ASSOCIATE PROFESSOR EMERITUS

B.S., University of New Hampshire, 1955

MENGR, Yale University, 1957

Ph.D., Syracuse University, 1971

Mennel, Robert M

PROFESSOR EMERITUS

B.A., Denison University, 1960

M.A., 1965, Ph.D., Ohio State University, 1969

Meredith, Dawn C

PROFESSOR

Physics

B.A., St. John's College, 1980

M.S., 1984, Ph.D., California Institute of Technology, 1987

Merenda, Michael J

PROFESSOR

Management

B.B.A., 1970, M.B.A., Northeastern University, 1972

Ph.D., University of Massachusetts - Amherst, 1978

Merton, Andrew H

PROFESSOR EMERITUS

B.A., University of New Hampshire, 1967

Messner, Richard A

ASSOCIATE PROFESSOR
Electrical & Computer Eng Dept
B.S., 1979, M.S., Clarkson College, 1981
Ph.D., Clarkson University, 1984

Metcalf, Theodore G

PROFESSOR EMERITUS
B.S., Mass Coll Pharmacy, 1940
Ph.D., University of Kansas, 1950

Metting, Fred B

PROFESSOR EMERITUS
B.S., Ohio University, 1968
M.A., Kent State University, 1970
Ph.D., University of New Hampshire, 1976

Meyrowitz, Joshua

PROFESSOR EMERITUS
B.A., 1972, M.A., City University of New York, 1974
Ph.D., New York University, 1978

Mian, Nicholas D

ASSISTANT PROFESSOR
Psychology
A.B., Bowdoin College, 2002
M.A., Boston University, 2007
M.A., 2009, Ph.D., University of Massachusetts - Boston, 2013

Michael, Amy Rachel

LECTURER
Anthropology
B.A., University of Iowa, 2006
M.A., 2009, Ph.D., Michigan State University, 2016

Michaud, Michelle M H

SENIOR LECTURER
Communication
B.A., 2001, M.A., University of Maine, 2004

Miksis-Olds, Jennifer L

RESEARCH PROFESSOR
Marine Sciences & Ocean Engineering
B.A., Harvard University, 1996
M.S., UMass- Dartmouth, 2000
Ph.D., University of Rhode Island, 2006

Miles, Russell A

LECTURER
Decisions Sciences
M.B.A., 1990, B.S.M.E., University of New Hampshire, 1990

Miletkov, Mihail K

ASSOCIATE PROFESSOR
Accounting and Finance
B.B.A., 2002, Ph.D., University of Georgia, 2008

Miller, Brian C

CLINICAL ASSISTANT PROFESSOR
Social Work
B.A., Boston University, 1980
M.A., University of New Hampshire, 2000

Miller, Edmund G

PROFESSOR EMERITUS
A.B., Dartmouth College, 1943
M.A., 1948, Ph.D., Barnard College, 1955

Miller, Glen P

PROFESSOR
Chemistry
B.S.Chem., 1987, Ph.D., Clarkson University, 1991

Miller, John P

ASSOCIATE PROFESSOR
Kinesiology
B.S., Brooklyn College of the City University of New York, 1981
M.S., Long Island University, 1983
Ph.D., University of Maryland, 1992

Miller, Lisa C

ASSOCIATE PROFESSOR
English
B.A., 1980, M.A., University of New Hampshire, 1988

Miller, W Thomas

PROFESSOR EMERITUS
B.S., 1972, M.S., 1974, Ph.D., Pennsylvania State University, 1977

Mills, Caitlin S

ASSISTANT PROFESSOR
Psychology
M.A., 2010, Ph.D., University of Notre Dame, 2016

Mills, Richard L

ASSOCIATE PROFESSOR EMERITUS
B.S., Rose Polytechnic Inst, 1962
M.A., 1964, Ph.D., Indiana University - Bloomington, 1967

Minocha, Subhash C

PROFESSOR
Biological Sciences
B.S., 1968, M.S., Panjab University, India, 1969
Ph.D., University of Washington, 1974

Mirhashem, Behzad

CLINICAL ASSOCIATE PROFESSOR
UNHL Clinic
B.A., Williams College, 1982
Ph.D., University of Maryland, 1989
J.D., Northeastern University, 1993

Mitchell, Clayton R

LECTURER
Natural Resources & The Environment
B.A., University of Arizona, 1991
J.D., 1996, M.S., Vermont Law School, So Royalto, 1996
Ph.D., University of New Hampshire, 2008

Mitchell, Frank S

EXTENSION PROFESSOR AND SPECIALIST EMERITUS
A.A.S., 1974, B.S., 1976, M.S., University of New Hampshire, 1979

Mitchell, James R

ASSOCIATE PROFESSOR EMERITUS
B.S., University of New Hampshire, 1957
M.S., 1960, Ph.D., Pennsylvania State University, 1969

Mittal, Prashant

CLINICAL ASSISTANT PROFESSOR
Health Management & Policy
B.S., 1996, M.S., University of Delhi, India, 1998
M.S., University of Southern Maine, 2000

Mittelman, David

LECTURER
Languages, Literatures, & Cultures
A.B., 2009, A.M., 2015, Ph.D., Brown University, 2018

Mizusawa, Diane D

LECTURER
Marketing
M.B.A., New York University, 1981
B.A., Rowan University,

Mizusawa, Leroy R

LECTURER
Management
B.A., Yale University, 1975
M.B.A., Stanford University, 1980

Mo, Weiwei

ASSISTANT PROFESSOR
Civil and Environmental Engineering
B.S., Shanghai Jiao Tong University, China, 2008
M.S., 2011, Ph.D., University of South Florida, 2012

Moebius, Eberhard S

PROFESSOR EMERITUS
Diploma, 1973, Ph.D., Ruhr University Bochum, Germany, 1977

Mohr, Robert D

ASSOCIATE PROFESSOR
Economics
B.A., University of Virginia, 1993
M.S., 1998, Ph.D., University of Texas at Austin, 2001

Moinfar, Amena

LECTURER
Languages, Literatures, & Cultures
Maitrise, Paris Nanterre University, France, 1999
M.A., Michigan State University, 2003
M.A., 2005, Ph.D., University of Texas, 2010
M.A., University of Massachusetts - Amherst, 2018

Montas, Lucia M

LECTURER
Languages, Literatures, & Cultures
B.A., 2007, M.A., University of Florida, 2009
M.A., 2016, Ph.D., University of Kentucky, 2018

Montminy, Timothy P

SENIOR LECTURER
Molecular, Cellular, & Biomedical
B.S., University of Rochester, 2001
Ph.D., Tufts University, 2009

Mooney, Robert E

INSTRUMENTATION SCIENTIST EMERITUS
B.A., University of New Hampshire, 1972

Moore, Berrien

DIRECTOR AND PROFESSOR EMERITUS
B.S., University of North Carolina, 1963
Ph.D., University of Virginia, 1969

Moore, Gregg E

RESEARCH ASSOCIATE PROFESSOR
Biological Sciences
B.S., Tufts University, 1994
M.S., 1997, Ph.D., Boston University, 2003

Moore, Joseph J

CLINICAL PROFESSOR EMERITUS
B.S., Trinity College - Conn, 1966
D.V.M., University of Pennsylvania, 1970

Moore, Sean D

ASSOCIATE PROFESSOR
English
B.A., University of Massachusetts - Amherst, 1991
M.A., Georgetown University, 1995
Ph.D., Duke University, 2003

Moore, Timothy S

RESEARCH ASSISTANT PROFESSOR
Ocean Process Analysis Lab
B.S., Worcester Polytechnic Institute, 1989
M.S., University of Rhode Island, 1995
Ph.D., University of New Hampshire, 2008

Moran, Catherine L

PRINCIPAL LECTURER
Sociology
B.A., University of New England, 1994
M.Sc., London School of Economics, 1996
Ph.D., University of New Hampshire, 2004

Morgan, Ann L

ASSOCIATE PROFESSOR EMERITA
B.A., Hanover College, 1974
M.S., Pennsylvania State University, 1976

Morner, Claudia J

PROFESSOR EMERITA
B.A., University of Minnesota, 1975
M.L.S., Simmons College, 1978
Ph.D., University of Massachusetts - Boston, 1993

Morrell, Jesse Stabile

PRINCIPAL LECTURER
Agriculture, Nutrition, & Food System
B.S., 1999, M.S., 2004, Ph.D., University of New Hampshire, 2013

Morrison, James D

PROFESSOR EMERITUS
B.S., Franklin Marshall Coll, 1958
Ph.D., Northwestern University, 1963

Mortensen, David A

PROFESSOR
Agriculture, Nutrition, & Food System
B.A., Drew University, 1978
M.S., Duke University, 1983
Ph.D., North Carolina State University, 1987

Morton, Cory M

ASSISTANT PROFESSOR
Social Work
B.A., University of Tennessee, 2000
M.S.W., East Tn State University, 2007
Ph.D., Rutgers University, 2012

Moses, Jennifer K

PROFESSOR
Art and Art History
B.F.A., Temple University, 1983
M.F.A., Indiana University - Bloomington, 1987

Moses, Mark D

CLINICAL ASSOCIATE PROFESSOR
Human Development & Family Studies
B.A., Northeastern University, 1971
M.Ed., Springfield College, 1972
C.A.G.S., University of New Hampshire, 1977
Ph.D., Ohio University, 1979

Mosher, David C

PROFESSOR
Earth Sciences - Joint Positions
B.S., Acadia Univ, 1983
M.S., Memorial University - Canada, 1987
Ph.D., Dalhousie University, Canada, 1993

Mouser, Paula J

ASSOCIATE PROFESSOR
Civil and Environmental Engineering
B.S., Utah State University, 1998
M.S., 2003, Ph.D., University of Vermont, 2006

Moyer, Judith N

RESEARCH ASSISTANT PROFESSOR EMERITA
B.A., 1968, M.A.T., 1970, M.A., 1995, Ph.D., University of New Hampshire, 2000

Moynihan, Robert G

PROFESSOR EMERITUS
B.S., University of New Hampshire, 1968
M.B.A., University of Akron, 1973

Mulligan, Shelley E

ASSOCIATE PROFESSOR
Occupational Therapy
B.S., University of Western Ontario, Canada, 1985
M.S., Colorado State University, 1990
Ph.D., University of Washington, 1997

Munoz Pina, Margarita

LECTURER
Languages, Literatures, & Cultures
B.A., Monterey Institute, 1989
M.A., University of Salamanca, Spain, 2007

Murdoch, Joseph B

PROFESSOR EMERITUS
B.S., Case Western Reserve University, 1950
M.S., University of New Hampshire, 1955
Ph.D., Case Western Reserve University, 1962

Murphy, Sharon A

ASSOCIATE PROFESSOR EMERITA
B.A., State University of New York at Plattsburgh, 1973
M., Adelphi University, 1985
Certificate, University of Wisconsin - Madison, 1997
Ph.D., Arizona State University, 1998

Murphy, William J

PROFESSOR
UNHL JD Instruction
B.A., Denison University, 1971
J.D., Pennsylvania State University, 1974
M.B.A., 1981, D.B.A., Harvard University, 1987

Murray, Frederick P

ASSOCIATE PROFESSOR EMERITUS
B.A., Stanford University, 1948
M.A., University of Southern California, 1950
Ph.D., University of Denver, 1966

Musinsky, Ellen J

VISITING PROFESSOR EMERITA
B.A., University of Vermont, 1972
J.D., Northeastern University, 1975

N**Nahin, Paul J**

PROFESSOR EMERITUS
B.S.E.E., Stanford University, 1962
M.S.E.E., California Institute of Technology, 1963
Ph.D., University of California - Irvine, 1972

Narayan, Arvind

SENIOR LECTURER
Computer Science
B.S., University of Mysore, India, 1985
M.S., University of Massachusetts - Lowell, 1990

Nardone, H Gay

PROFESSOR
Theatre & Dance
B.F.A., 1974, M.F.A., The Boston Conservatory, 1990

Nash, Jonathan D

ASSISTANT PROFESSOR
Accounting and Finance
B.S.B.A., Rogers Williams University, 2008
M.S.A., University of Connecticut, 2010
Ph.D., Florida State University, 2016

Naumes, William

ASSOCIATE PROFESSOR EMERITUS
B.S., 1967, M.B.A., Cornell University, 1968
Ph.D., Stanford University, 1971

Neal, Catherine A

FULL EXTENSION STATE SPECIALIST/PROFESSOR
Food and Agriculture
B.S., University of Massachusetts - Amherst, 1976
M.S., 1981, Ph.D., Cornell University, 1983

Nedyalkov, Ivaylo

LECTURER

Mechanical Engineering

B.S., Technical University of Sofia, 2007

M.S., Chalmers University of Technology, Sweden, 2013

Ph.D., University of New Hampshire, 2015

Needle, David B

CLINICAL ASSISTANT PROFESSOR

Molecular, Cellular, & Biomedical

B.A., 2003, D.V.M., Tufts University, 2011

Neefus, Christopher D

PROFESSOR

Biological Sciences

B.A., Boston University, 1971

Ph.D., University of New Hampshire, 1982

Negron-Gonzales, Melinda

ASSOCIATE PROFESSOR

Political Science

B.A., 1997, M.A., 2004, Ph.D., University of Florida, 2009

Nesbitt, Kimberly T

ASSISTANT PROFESSOR

Human Development & Family Studies

B.A., University of Kansas, 2003

M.S., 2007, Ph.D., North Carolina State University, 2010

Nevin, John A

PROFESSOR EMERITUS

B.S.M.E., Yale University, 1954

M.A., 1961, Ph.D., Barnard College, 1963

Newkirk, Thomas R

PROFESSOR EMERITUS

B.A., Oberlin College, 1970

M.Ed., University of Massachusetts - Boston, 1973

Ph.D., University of Texas, 1977

Newman, Anna C

SENIOR LECTURER

Classics, Humanities & Ital Studies

Lizenziat, University of Zurich, Switzerland, 1981

Nicoloff, Philip L

PROFESSOR EMERITUS

B.A., University of California - Los Angeles, 1949

M.A., 1952, Ph.D., Barnard College, 1959

Nikshych, Dmitri

PROFESSOR

Mathematics & Statistics

B.S., 1994, M.S., National Technical University, Ukraine, 1996

Ph.D., University of California - Los Angeles, 2001

Niland, Karen Sue

SENIOR LECTURER

Nursing

B.S., 1989, M.S., University of New Hampshire, 1999

Niman, Neil B

ASSOCIATE DEAN

Dean's Office

B.A., University of California - Santa Cruz, 1978

M.A., University of California - Riverside, 1980

Ph.D., University of Texas, 1985

Nisbet, Jane A

SENIOR VICE PROVOST FOR RESEARCH

Research Office Central Operations

B.S., Simmons College, 1977

M.S., 1980, Ph.D., University of Wisconsin, 1983

Nolte, Kerry L

ASSISTANT PROFESSOR

Nursing

B.S., Northeastern University, 2006

M.S., University of New Hampshire, 2009

Ph.D., Northeastern University, 2016

Nordgren, Eric A

PROFESSOR EMERITUS

B.S.Ch.E., California Polytechnic State University - San Luis Obispo, 1956

Ph.D., University of Michigan, 1964

Nute, Jonathan W

EXTENSION PROFESSOR AND SPECIALIST EMERITUS

B.A., University of New Hampshire, 1973

M.F., Yale University, 1985

O**O'Brien, Alyssa J**

ASSISTANT PROFESSOR

Nursing

B.S., 2003, M.S., University of New Hampshire, 2008

Ph.D., University of California, 2015

O'Brien, David H

ASSOCIATE PROFESSOR EMERITUS

B.S., 1969, M.A., University of New Hampshire, 1991

O'Brien, Edward J

PROFESSOR

Psychology

B.A., Framingham State College, 1978

M.A., State University of New York at Oswego, 1980

Ph.D., University of Massachusetts - Amherst, 1984

O'Brien, Jennifer E

ASSISTANT PROFESSOR

Social Work

B.A., 2006, B.S., University of Texas at Austin, 2006

M.S.W., Smith College, 2010

Ph.D., University of North Carolina, 2017

O'Connell, Lawrence W

ASSOCIATE PROFESSOR EMERITUS

B.A., University of New Hampshire, 1956

Ph.D., Syracuse University, 1968

O'Hern, Matthew S

ASSISTANT PROFESSOR
Marketing
B.A., Grinnell College, 1990
M.A., 1998, M.B.A., Indiana University, 2000
Ph.D., University of Wisconsin, 2009

O'Keefe, Christine Marie

PRINCIPAL LECTURER
English
B.A., Rivier College, 1993
M.A., Midwestern State University, 1996
M.F.A., Emerson College (Mass), 2004

O'Sullivan, Jeanne H

CLINICAL ASSOCIATE PROFESSOR
Communication Sciences & Disorders
B.A., Bates College, 1976
M.Ed., Northeastern University, 1979

Ogden, Andrew B

SENIOR LECTURER
Agriculture, Nutrition, & Food System
B.A., University of North Carolina at Chapel Hill, 1998
M.S., University of Georgia, 2009

Ogembo, Justus M

ASSOCIATE PROFESSOR
Education
B.A., Kenyatta University, Kenya, 1986
M.A., University of Nairobi, Kenya, 1990
Ph.D., Harvard University, 1997

Oja, Sharon N

PROFESSOR EMERITUS
B.A., Macalester College, 1966
M.A., 1971, Ph.D., University of Minnesota, 1977

Ollinger, Scott V

PROFESSOR
Natural Resources & The Environment
B.S., State University of New York, 1989
M.S., 1992, Ph.D., University of New Hampshire, 2000

Olson, David P

PROFESSOR EMERITUS
B.S., University of Minnesota, 1954
M.S., University of Maine, 1958
Ph.D., University of Minnesota, 1964

Onosko, Joseph J

ASSOCIATE PROFESSOR
Education
B.S., 1979, M.S., 1984, Ph.D., University of Wisconsin - Madison, 1988

Orcutt, John L

PROFESSOR
UNHL JD Instruction
B.A., 1990, J.D., University of California - Berkeley, 1993

Orhon, Mehmet

SENIOR LECTURER
Mathematics & Statistics
B.S., University of New Castle, UK, 1965
Ph.D., Cardiff University, Wales, 1969

Orliac, Pascal

LECTURER
Management
M.S., Univ Paris, 1978
M.B.A., HEC Paris, France, 1980

Ormeci Matoglu, Melda

ASSISTANT PROFESSOR
Decisions Sciences
B.S., Bogazici University, Turkey, 1999
M.S., 2001, Ph.D., Georgia Institute of Technology, 2006

Orovich, Nicholas N

PROFESSOR
Music
B.A., University of Wisconsin - Madison, 1976
M.M., The New England Conservatory of Music, 1978

Ortmeier, Christina M

ASSOCIATE PROFESSOR
English
B.A., University of Massachusetts - Amherst, 1995
M.A.T., 1998, Ph.D., University of New Hampshire, 2007

Ossenbruggen, Paul J

PROFESSOR EMERITUS
B.S.C.E., Syracuse University, 1963
M.S., University of Connecticut, 1967
Ph.D., Carnegie Mellon University, 1970

Owens, Charles W

PROFESSOR EMERITUS
B.S., Colorado College, 1957
Ph.D., University of Kansas, 1963

Ozabaci, Deniz

ASSISTANT PROFESSOR
Economics
B.S., State University of New York at New Palz, 2007
B.S., Istanbul Technical University, Turkey, 2007
Ph.D., 2014, M.A., State University of New York at Binghamton, 2014

P**Paglia, Alison Kolbe**

ASSOCIATE PROFESSOR
Psychology
B.A., 1992, M.A., 1994, Ph.D., Texas Tech University, 1998

Palace, Michael W

ASSOCIATE PROFESSOR
Earth Sciences - Joint Positions
B.A., 1992, M.S., University of Virginia, 1995
Ph.D., University of New Hampshire, 2006

Parr, Northam D

EXTENSION EDUCATOR EMERITUS
B.S., 1979, M.S., University of New Hampshire, 1982

Parssinen, Toimi Antero

ASSISTANT PROFESSOR EMERITUS
B.S.M.E., University of New Hampshire, 1960

Paterson, Susanne F

ASSOCIATE PROFESSOR
English
B.A., University of East Anglia, United Kingdom, 1989
M.A., Purdue University, 1992
Ph.D., University of Texas at Austin, 2001

Patmos, R Marshall

LECTURER EMERITUS
B.S., University of New Hampshire, 1966
M.B.A., Plymouth State University, 1980

Payne, Thomas L

ASSOCIATE PROFESSOR
English
B.A., Princeton University, 1984
M.F.A., Columbia University in the City of New York, 1996
M.F.A., Princeton University, 2006

Pazicni, Samuel

ASSOCIATE PROFESSOR
Chemistry
B.A., Washington & Jefferson College, 2001
M.S., 2003, Ph.D., University of Wisconsin, 2006

Pearson, David A

EVERETT SACKETT PROFESSOR EMERITUS
B.S., University at Albany, 1956
M.P.H., University of Michigan, 1961
Ph.D., Yale University, 1970

Peck, Benjamin S

CONTRACT LIBRARIAN
Research Learning Services
B.A., Bates College, 2005
M.L.S., Indiana University, 2008

Peirce, Lincoln C

PROFESSOR EMERITUS
B.S., Cornell University, 1952
Ph.D., University of Minnesota, 1958

Pekins, Peter J

PROFESSOR
Natural Resources & The Environment
B.A., State University of New York at Plattsburgh, 1976
M.S., University of New Hampshire, 1981
Ph.D., Utah State University, 1988

Pelletier, Donna M

CLINICAL ASSOCIATE PROFESSOR
Nursing
B.S., University of Massachusetts - Amherst, 1977
M.S., University of New Hampshire, 2000
DNP, University of Massachusetts - Amherst, 2011

Peracchi, Kelly Ann

SENIOR LECTURER
Psychology
B.A., Saint Anselm's College, 1999
M.A., 2001, Ph.D., University of New Hampshire, 2004

Perkins, Donna M

CLINICAL ASSOCIATE PROFESSOR
Justice Studies Program
B.A., University of Southern Maine, 1997
M.A., 2000, M.S., 2003, Ph.D., University of New Hampshire, 2003

Pescosolido, Anthony T

ASSOCIATE PROFESSOR
Management
B.A., Harvard University, 1991
Ph.D., Case Western Reserve University, 2001

Peshkova, Svetlana A

ASSOCIATE PROFESSOR
Anthropology
M.A., Moscow State Linguistic University, Russia, 1996
MTS, Emory University, 1999
M.A., 2002, Ph.D., Syracuse University, 2006

Peterson, Julia M

FULL EXTENSION STATE SPECIALIST/PROFESSOR
Natural Resources
B.A., Connecticut College, 1982
M.S., Antioch New England, 1989

Petillo, Juliette D

ASSOCIATE PROFESSOR EMERITUS
B.S.N., Saint Anselm's College, 1961
M.S., Boston University, 1973

Petrik, Marek

ASSISTANT PROFESSOR
Computer Science
B.S., Univerzita Komenskeho, Bratislava, Slovakia, 2005
M.S., University of Massachusetts - Amherst, 2008
M.S., University of Massachusetts - Boston, 2008
Ph.D., University of Massachusetts - Amherst, 2010

Petrucelli, Gabrielle E

CLINICAL ASSISTANT PROFESSOR
Occupational Therapy
B.S., Green Mountain College, 1995
M.A., Tufts University, 2004

Petty, Guy

PROFESSOR EMERITUS
B.Ar., Pennsylvania State University, 1969

Pfeiffer, Bruce E

ASSOCIATE PROFESSOR
Marketing
B.S., University of Colorado at Boulder, 1991
M.B.A., Rockhurst University, 1997
M.S., University of Colorado at Boulder, 2005
Ph.D., University of Cincinnati, 2008

Pietro, Kevin J

CLINICAL ASSISTANT PROFESSOR
Agriculture, Nutrition, & Food System
B.S., 2010, M.S., Illinois State Univ, 2012

Pike, John E

DEAN AND DIRECTOR EMERITUS
B.S., 1974, M.P.A., 1975, Ph.D., University of New Hampshire, 1996

Pilar, Frank L

PROFESSOR EMERITUS
B.S., 1951, M.S., University of Nebraska, 1953
Ph.D., University of Cincinnati, 1957

Pillemer, David B

PROFESSOR
Psychology
B.A., University of Chicago, 1972
Ed.D., Harvard University, 1979

Pillet-Shore, Danielle M

ASSOCIATE PROFESSOR
Communication
B.A., 1998, M.A., 2001, Ph.D., University of California - Los Angeles, 2008

Pimpare, Stephen

SENIOR LECTURER
Political Science
B.S., State University of New York, 1998
Ph.D., City University of New York, 2002

Piotrowski, Thaddeus M

PROFESSOR EMERITUS
B.A., Saint Francis University, 1963
M.A., 1969, Ph.D., University of Pennsylvania, 1972

Pistole, Thomas G

PROFESSOR EMERITUS
Ph.D., 1964, M.S., Wayne State University, 1966
Ph.D., University of Utah, 1969

Plachetzki, David C

ASSISTANT PROFESSOR
Molecular, Cellular, & Biomedical
B.S., 1996, M.S., Northern Michigan Univ, 2000
Ph.D., University of California - Santa Barbara, 2009

Planalp, Roy P

ASSOCIATE PROFESSOR
Chemistry
B.S., Massachusetts Institute of Technology, 1979
Ph.D., University of California - Berkeley, 1983

Plante, Amy Solomon

CLINICAL ASSOCIATE PROFESSOR
Communication Sciences & Disorders
B.S., 1980, M.S., University of New Hampshire, 1982

Plante, Catherine Craycraft

ASSOCIATE PROFESSOR
Accounting and Finance
B.A., University of Cincinnati, 1983
M.A., University of Missouri - Columbia, 1985
Ph.D., Ohio State University, 1991

Plante, Donald J

LECTURER
Mathematics
B.S., 2005, M.S., University of Rhode Island, 2007
Ph.D., Tufts University, 2012

Plumlee, Matthew D

SENIOR LECTURER
Computer Science
B.S., 1995, Ph.D., University of New Hampshire, 2004

Plunkett, Leah A W

LECTURER
UNHL Academic Success Program
A.B., 2001, B.A., 2001, J.D., Harvard University, 2006

Pohl, Karsten

PROFESSOR
Physics
Diploma, Ludwig Maximilian University of Munich, Germany, 1990
Ph.D., University of Pennsylvania, 1997

Pohl, Peter W

EXTENSION EDUCATOR EMERITUS
M.S., University of New Hampshire, 1978

Pokoski, John L

PROFESSOR EMERITUS
B.S.E.E., Saint Louis University, 1959
M.S.E.E., Arizona State University, 1965
Ph.D., Montana State University, 1967

Polasky, Janet L

PROFESSOR
History
B.A., Carleton College, 1973
M.A., 1974, Ph.D., Stanford University, 1978

Poleatewich, Anissa M

ASSISTANT PROFESSOR
Agriculture, Nutrition, & Food System
B.A., Wheaton College (Mass), 2002
M.S., 2005, Ph.D., Pennsylvania State University, 2010

Polk, Keith

PROFESSOR EMERITUS
B.A., San Diego State Univ, 1956
M.M., University of Wisconsin, 1958
Ph.D., University of California - Berkeley, 1968

Pollard, James E

ASSOCIATE PROFESSOR EMERITUS
A.B., Duke University, 1965
Ph.D., University of Florida, 1969

Poltak, Steffen R

LECTURER
Molecular, Cellular, & Biomedical
B.A., Saint Anselm's College, 2003
Ph.D., University of New Hampshire, 2010

Porter, John C

EXTENSION PROFESSOR EMERITUS
B.S., University of New Hampshire, 1971
M.S., Cornell University, 1973

Pothier, Wendy G

ASSISTANT PROFESSOR
Research Learning Services
B.A., Pennsylvania State University, 2004
M.L.S., Clarion University, 2007
M.S., Maine Maritime Academy, 2016

Potter, Sharyn J

PROFESSOR
Sociology
B.S., State University of New York, 1989
M.P.H., 1994, Ph.D., Emory University, 1998

Powell, Lou G

PROFESSOR EMERITA
B.S., Winthrop University, 1972
M.S., Florida State University, 1975
O, Indiana University, 1981

Powers, Allison

LECTURER
Thompson School of Applied Science
Certificate, New Hampshire Technical Colleg, 1990
M.S., Canisius College, 2014

Poworoznek, Emily LeViness

ASSOCIATE PROFESSOR
Research Learning Services
B.A., State University of New York at Purchase, 1982
M.S., University of New Hampshire, 1986
M.L.S., University of Rhode Island, 1993

Prelli, Lawrence J

PROFESSOR
Communication
B.S., State University of New York at Brockport, 1977
M.A., University at Albany, 1979
Ph.D., Pennsylvania State University, 1984
M.S., University of New Hampshire, 1998

Prescott, Sarah Grace

ASSOCIATE PROFESSOR
Science
B.S., Worcester Polytechnic Institute, 1993
M.Ed., 1999, Ph.D., University of New Hampshire, 2006

Prince, Allan B

PROFESSOR EMERITUS
B.S., 1947, Ph.D., Rutgers University, 1950

Pringle, James M

PROFESSOR
Earth Sciences - Joint Positions
B.S., Dartmouth College, 1990
Ph.D., Massachusetts Institute of Technology, 1998

Proctor, Sarah E

CLINICAL ASSOCIATE PROFESSOR
Thompson School of Applied Science
B.S., University of New Hampshire, 1996
D.V.M., Cornell University, 2000
M.P.H., University of New Hampshire, 2016

Pruiksmas, Rose A

LECTURER
Music
B.A., Calvin College, 1989
M.M., 1992, M.A., 1994, Ph.D., University of Michigan, 1999

Puccilli, Patricia A

CLINICAL ASSOCIATE PROFESSOR
Nursing
B.S., 2005, M.S., 2007, DNP, University of New Hampshire, 2015

Pugh, R Michael

SENIOR LECTURER
English
B.A., Dartmouth College, 1966
M.A., Paterson State College, 1986
Ph.D., University of New Hampshire, 1994

Pugh, Stephen R

ASSOCIATE PROFESSOR
Science
B.A., Ripon College, 1976
M.S., University of North Dakota, 1980
Ph.D., Boston University, 1989

Pulecio-Pulgarin, Jairo M

LECTURER
Languages, Literatures, & Cultures
M.A., Pontifical Javeriana University, Colombia, 2010
M.A., 2014, Ph.D., University of Pittsburgh, 2017
LLB, National Univ of Columbia,

Purrenhage, Jennifer L

SENIOR LECTURER
Natural Resources & The Environment
B.S., University of Wisconsin, 1998
M.S., University of Akron, 2004
Ph.D., Miami University - Ohio, 2009

Puth, Robert C

PROFESSOR EMERITUS
B.A., Carleton College, 1958
M.A., 1965, Ph.D., Northwestern University, 1967

Putnam, Charles T

CLINICAL PROFESSOR
Dean's Office - Liberal Arts
B.A., Yale University, 1979
J.D., University of Connecticut, 1985

Q**Quigley, Donald W**

PROFESSOR EMERITUS
B.S.F., 1976, M.S., University of New Hampshire, 1978

Quin, Langdon C

ASSOCIATE PROFESSOR EMERITUS
B.A., Washington and Lee University, 1970
M.F.A., Yale University, 1976

Quinn, Timothy J

ASSOCIATE PROFESSOR
Kinesiology
B.S., Bradley University, 1979
M.A., 1983, Ph.D., Michigan State University, 1987

R**Rader, Samantha C**

LECTURER
Science
B.A., 2007, B.S., Winthrop University, 2007
Ph.D., Dartmouth College, 2012

Raeder, Joachim

PROFESSOR
Physics - Joint Positions
Diploma, 1985, Ph.D., University of Cologne, Germany, 1989

Ragland, Linda G

ASSISTANT PROFESSOR
Accounting and Finance
B.S., 1993, M.Acc., University of Tennessee, 1999
Ph.D., University of South Florida, 2011

Ramadanovic, Petar

PROFESSOR
English
B.A., University of Belgrade, Serbia, 1989
M.A., 1993, Ph.D., State University of New York at Binghamton, 1997

Ramage, Amy E

ASSISTANT PROFESSOR
Communication Sciences & Disorders
B.S., Texas Tech University, 1993
Ph.D., 1995, M.S., University of Arizona, 1995

Ramsay, James D

PROFESSOR
Security Studies
B.S., 1984, Ph.D., 2014, M.A., University of Wisconsin,

Ramsey, David L

PROFESSOR
Theatre & Dance
B.A., Plymouth State University, 1973
M.F.A., University of North Carolina, 1977

Ramsey, Philip J

PRINCIPAL LECTURER
Mathematics & Statistics
B.A., University of New Hampshire, 1974
M.S., Southern Ill Univ-Edwardsville, 1986
Ph.D., Virginia Polytechnic Institute and State University, 1989

Ranfos, Lisa M

CLINICAL ASSISTANT PROFESSOR
Human Development & Family Studies
M.S., Wheelock College, 2007
B.S., University of New Hampshire,
A.S., New Hampshire Technical Instit,

Raymond, Daniel J

SENIOR LECTURER EMERITUS
B.A., Beloit College, 1971
M.A.T., University of New Hampshire, 1979

Raymond, Kristin L

SENIOR LECTURER
English as a Second Language
B.A., 2006, M.A., Saint Michael's College, 2007

Reagan, Emilie N

ASSISTANT PROFESSOR
Education
B.S., Georgetown University, 2003
M.S., Saint Joseph's University, 2005
Ph.D., Boston College, 2011

Reardon, Lawrence C

ASSOCIATE PROFESSOR
Political Science
B.A., Johns Hopkins University, 1979
M.I.A., 1983, M.Phil., 1986, Ph.D., Columbia University in the City of New York, 1991

Rebellion, Cesar J

PROFESSOR
Sociology
B.A., Rice University, 1996
M.A., 1999, Ph.D., Emory University, 2002

Redfield, Sarah E

PROFESSOR EMERITA/AFFILIATE PROFESSOR
B.A., Mount Holyoke College, 1970
LL.M., Harvard University, 1983

Rehan, Sandra M

ASSISTANT PROFESSOR
Biological Sciences
B.S., 2007, Ph.D., Brock University, 2011

Reid, R Dan

ASSOCIATE PROFESSOR EMERITUS
B.A., University of Maryland, 1976
M.B.A., Angelo State University, 1978
Ph.D., Ohio State University, 1987

Reilly, Ruth A

CLINICAL ASSOCIATE PROFESSOR
Agriculture, Nutrition, & Food System
B.S., Florida State University, 1965
M.O.E., 1989, Ph.D., University of New Hampshire, 1998

Reinhold, Vernon

RESEARCH PROFESSOR
Molecular, Cellular, & Biomedical
B.S., 1959, M.S., University of New Hampshire, 1961
Ph.D., University of Vermont, 1965

Remar, Daniel A G

ASSISTANT PROFESSOR
Hospitality Management
B.S., 2003, M.A., Boston University, 2012
Ph.D., University of South Carolina, 2015

Resch, John P

PROFESSOR EMERITUS
B.A., Denison University, 1962
M.A., 1965, Ph.D., Ohio State University, 1969

Reyna, Stephen P

PROFESSOR EMERITUS
A.B., 1965, Ph.D., Barnard College, 1972

Reynolds, Edward J

LECTURER
Communication
B.A., 2000, M.A., Australian National University, 2009
Ph.D., University of Queensland, Bris, 2013

Rhiel, Mary E

ASSOCIATE PROFESSOR EMERITA
B.S., University of Wisconsin - River Falls, 1971
M.A., 1978, Ph.D., University of Wisconsin - Madison, 1988

Richards, Harry J

DEAN AND ASSOCIATE PROFESSOR EMERITUS
B.A., State University of New York at Potsdam, 1968
M.S., University at Albany, 1969
Ph.D., Florida State University, 1978

Richardson, Roy L

LECTURER
Molecular, Cellular, & Biomedical
B.S., Univ of Maryland at Baltimore, 2006
Ph.D., University of New Hampshire, 2013

Richey, Susan M

PROFESSOR OF LAW EMERITA
B.S., College of William and Mary, 1973
B.A., University of Baltimore, 1977
J.D., University of Maryland, 1980

Richman, David M

PROFESSOR
Theatre & Dance
B.A., Harvard University, 1972
Ph.D., Stanford University, 1979

Rigg, Sarah H

PRINCIPAL LECTURER
Agriculture, Nutrition, & Food System
B.S., University of New Hampshire, 1998

Rioux, James M

LECTURER
English
B.A., University of New Hampshire, 1992
M.F.A., Georgia State University, 1997

Ripley, David K

PROFESSOR
Music
B.A., Harvard University, 1970
M.M., The New England Conservatory of Music, 1977

Rivard, David A

PROFESSOR
English
B.A., University of Massachusetts - Dartmouth, 1975
M.F.A., University of Arizona, 1982
M.F.A., University of Massachusetts - Dartmouth, 1983

Robb, Judith A

ASSOCIATE PROFESSOR EMERITA
A.B., Connecticut College, 1967
M.A., University of South Florida, 1969
Ed.D., University of Rochester, 1982

Roberts, Alexandra J

ASSOCIATE PROFESSOR
UNHL JD Instruction
B.A., Dartmouth College, 2002
A.B., Stanford University, 2003
J.D., Yale University, 2008

Roberts, Betty H

PROFESSOR EMERITA
B.A., 1953, M.S.W., West Virginia University, 1970
Ph.D., Brandeis University, 1975

Roberts, John M

ASSOCIATE PROFESSOR EMERITUS
B.S., Washington State University, 1974
M.S., 1975, Ph.D., Purdue University, 1977

Robertson, C Laurence

PROFESSOR EMERITUS
B.F.A., 1969, M.F.A., United States International University, 1971

Robertson, Paul M

LECTURER
Classics, Humanities & Ital Studies
B.A., Reed College, 2006
Ph.D., Brown University, 2012

Robertson, Robert A

ASSOCIATE PROFESSOR
Natural Resources & The Environment
B.A., Western Illinois University, 1981
M.A., Oregon State University, 1984
Ph.D., University of Illinois at Urbana-Champaign, 1990

Robin, Donald A

PROFESSOR
Communication Sciences & Disorders
B.A., Boston University, 1976
M.S., University of Redlands, 1981
Ph.D., Case Western Reserve University, 1984

Rock, Barrett N

PROFESSOR EMERITUS
B.A., University of Vermont, 1966
M.S., 1970, Ph.D., University of Maryland, 1972

Rodgers, Frank G

PROFESSOR EMERITUS
B.S., 1969, Ph.D., University of Surrey, United Kingdom, 1977
M.S., Institute of Biology, London, United Kingdom, 1977

Rodgers, Melissa S

CLINICAL ASSISTANT PROFESSOR
Kinesiology
B.S., Pennsylvania State University, 2003
M.Ed., University of Alabama, 2006

Rodriguez, Julia E

ASSOCIATE PROFESSOR
History
B.A., 1989, M.A., The New School, 1992
M.Phil., 1995, Ph.D., Columbia University in the City of New York, 2000

Rojo, Juan U

CLINICAL ASSISTANT PROFESSOR
Molecular, Cellular, & Biomedical
B.S., University of Texas, 2012
Ph.D., Texas Tech University, 2017

Ross, Robert S

ASSISTANT PROFESSOR
Psychology
B.A., Fairleigh Dickinson University, 1997
M.A., 1999, Ph.D., Boston University, 2006

Ross, William E

PROFESSOR
Special Collections and Archives
B.A., East Carolina University, 1977
M.A., 1980, M.L.S., University of Maryland, 1980
Ph.D., American University, 1992

Rossi, Maria I

SENIOR LECTURER EMERITA
B.A., Univ De Costa Rica, San Jose, 1976
M.A., University of New Hampshire, 2007

Roth, George L

LECTURER
Management
B.S., 1979, M.B.A., University of New Hampshire, 1980
Ph.D., Massachusetts Institute of Technology, 1993

Rothwell, Kenneth J

PROFESSOR EMERITUS
B.A., 1949, M.A., University of Western Australia, Australia, 1954
Ph.D., Harvard University, 1960

Rouman, John C

PROFESSOR EMERITUS
B.A., Carleton College, 1950
M.A., Barnard College, 1951
Ph.D., University of Wisconsin, 1965

Rowe, Rebecca J

ASSOCIATE PROFESSOR
Natural Resources & The Environment
B.A., Bowdoin College, 1997
Ph.D., University of Chicago, 2006

Royce, Peter W

LECTURER EMERITUS
B.S., 1971, M.B.A., University of New Hampshire, 1983

Ruane, Nicole J

LECTURER
Classics, Humanities & Ital Studies
B.A., Hamilton College, 1992
M.A., 1995, Ph.D., Union Theological Seminary, 2005

Rubini, Loris

ASSISTANT PROFESSOR
Economics
B.A., 1999, M.S., Universidad de San Andrés, Buenos Aires, Argentina, 2001
Ph.D., Arizona State University, 2010

Rucinski, Andrzej

PROFESSOR EMERITUS
M.S., Odessa College, 1973
Ph.D., Gdansk University of Technology, Poland, 1982
B.S., Xi'an Jiaotong University, China, 2002

Ruml, Wheeler

PROFESSOR
Computer Science
A.S./B.S., 1993, Ph.D., Harvard University, 2002

Rupp, Nancy C

ASSISTANT PROFESSOR EMERITA
B.S., Boston University, 1950
M.A., University of Iowa, 1955

Rush, Lee Pozzi

CLINICAL ASSISTANT PROFESSOR
Social Work
B.S.W., Syracuse University, 1980
M.S.W., Boston College, 1982

Russell, Robert D

ASSOCIATE PROFESSOR EMERITUS
B.A., Yale University, 1965
M.S., 1967, Ph.D., Stanford University, 1972

Ryan, James M

PROFESSOR
Physics
B.S., University of California - Riverside, 1970
M.S., University of California - San Diego, 1974
Ph.D., University of California - Riverside, 1978

Ryan, Joelle R

SENIOR LECTURER
Women's Studies Program
B.A., University of New Hampshire, 1996
M.A., University of Northern Iowa, 2000
M.A., University of New Hampshire, 2002
Ph.D., Bowling Green State University, 2009

Rzhanov, Yuri

RESEARCH PROFESSOR
Center for Coastal & Ocean Mapping
M.S., Novosibirsk State University, 1978
Ph.D., Academy of Science of Russia, 1983

S**Sabin, Mihaela C**

ASSOCIATE PROFESSOR
Computer Science
B.S., 1984, M.S., Politehnica University of Bucharest, Romania, 1984
M.S.T., 2003, Ph.D., University of New Hampshire, 2003

Sable, Janet R

PROFESSOR EMERITA
B.A., University of Michigan, 1975
M.S., Northeastern University, 1981
Ed.D., Boston University, 1989

Safford, Thomas G

ASSOCIATE PROFESSOR
Sociology
B.A., University of North Carolina at Chapel Hill, 1989
M.A., Stanford University, 1995
Ph.D., Cornell University, 2004

Saglam, Aziz I

SENIOR LECTURER
Economics
B.S., Orta Dogu Teknik University, Turkey, 1996
M.A., Bilkent University, Turkey, 1996
M.A., University of Pittsburgh, 1998
Ph.D., West Virginia University, 2006

Salisbury, Joseph E

RESEARCH ASSOCIATE PROFESSOR
Ocean Process Analysis Lab
B.A., 1980, M.S., University of Southern Maine, 1990
Ph.D., University of New Hampshire, 2003

Salloway, Jeffrey Colman

PROFESSOR EMERITUS
B.A., Tufts University, 1963
M.A., 1965, Ph.D., Boston University, 1969

Salvio, Paula M

PROFESSOR
Education
B.A., Fordham University, 1981
M.A., Wesleyan University, 1983
Ph.D., University of Rochester, 1989

Salyer, Lucy E

ASSOCIATE PROFESSOR
History
B.A., University of California - San Diego, 1979
M.A., 1983, Ph.D., University of California - Berkeley, 1989

Sample, Ruth J

ASSOCIATE PROFESSOR
Philosophy
B.A., Oberlin College, 1986
Ph.D., University of Pittsburgh, 1995

Samuels, Joanne G

ASSOCIATE PROFESSOR
Nursing
B.S.N., Northeastern University, 1978
M.S., Boston University, 1984
Ph.D., University of Massachusetts - Amherst, 2007

Sasner, John J

PROFESSOR EMERITUS
B.A., 1957, M.S., University of New Hampshire, 1959
Ph.D., University of California - Los Angeles, 1965

Savage, Terry M

ASSOCIATE PROFESSOR EMERITUS
B.A., University of New Hampshire, 1969
M.A., 1975, Ph.D., Boston University, 1978

Scala, Dante J

PROFESSOR
Political Science
B.A., Villanova University, 1990
M.A., 1993, Ph.D., University of Chicago, 2000

Scharff, Robert C

PROFESSOR EMERITUS
A.B., University of Illinois at Urbana-Champaign, 1961
M.A., 1965, Ph.D., Northwestern University, 1970

Schefer, Donna L

SENIOR LECTURER
Communication Sciences & Disorders
B.S., Trenton State College, 1984
M.Ed., Boston University, 1991

Scherr, Albert E

PROFESSOR
UNHL JD Instruction
B.A., Yale University, 1976
J.D., Vermont Law School, So Royalto, 1981

Schibanoff, Susan

PROFESSOR EMERITA
B.A., Cornell University, 1966
M.A., 1967, Ph.D., University of California - Los Angeles, 1971

Schiller, Nina K

PROFESSOR EMERITA
B.A., New York University, 1966
Ph.D., Columbia University in the City of New York, 1975

Schnepf, Scott K

PROFESSOR EMERITUS
B.A., Augustana College (Sd), 1975
M.F.A., Kansas State University, 1981

Schofield, Janet L

SENIOR LECTURER EMERITA
B.A., 1975, M.A., University of New Hampshire, 1977
M.F.A., University of Iowa, 1979

Schram, Thomas H

ASSOCIATE PROFESSOR

Education

B.A., Dartmouth College, 1978

B.A., University of Wyoming, 1982

M.Ed., 1987, Ph.D., University of Oregon, 1990

Schroeder, Calvin E

EXTENSION EDUCATOR EMERITUS

M.O.E., University of New Hampshire, 1980

Schuh, Mary Clare

RESEARCH ASSOCIATE PROFESSOR

Institute on Disability

B.A., State University of New York at Geneseo, 1984

M.A., Syracuse University, 1987

M.F.A., 1987, Ph.D., University of New Hampshire, 2002

Schwab, Charles George

PROFESSOR EMERITUS

B.S., 1969, M.S., 1970, Ph.D., University of Wisconsin, 1974

Schwadron, Nathan A

PROFESSOR

Physics - Joint Positions

B.A., Oberlin College, 1990

Ph.D., University of Michigan, 1997

Schweickart, Patrocino P

PROFESSOR EMERITUS

B.S., University of The Philippines, Philippines, 1963

M.S., 1965, M.A., University of Virginia, 1969

M.A., 1974, Ph.D., Ohio State University, 1979

Sciabarrasi, Michael R

EXTENSION PROFESSOR AND SPECIALIST EMERITUS

B.S., University of Massachusetts - Lowell, 1976

M.S., Virginia Polytechnic Institute and State University, 1978

Scogland, Elissa

LECTURER

English as a Second Language

B.A., Bentley College, 1992

M.Ed., Harvard University, 1993

Scott, Michelle P

PROFESSOR EMERITA

B.A., Wellesley College, 1961

M.A., 1980, Ph.D., Harvard University, 1984

Scott, William

PROFESSOR EMERITUS

B.S., Drexel University, 1961

M.Ed., University of New Hampshire, 1973

Seal, Andrew R

LECTURER

Economics

B.A., Dartmouth College, 2007

M.A., 2012, M.Phil., 2012, Ph.D., Yale University, 2017

Seal, Samantha L

ASSISTANT PROFESSOR

English

B.A., Washington University - St Louis, 2006

M.A., 2010, M.Phil., 2010, Ph.D., Yale University, 2012

Seaman, Jayson O

ASSOCIATE PROFESSOR

Kinesiology

B.A., New England College, 1994

M.S., 1999, Ph.D., University of New Hampshire, 2006

Seavey, David Charles

EXTENSION EDUCATOR EMERITUS

A.A., University of New Hampshire, 1963

B.A., University of Rhode Island, 1966

M.A., University of New Hampshire, 1969

Seavey, John W

PROFESSOR EMERITUS

A.B., Bates College, 1966

M.A., 1968, Ph.D., University of Arizona, 1973

M.P.H., Harvard University, 1979

Sedory, Daniel R

CLINICAL ASSOCIATE PROFESSOR

Kinesiology

B.S., University of Pittsburgh, 1982

M.S., University of Arizona, 1984

Seichepine, Daniel R

ASSISTANT PROFESSOR

Psychology

B.A., California State University, C, 2002

M.A., 2005, Ph.D., Boston University, 2011

Seidel, Alice C

ASSOCIATE PROFESSOR EMERITUS

B.S., University of Wisconsin, 1963

M.P.H., University of Michigan, 1972

Ed.D., Vanderbilt University, 1994

Seidel, Lee F

PROFESSOR EMERITUS

A.B., Hobart and William Smith College, 1967

M.P.A., 1972, Ph.D., Pennsylvania State University, 1976

Seiler, David E

PROFESSOR EMERITUS

B.M., 1965, M.M., University of Wisconsin - Madison, 1979

Seitz, William Rudolf

PROFESSOR

Chemistry

A.B., Princeton University, 1965

Ph.D., Massachusetts Institute of Technology, 1970

Sell, Nancy L

SENIOR LECTURER

English as a Second Language

B.A., Michigan State University, 1983

M.A., Eastern Michigan Univ, 1990

M.P.H., University of New Hampshire, 2011

Semenova, Oksana V

SENIOR LECTURER

English as a Second Language

B.A., Kramatorsk Inst Econ to Humani, 1997

M.A., 2005, M.Ed., University of New Hampshire, 2012

Senier, Siobhan

PROFESSOR

English

A.B., Bowdoin College, 1987

M.A., 1992, Ph.D., University of Illinois at Urbana-Champaign, 1997

Shaffer, Laurie R

LECTURER

Sign Language Interpreting

B.A., Hamilton College, 1983

Shannon, Patrick

ASSOCIATE PROFESSOR

Social Work

B.A., 1990, M.S.W., State University of New York at Buffalo, 1993

Ph.D., University of Virginia, 2000

Sharkey, Judith A

ASSOCIATE PROFESSOR

Education

B.A., Franklin Pierce College, 1984

M.A.T., School for International Training, 1990

Ph.D., Pennsylvania State University, 2000

Sharp, Dayle B

CLINICAL ASSOCIATE PROFESSOR

Nursing

B.S.N., University of New Hampshire, 1992

M.S.N., Idaho State University, 1999

Ph.D., El Paso Univ of Texas, 2005

M.P.H., Univ of Texas Houston, 2008

DNP, El Paso Univ of Texas, 2014

Sharp, Erin H

ASSOCIATE PROFESSOR

Human Development & Family Studies

B.S., Virginia Commonwealth University, 1999

M.S., 2003, Ph.D., Pennsylvania State University, 2006

Sharpe, Sheree T

ASSISTANT PROFESSOR

Mathematics & Statistics

B.A., Wesleyan College, 2004

M.A., University of Georgia, 2007

Ph.D., University of Miami, 2011

Shea, Christine M

PROFESSOR

Decisions Sciences

B.A., 1980, M.B.A., Wilfrid Laurier University, Canada, 1984

Ph.D., University of Western Ontario, Canada, 1995

Shen, Junhao

PROFESSOR

Mathematics & Statistics

B.S., 1993, M.S., Nanjing University, China, 1996

Ph.D., University of Pennsylvania, 2004

Shepard, Harvey K

PROFESSOR EMERITUS

B.S., University of Illinois at Urbana-Champaign, 1960

M.S., 1962, Ph.D., California Institute of Technology, 1966

Shepard, Margaret P

CLINICAL ASSOCIATE PROFESSOR

Nursing

B.S.N., 1980, M.S.N., 1983, Ph.D., University of Pennsylvania, 1992

Sheriff, Robin E

ASSOCIATE PROFESSOR

Anthropology

B.A., Bard College, 1984

Ph.D., City University of New York, 1997

Sherman, Jill M

ASSISTANT PROFESSOR

Human Development & Family Studies

B.S., 2007, M.A., Central Michigan Univ, 2009

Ph.D., Purdue University, 2014

Sherman, Sarah W

PROFESSOR EMERITA

B.A., Marlboro College, 1972

Ph.D., Brown University, 1983

Shetty, Sandhya

ASSOCIATE PROFESSOR

English

B.A., 1977, M.A., University of Poona, India, 1979

M.A., 1982, Ph.D., University of Rochester, 1987

Shiklomanov, Alexander I

RESEARCH ASSISTANT PROFESSOR

Earth Systems Research Center

B.S., 1981, M.S., 1983, Ph.D., Hydrometeorological University, 1996

Shipe, Stephan D

ASSISTANT PROFESSOR

Accounting and Finance

B.B.A., University of North Florida, 2012

Ph.D., Florida State University, 2016

Shippee-Rice, Raelene V

ASSOCIATE PROFESSOR EMERITA

B.S., Fitchburg State College, 1960

Diploma, Cook County Sch Nursing, 1960

B.S.N., Carroll College, 1964

M.S., University of Rochester, 1979

Ph.D., Brandeis University, 1990

Shore, Barry

PROFESSOR EMERITUS

B.S., Tufts University, 1960

M.B.A., University of Massachusetts - Amherst, 1963

Ph.D., University of Wisconsin, 1968

Shore, Samuel D

PROFESSOR EMERITUS

B.S., Juniata College, 1959

M.A., 1961, Ph.D., Pennsylvania State University, 1964

Short, Frederick T

RESEARCH PROFESSOR
Natural Resources & The Environment
B.A., Plymouth State University, 1972
M.S., University of Rhode Island, 1976
Ph.D., University of Alaska, 1981

Short, Kevin M

PROFESSOR
Mathematics & Statistics
B.A., 1985, B.S., University of Rochester, 1985
Ph.D., Imperial College London, United Kingdom, 1988

Shubov, Marianna A

PROFESSOR
Mathematics & Statistics
M.S., 1972, Ph.D., Saint Petersburg State University, Russia, 1985

Sideman, Rebecca G

FULL EXTENSION STATE SPECIALIST/PROFESSOR
Food and Agriculture
B.A., Dartmouth College, 1994
Ph.D., Cornell University, 1999

Sidor, Inga F

CLINICAL ASSOCIATE PROFESSOR
Molecular, Cellular, & Biomedical
B.A., Reed College, 1992
D.V.M., Tufts University, 1999
M.S., University of Connecticut, 2004

Siggelakis, Susan J

ASSOCIATE PROFESSOR
Political Science
B.A., Rutgers University, 1979
M.A., 1983, Ph.D., Johns Hopkins University, 1988

Silva, Bethany A

RESEARCH ASSISTANT PROFESSOR
Education
B.A., Middlebury College, 1998
M.F.A., Vermont College of Fine Arts, 2005
Ed.D., University of Pennsylvania, 2017

Silva, J. Donald

PROFESSOR EMERITUS
B.A., 1957, M.A., University of New Hampshire, 1965

Silverman, Daniel S

LECTURER
Decisions Sciences
B.A., State University of New York, 1994
M.B.A., University of New Hampshire, 2007

Simic, Charles

PROFESSOR EMERITUS
B.A., New York University, 1967

Simmons, Michael J

LECTURER
Thompson School of Applied Science
A.A.S., 2007, B.Sc., 2010, M., University of New Hampshire, 2013

Simon, Mitchell M

VISITING PROFESSOR EMERITA
B.S., Hofstra University, 1973
J.D., Boston University, 1977

Simonton, Deborah L

CLINICAL ASSISTANT PROFESSOR
Nursing
B.S., 1983, M.S., University of New Hampshire, 1998

Simos, Evangelos O

PROFESSOR
Economics
B.S., National and Kapodistrian University of Athens, Greece, 1972
M.A., 1974, Ph.D., Northern Illinois University, 1977

Simpson, Robert E

PROFESSOR EMERITUS
B.S., University of Rochester, 1955
M.A., 1956, Ph.D., Harvard University, 1960

Sir, Walter Niel

ASSOCIATE PROFESSOR EMERITUS
B.A., University of Chicago, 1952
B.A., 1954, M.A., University of California - Berkeley, 1962

Sitkoff, Harvard I

PROFESSOR EMERITUS
A.B., Queens College of the City University of New York, 1961
M.A., 1962, Ph.D., Columbia University School of General Studies, 1975

Sivaprasad, Kondagunta

PROFESSOR EMERITUS
B.S.E.E., University of Madras, India, 1956
M.S., 1958, Ph.D., Harvard University, 1963

Slauson, Margaret W

ASSOCIATE PROFESSOR EMERITUS
B.S.N., Massachusetts Institute of Technology, 1952
M.S., Univ of Lowell, 1979
Ed.D., Vanderbilt University, 1985

Slifer, Karl J

ASSOCIATE PROFESSOR
Physics
B.S., 1995, Ph.D., Temple University, 2004

Slomba, Elizabeth A

PROFESSOR
Dean's Office/Administration
B.A., Mount Holyoke College, 1991
M.A., University of Virginia, 1993
M.L.S., University of Maryland, 1998

Smick-Attisano, Regina A

ASSOCIATE PROFESSOR
Thompson School of Applied Science
B.S., 1982, M.S., University of Maryland, 1984
Ed.D., Virginia Polytechnic Institute and State University, 1988

Smiley, William A

ASSISTANT PROFESSOR
Classics, Humanities & Ital Studies
B.S., Hillsdale College, 2005
M.A., University of Utah, 2008
Ph.D., University of Cambridge, Engla, 2012
J.D., Yale Law School, 2014

Smith, Allan B

CLINICAL ASSOCIATE PROFESSOR
Communication Sciences & Disorders
B.S., Florida State University, 1986
M.S., Mass Gen Hosp Sch of Nur, 1996
Ph.D., University of Connecticut, 2002

Smith, Charles W

RESEARCH PROFESSOR
Space Science Center
B.S., University of Maryland, 1977
Ph.D., 1979, M.S., College of William and Mary, 1981

Smith, Cheryl A

FULL EXTENSION STATE SPECIALIST/PROFESSOR
Food and Agriculture
B.A., Plymouth State University, 1978
M.S., University of Rhode Island, 1983
Ph.D., University of New Hampshire, 1992

Smith, Gerald L

ASSOCIATE PROFESSOR EMERITUS
B.S., University of New Hampshire, 1948
M.S., Pennsylvania State University, 1951

Smith, Henry M

LECTURER EMERITUS
B.A., Wofford College, 1963
M.A., Yale University, 1964
M.A., Middlebury College, 1987

Smith, Kristin E

RESEARCH ASSOCIATE PROFESSOR
Carsey School
B.A., University of Vermont, 1989
M.P.H., Tulane University, 1993
Ph.D., University of Maryland, 2006

Smith, Laura A

SENIOR LECTURER
English
B.A., Grove City College, 1992
M.S.T., 2001, Ph.D., University of New Hampshire, 2007

Smith, Mark R

PROFESSOR EMERITUS
B.A., Northwestern University, 1960

Smith, Nicholas J

PROFESSOR
Philosophy
B.A., Vassar College, 1994
J.D., State University of New York at Buffalo, 1997
Ph.D., Vanderbilt University, 2002

Smith, Richard G

ASSOCIATE PROFESSOR
Natural Resources & The Environment
B.S., University of New Mexico, 1996
Ph.D., Michigan State University, 2005

Smith, Robert Scott

PROFESSOR
Classics, Humanities & Ital Studies
B.A., Mary Wash Coll (Univ Va), 1993
A.M., 1996, Ph.D., University of Illinois at Urbana-Champaign, 2000

Smith, Samuel C

PROFESSOR EMERITUS
B.S., 1955, M.S., 1958, Ph.D., Pennsylvania State University, 1962

Smith, Sarah L

ASSISTANT PROFESSOR
Occupational Therapy
B.S., Colorado State University, 1997
D.Sc., University of Oklahoma, 2015

Smith, Sarah Shea

EXTENSION PROFESSOR AND SPECIALIST EMERITUS
B.S.F., 1978, M.O.E., University of New Hampshire, 1989

Smith, Subrena E

ASSISTANT PROFESSOR
Philosophy
B.A., University of London, United Kingdom, 2005
M.A., 2011, Ph.D., Cornell University, 2013

Smith, Wayne J

SENIOR LECTURER
Electrical & Computer Eng Dept
B.S., 1986, M.S., 1998, Ph.D., University of New Hampshire, 2005

Sobel, Kelsey

CLINICAL ASSISTANT PROFESSOR
Social Work
M.S.W., 2007, B.S., University of New Hampshire,

Soha, Michael L

LECTURER
Communication
B.A., University of New Hampshire, 2008
M.A., University of Massachusetts - Amherst, 2012

Sohl, Jeffrey E

PROFESSOR
Decisions Sciences
B.A., Villanova University, 1972
M.A., 1974, Ph.D., University of Maryland, 1983

Sokol, Jason C

ASSOCIATE PROFESSOR
History
B.A., Oberlin College, 1999
M.A., 2001, Ph.D., University of California - Berkeley, 2006

Solomon, Alvin Maingi

LECTURER

Geography

B.Ed., Egerton University, Kenya, 2007

M.A., 2010, M.A., Ohio University, 2011

Ph.D., West Virginia University, 2015

Song, Edward

ASSISTANT PROFESSOR

Electrical & Computer Eng Dept

B.S., Queen's University- Ca, 2004

M.S., University of Alberta, Canada, 2007

Ph.D., Louisiana State University, 2014

Sonnenmeier, Rae M

CLINICAL ASSOCIATE PROFESSOR

Communication Sciences & Disorders

B.S.Ed., 1980, M.A., 1984, Ph.D., State University of New York at Buffalo,

1999

Sorensen, David C

EXTENSION EDUCATOR EMERITUS

M.S., University of Rhode Island, 1967

Sower, Stacia

PROFESSOR EMERITA

B.A., University of Utah, 1973

M.S., 1978, Ph.D., Oregon State University, 1980

Sowers, Jeannie

ASSOCIATE PROFESSOR

Political Science

B.A., Harvard University, 1989

M.A., 1996, Ph.D., Princeton University, 2003

Spang, Linda A

CLINICAL ASSOCIATE PROFESSOR

Health Management & Policy

B.A., Purdue University, 1985

J.D., Western Michigan University, 1999

M.S., Union Graduate School, 2013

Sparr, T M

PROFESSOR EMERITUS

B.A., Ohio Wesleyan University, 1963

M.S., 1969, Ph.D., Texas A & M University, 1972

Sparrow, John E

ASSOCIATE PROFESSOR

Psychology

B.S., State University of New York at Oswego, 1983

M.A., 1986, Ph.D., University of New Hampshire, 1990

Sparrow, Sophie M

PROFESSOR

UNHL JD Instruction

B.A., Harvard University, 1982

J.D., Harvard Law School, 1986

Spence, Harlan

DIRECTOR

EOS Administration

B.A., Boston University, 1983

M.S., 1985, Ph.D., University of California, 1989

Sproul, Otis J

PROFESSOR EMERITUS

B.S., 1952, M.S., University of Maine, 1957

D.Sc., Washington University, 1961

Stampone, Mary D

ASSOCIATE PROFESSOR

Geography

B.A., Albion College, 1998

M.S., 2002, Ph.D., University of Delaware, 2009

Staneva, Viktoriya B

ASSISTANT PROFESSOR

Accounting and Finance

B.S., Ramapo College Nj, 2010

M.Phil., 2014, Ph.D., CUNY Baruch College, 2017

Stibler, Robert J

PROFESSOR EMERITUS

B.S., Susquehanna University, 1970

M.M., 1973, D.F.A., 1979, D.M.A., Catholic University of America, 1979

Stine, William W

ASSOCIATE PROFESSOR

Psychology

B.S., 1977, Ph.D., 1983, M.S., Georgia Institute of Technology, 1983

Stoddard, Samuel

EXTENSION EDUCATOR EMERITUS

B.A., University of Maine, 1968

M.S., Iowa State University, 1976

Stone, Joyce R

LECTURER EMERITA

B.A., Northeastern University, 1971

Stoykovich, Elisa F

LECTURER EMERITA

B.A., Univ of Barcelona, 1967

M.A., 1972, M.A., University of New Hampshire, 1974

Stracuzzi, Nena F

SENIOR LECTURER

Sociology

B.A., University of California - Irvine, 1996

M.A., 1998, Ph.D., University of New Hampshire, 2005

Straussfogel, Debra L

PRINCIPAL LECTURER

Natural Resources & The Environment

B.S., 1979, M.S., 1983, Ph.D., Pennsylvania State University, 1987

Sukhu, Anupama

ASSISTANT PROFESSOR

Hospitality Management

B.A., University of Calicut, India, 2008

M.S., Plymouth Business School, Plymouth University, Plymouth England,

2010

Ph.D., Ohio State University, 2015

Sullivan, Judith A

PROFESSOR EMERITUS
 Diploma, Newton Wellsley Hospital, 1959
 B.S., Boston University, 1962
 M.S., Case Western Reserve University, 1967
 Ed.D., University of Rochester, 1973

Sullivan, Mary Jane

CLINICAL ASSISTANT PROFESSOR
 Communication Sciences & Disorders
 B.A., 1982, M.A., George Washington University, 1984
 AUD, Arizona School of Health Sciences, 2003

Sundar, Vidyalakshmi

ASSISTANT PROFESSOR
 Occupational Therapy
 B.S., The Tamil Nada Dr M.G.R Medical University, India, 1979
 Ph.D., University at Buffalo, State University of New York, 2007

Sundberg, Donald C

PROFESSOR EMERITUS
 B.S., Worcester Polytechnic Institute, 1965
 M.S., 1968, Ph.D., University of Delaware, 1970

Sussenberger, Barbara B

ASSOCIATE PROFESSOR EMERITUS
 B.S., 1961, Certificate, Tufts University, 1961
 M.S., Boston University, 1975

Swack, Michael E

RESEARCH PROFESSOR
 Carsey School
 B.S., University of Wisconsin, 1975
 M.S., Harvard University, 1979
 Ph.D., Columbia University in the City of New York, 1990

Swann, Kristen R

SENIOR LECTURER
 Classics, Humanities & Ital Studies
 B.A., 1995, M.A., Middlebury College, 2001
 M.Phil., 2007, Ph.D., Columbia University in the City of New York, 2012

Swier, Stanley R

EXTENSION PROFESSOR AND SPECIALIST EMERITUS
 B.S., Syracuse University, 1969
 M.S., Northern Az University, 1974
 Ph.D., Ohio State University, 1976

Swift, M Robinson

PROFESSOR
 Mechanical Engineering
 B.S., 1971, Ph.D., University of New Hampshire, 1974

T**Taft, Charles K**

PROFESSOR EMERITUS
 B.A., Amherst College, 1951
 B.S., Massachusetts Institute of Technology, 1953
 M.S., 1956, Ph.D., Case Western Reserve University, 1960

Tagliaferro, Anthony R

PROFESSOR EMERITUS
 B.A., Boston College, 1968
 M.S., Lehigh University, 1972
 Ph.D., Cornell University, 1978

Talay, Melike Billur

ASSOCIATE PROFESSOR
 Marketing
 B.A., 2002, M.B.A., Bogazici University, Turkey, 2004
 Ph.D., Michigan State University, 2009

Talpin, Emilie V

SENIOR LECTURER
 Languages, Literatures, & Cultures
 M.A., Univ of Burgundy- France, 2004
 M.A., Miami University, 2008

Tarr, Matthew D

FULL EXTENSION STATE SPECIALIST/PROFESSOR
 Natural Resources
 B.S., 1996, M.S., 1999, A.A.S., University of New Hampshire, 2002

Tavares, Theodore S

ASSISTANT PROFESSOR
 Engineering Technology Program
 S.B., 1984, S.M., 1986, Ph.D., Massachusetts Institute of Technology, 1991

Taylor, James Thomas

PROFESSOR
 Natural Resources & The Environment
 B.S., 1966, M.S., University of Tennessee, 1968
 Ph.D., Oregon State University, 1976

Taylor, Rosemary A

ASSISTANT PROFESSOR
 Nursing
 B.F.A., New York University, 1988
 B.S.N., 1998, Ph.D., Northeastern University, 2013

Tebbetts, Diane R

PROFESSOR EMERITA
 B.A., University of New Hampshire, 1965
 M.S., Simmons College, 1972
 M.L.S., Boston University, 1978
 D.L.S., Simmons College, 1985

Tenczar, Anthony

ASSOCIATE PROFESSOR
 Life Sciences
 B.A., University of Massachusetts - Amherst, 1978
 M.F.A., University of Texas, 1996

Teng, Xiaowei

PROFESSOR
 Chemical Engineering
 B.S., 2001, M.S., East China University of Science and Technology, 2001
 Ph.D., University of Rochester, 2006

Terry, Joseph L

LECTURER

Communication

B.S., University of Illinois at Urbana-Champaign, 2000

M.A., University of Georgia, 2004

Ph.D., University of Colorado at Boulder, 2013

Theimer, Sarah H

ASSISTANT PROFESSOR

Resource Acquisition and Discovery

B.A., Carleton College, 1984

M.L.S., University of Maryland, 1986

Thein, May-Win L

ASSOCIATE PROFESSOR

Mechanical Engineering

B.S., 1991, M.S., Lehigh University, 1992

Ph.D., Oklahoma State University, 1999

Thomas, William K

PROFESSOR

Molecular, Cellular, & Biomedical

B.S., University of Redlands, 1981

M.S., 1984, Ph.D., Simon Fraser University, Canada, 1988

Thompson, Thelma B

ASSOCIATE PROFESSOR EMERITA

B.S., 1970, M.S.T., University of Vermont, 1972

M.A., University of Iowa, 1988

Thomsen, Linda Jean

PRINCIPAL LECTURER

Languages, Literatures, & Cultures

B.A., University of Connecticut, 1975

M.A., University of New Hampshire, 1988

Thorson, Jill C

ASSISTANT PROFESSOR

Communication Sciences & Disorders

B.A., 2005, M.A., University of Rochester, 2007

M.S., 2012, Ph.D., Brown University, 2015

Thurston, Filip JM

SENIOR LECTURER

Thompson School of Applied Science

B.A., York College, 2009

M.Ed., Plymouth State University, 2011

Tillinghast, Edward K

PROFESSOR EMERITUS

B.S., 1955, M.S., University of Rhode Island, 1959

Ph.D., Duke University, 1966

Tisa, Louis S

PROFESSOR

Molecular, Cellular, & Biomedical

B.S., 1976, M.S., University of Windsor, Ontario, Canada, 1979

Ph.D., University of Wisconsin, 1987

Tomar, Nikhil

ASSISTANT PROFESSOR

Occupational Therapy

B.S., Chaudhary Charan Singh University, India, 2010

M.S., University of Wisconsin, 2013

Ph.D., University of North Carolina, 2018

Tomellini, Sterling A

PROFESSOR

Chemistry

B.S., University of Rhode Island, 1979

Ph.D., Rutgers University, 1985

Tommasi, John R

LECTURER

Decisions Sciences

B.A., 1974, M.B.A., 1979, M.A., University of New Hampshire, 1999

Tooch, David E

PROFESSOR EMERITUS

A.A.S., 1976, B.S.F., University of New Hampshire, 1978

M.B.A., Plymouth State University, 1981

Torbert, Roy B

PROFESSOR

Physics

B.A., Princeton University, 1971

Ph.D., University of California - Berkeley, 1979

Tornick, Jan K

SENIOR LECTURER

Psychology

B.S., Ramapo College Nj, 2003

M.S., 2007, M.A., 2009, Ph.D., University of New Hampshire, 2012

Towne, Benjamin M

CLINICAL ASSISTANT PROFESSOR

Kinesiology

B.S., Lyndon State College, 1999

M.A., Western Michigan University, 2001

Triplett, Timm A

ASSOCIATE PROFESSOR

Philosophy

B.A., Antioch College, 1972

M.A., 1980, Ph.D., University of Massachusetts - Amherst, 1982

Trolley-Hanson, Alexa R

CLINICAL ASSISTANT PROFESSOR

Occupational Therapy

B.S., 2003, M.S., University of New Hampshire, 2004

Troy, William F

SENIOR LECTURER

Business Administration

B.A., University of Massachusetts - Amherst, 1976

M.B.A., Cornell University, 1983

Trubowitz, Rachel J

PROFESSOR

English

B.A., Barnard College, 1976

M.A., 1977, M.Phil., 1980, Ph.D., Columbia University in the City of New York, 1985

Trzaskoma, Stephen Michael

PROFESSOR

Classics, Humanities & Ital Studies

A.B., Stanford University, 1991

A.M., 1993, Ph.D., University of Illinois at Urbana-Champaign, 1998

Tsang, Paul C

PROFESSOR

Molecular, Cellular, & Biomedical

B.A., Cornell University, 1978

Ph.D., Boston University, 1986

Tsavalas, John G

ASSOCIATE PROFESSOR

Chemistry

B.S., University of Virginia, 1996

M.S., 1998, Ph.D., Georgia Institute of Technology, 2001

Tsukrov, Igor I

PROFESSOR

Mechanical Engineering

B/M, Dnepropetrovsk National University, Ukraine, 1986

M.S., 1993, Ph.D., Tufts University, 1996

Tu, Hsiang

LECTURER

Music

B.M., Univ of Calgary, 2002

M.M., 2004, D.M.A., Julliard School, 2010

Tucker, Anita R

ASSOCIATE PROFESSOR

Social Work

B.A., Dartmouth College, 1992

M.S.W., University of Michigan, 1997

Ph.D., Boston College, 2006

Tucker, Corinna J

PROFESSOR

Human Development & Family Studies

B.A., Clark University, 1992

M.S., 1995, Ph.D., Pennsylvania State University, 1998

Tucker, James E

ASSOCIATE PROFESSOR

Sociology

B.S., 1981, M.A., 1987, Ph.D., University of Virginia, 1992

Turner, Heather A

PROFESSOR

Sociology

B.A., University of Western Ontario, Canada, 1985

Ph.D., University of California - San Francisco, 1990

Turner, Penelope C

EXTENSION EDUCATOR EMERITA

A.A.S., Westbrook Junior College, 1960

M.Ed., Cambridge College, Ma, 1992

Tuttle, Steven D

ASSOCIATE PROFESSOR EMERITUS

A.A.S., 1977, B.S., 1979, M.Ed., University of New Hampshire, 1984

U**Ulrich, Gael Dennis**

PROFESSOR EMERITUS

B.S., 1959, M.S., University of Utah, 1962

D.Sc., Massachusetts Institute of Technology, 1964

Upham, David Michael

ASSISTANT PROFESSOR

Music

B.A., Luther College, 1992

M.M., University of Northern Colorado, 1995

D.M.A., University of Washington, 2007

Upham, Elsa M

LECTURER

English as a Second Language

B.A., Academy of Montpellier, France, 1992

M.A., Paul Valery University, France, 1996

M.A., University of British Columbia, 1999

Urban, Willard E

PROFESSOR EMERITUS

B.S., Virginia Polytechnic Institute and State University, 1958

M.S., 1960, Ph.D., Iowa State University, 1963

Urquhart, Peter W

ASSOCIATE PROFESSOR

Music

A.B., Princeton University, 1974

M.M., Rider University, 1978

M.A., Smith College, 1982

Ph.D., Harvard University, 1988

V**Vacca, Ryan G**

PROFESSOR

UNHL JD Instruction

B.A., Amherst College, 2001

J.D., University of Missouri - Columbia, 2004

LL.M., New York University, 2008

Vagts, Peggy A

PROFESSOR

Music

B.A., Morningside College, 1976

M.M., University of Wisconsin - Madison, 1978

Valdez, Charli G

SENIOR LECTURER

English

A.B., Cornell University, 1992

A.M., Brown University, 1999

Ph.D., University of Houston, 2004

Valenza, Daniel L

PROFESSOR EMERITUS

A.A.S., 1956, B.F.A., 1958, M.F.A., Rochester Institute of Technology, 1966

Van der Graaff, Ivo

ASSISTANT PROFESSOR
Art and Art History
B.A., 2006, M.A., University of Amsterdam, the Netherlands, 2006
Ph.D., University of Texas at Austin, 2013

Van Zandt, Cynthia J

ASSOCIATE PROFESSOR
History
B.A., University of Virginia, 1984
M.A., 1991, Ph.D., University of Connecticut, 1998

VanCamp, Amy B

CLINICAL ASSISTANT PROFESSOR
Occupational Therapy
B.S., University of New Hampshire, 2001
Ph.D., Quinnipiac University, 2016

Vandemark, Douglas C

RESEARCH PROFESSOR
Ocean Process Analysis Lab
B.S., Hope College, 1986
M.S., University of Massachusetts - Amherst, 1988
Ph.D., University of New Hampshire, 2005

VanderEls, Stephanie M

SENIOR LECTURER
Thompson School of Applied Science
B.A., 1996, M.Ed., University of New Hampshire, 2002

Vangundy, Karen T

PROFESSOR
Sociology
B.S., Virginia Polytechnic Institute and State University, 1994
M.A., University of Cincinnati, 1998
Ph.D., University of Miami, 2001

Vannette, Charles M

ASSISTANT PROFESSOR
Languages, Literatures, & Cultures
B.A., University of Arizona, 2001
M.A., 2005, Ph.D., Ohio State University, 2011

Vanosdol, Donovan H

PROFESSOR EMERITUS
A.B., Earlham College, 1964
M.A., University of Illinois at Urbana-Champaign, 1966
Ph.D., University of Illinois at Chicago, 1969

Varga, Krisztina

ASSISTANT PROFESSOR
Molecular, Cellular, & Biomedical
B.S., 1996, M.S., St. John's University - New York, 1998
Ph.D., Columbia University in the City of New York, 2015

Varki, Elizabeth

ASSOCIATE PROFESSOR
Computer Science
B.S., 1985, M.A., University of Delhi, India, 1988
M.S., Villanova University, 1992
Ph.D., Vanderbilt University, 1997

Varn, James S

ASST PROVOST EMERITUS
B.A., University of New Hampshire, 1976
M.P.A., Harvard University, 1984
C.A.G.S., University of New Hampshire, 2001

Varner, Ruth K

PROFESSOR
Earth Sciences - Joint Positions
B.A., Hartwick College, 1991
M.S., 1993, Ph.D., University of New Hampshire, 2000

Vashisth, Harish

ASSISTANT PROFESSOR
Chemical Engineering
B.Tech., National Instit of Tech India, 2005
Ph.D., Drexel University, 2010

Vasquez, Bernard J

RESEARCH PROFESSOR
Space Science Center
B.S., Rensselaer Polytechnic Institute, 1987
Ph.D., University of Maryland, 1992

Vasudevan, Palligarnai T

SENIOR VICE PROVOST
Provost Office
B.S.E.T., University of Madras, India, 1974
M.S., State University of New York at Buffalo, 1984
Ph.D., Clarkson University, 1988

Veal, Larry J

ASSOCIATE PROFESSOR EMERITUS
B.S., 1974, M.M., University of Illinois at Urbana-Champaign, 1976

Vellucci Leaver, Sherry L

PROFESSOR EMERITA
B.A., Rutgers University, 1972
M.S., Drexel University, 1983
D.L.S., 1995, Ph.D., Columbia University in the City of New York, 1995

Vincenzi, Marco

LECTURER
Economics
M.S., Bocconi University, Italy, 2006
M.S., 2010, Ph.D., Carnegie Mellon University, 2012

Violette, Catherine A

FULL EXTENSION STATE SPECIALIST/PROFESSOR EMERITA
B.S., 1974, B.S., 1975, M.S., University of Maine, 1977
Ph.D., Pennsylvania State University, 2002

Vogel, Karla E

ASSISTANT PROFESSOR EMERITA

Vorenberg, Amy

CLINICAL PROFESSOR
UNHL Legal Skills
B.A., Hamilton College, 1979
J.D., Northeastern University, 1984

Vroman, Kerryellen G

ASSOCIATE VICE PROVOST FOR INTERNATIONAL PROGRAMS
Education Abroad
B.A., Massey University, New Zealand, 1990
M.S., McMaster University, Canada, 1992
Ph.D., Massey University, New Zealand, 2006

W**Wager, Susan M**

ASSISTANT PROFESSOR
Art and Art History
B.A., 2004, M.A., 2009, M.Phil., 2011, Ph.D., Columbia University in the City of New York, 2015

Wainwright, Anna F

ASSISTANT PROFESSOR
Classics, Humanities & Ital Studies
B.A., University of Chicago, 2005
M.A., 2014, Ph.D., New York University, 2017

Wake, Cameron P

RESEARCH PROFESSOR
Earth Systems Research Center
B.S., University of Ottawa, Canada, 1984
M.A., 1987, M.A., Wilfrid Laurier University, Canada, 1993
Ph.D., University of New Hampshire, 1993

Walker, Charles W

PROFESSOR EMERITUS
B.A., Miami University, 1969
M.S., 1973, Ph.D., Cornell University, 1976

Walker, Sarah R

ASSISTANT PROFESSOR
Molecular, Cellular, & Biomedical
B.S., Rensselaer Polytechnic Institute, 2001
Ph.D., Harvard University, 2006

Walsh, Susan A

ASSOCIATE PROFESSOR
English
B.A., Kenyon College, 1979
M.A., 1980, Ph.D., Duke University, 1988

Wang, Jing

ASSOCIATE PROFESSOR
Decisions Sciences
B.A., Nankai University, China, 1994
M.A., Bowling Green State University, 2001
M.B.A., 2003, Ph.D., Kent State University, 2007

Wang, Rosemary Y

ASSOCIATE PROFESSOR EMERITUS
Diploma, Good Samaritan Hospital, 1957
B.S., Coll of Mount St, 1959
M.S., 1962, Ed.D., Boston College, 1982

Wansart, William L

ASSOCIATE PROFESSOR EMERITUS
B.S., State University of New York at Buffalo, 1972
M.A., 1975, Ed.D., Colorado State University, 1984

Ward, Judith D

ASSOCIATE PROFESSOR EMERITA
M.O.E., 1976, B.S., University of New Hampshire, 1978
Ph.D., University of Minnesota, 1997

Ward, Larry G

RESEARCH ASSOCIATE PROFESSOR
Center for Coastal & Ocean Mapping
B.A., University of New Hampshire, 1972
M.S., 1974, Ph.D., University of South Carolina, 1978

Ward, Sally K

PROFESSOR EMERITA
B.A., University of Maryland, 1970
M.A., 1974, Ph.D., Brown University, 1977

Ware, Colin

PROFESSOR
PEAEMPL-Casual Salary
B.S., University of Durham, United Kingdom, 1972
M.A., Dalhousie University, Canada, 1973
Ph.D., University of Toronto, Canada, 1980

Warner, Rebecca M

PROFESSOR EMERITA
B.A., Carnegie Mellon University, 1973
Ph.D., Harvard University, 1978

Watson, Deborah E

ASSOCIATE PROFESSOR EMERITA
B.A., 1963, M.A., University of New Hampshire, 1967
M.S., Simmons College, 1972

Watson, Winsor H

PROFESSOR
Biological Sciences
B.A., Wesleyan University, 1972
Ph.D., University of Massachusetts - Amherst, 1978

Watters, David H

PROFESSOR EMERITUS
A.B., Dartmouth College, 1972
Ph.D., Brown University, 1978

Watts, Alison W

RESEARCH ASSISTANT PROFESSOR
Civil and Environmental Engineering
B.A., Mount Holyoke College, 1984
M.S., University of Arizona, 1992
Ph.D., University of New Hampshire, 2006

Weathersby, Rita

ASSOCIATE PROFESSOR EMERITA
B.A., University of California - Berkeley, 1965
M.A.T., 1968, Certificate, 1974, Ed.D., Harvard University, 1977

Webb, W Dwight

ASSOCIATE PROFESSOR EMERITUS
B.A., 1955, M.A., University of Redlands, 1956
Ph.D., Stanford University, 1967

Weber, Thomas C

ASSOCIATE PROFESSOR
Mechanical Engineering
B.S., 1997, M.S., University of Rhode Island, 2000
Ph.D., Pennsylvania State University, 2006

Webster, Penelope E

ASSOCIATE PROFESSOR EMERITA
B.S., Northeastern University, 1976
M.A., State University of New York at Geneseo, 1977
Ed.D., Boston University, 1984

Weiland, Walter E

ASSOCIATE PROFESSOR EMERITUS
B.S., State University of New York at Cortland, 1957
M.S., 1959, Ph.D., Pennsylvania State University, 1964

Weiner, James L

ASSOCIATE PROFESSOR
Computer Science
B.S., University of Massachusetts - Amherst, 1973
M.S., University of Wisconsin, 1975
Ph.D., University of California - Los Angeles, 1979

Weintraub, Scott E

ASSOCIATE PROFESSOR
Languages, Literatures, & Cultures
A.B., Dartmouth College, 2001
Ph.D., Emory University, 2006

Weisman, Gary R

PROFESSOR EMERITUS
B.S., University of Kentucky, 1971
Ph.D., University of Wisconsin, 1976

Wells, Melissa

PROFESSOR
Social Work
B.A., University of New Hampshire, 1991
M.S.W., University of Minnesota, 1995
Ph.D., University of New Hampshire, 2003

Wells, Otho S

PROFESSOR EMERITUS
B.S., Nc State University, 1961
M.S., Michigan State University, 1963
Ph.D., Rutgers University, 1966

Wells, Roger E

CLINICAL PROFESSOR EMERITUS
D.V.M., Ohio State University, 1972
M.S., Michigan State University, 1980

West, Natalie K

LECTURER
Kinesiology
B.A., Simmons College, 2009
M.S., Northwestern University, 2011

Wetzel, William E

PROFESSOR EMERITUS
B.A., Wesleyan University, 1950
M.B.A., Temple University, 1965
M.B.A., University of Chicago, 1967

Wharton-McDonald, Ruth M

ASSOCIATE PROFESSOR
Education
A.B., Brown University, 1985
Ed.M., Harvard University, 1989
Ph.D., University at Albany, 1996

Wheeler, Douglas L

PROFESSOR EMERITUS
A.B., Dartmouth College, 1959
M.A., 1960, Ph.D., Boston University, 1963

Whistler, Cheryl A

PROFESSOR
Molecular, Cellular, & Biomedical
B.A., University of California - San Diego, 1991
Ph.D., Oregon State University, 2000

White, Barbara Prudhomme

ASSOCIATE PROFESSOR
Occupational Therapy
B.S., 1978, Ph.D., University of Minnesota, 1999

White, Christopher M

ASSOCIATE PROFESSOR
Mechanical Engineering
B.S., 1994, M.S., State University of New York, 1996
Ph.D., Yale University, 2001

White, Melinda M

LECTURER
English
B.S., 2005, M.S., Utah State University, 2007
Ph.D., Virginia Commonwealth University, 2012

White, Susan O

PROFESSOR EMERITA
A.B., Bryn Mawr College, 1958
M.A., 1966, Ph.D., University of Minnesota, 1970

Whitehead, Tamsin A

LECTURER
Women's Studies Program
B.A., University of London, United Kingdom, 1978
M.F.A., Vermont College of Fine Arts, 2005

Whitehouse, Nancy L

RESEARCH ASSISTANT PROFESSOR
Agriculture, Nutrition, & Food System
B.S., 1984, M.S., 1991, Ph.D., University of New Hampshire, 2016

Whittier, Duane H

PROFESSOR EMERITUS
B.A., University of New Hampshire, 1950
M.A., 1952, Ph.D., University of Illinois at Urbana-Champaign, 1961

Wible, James R

PROFESSOR
Economics
A.B., Wheaton College, 1973
Ph.D., Pennsylvania State University, 1980

Wilburn, Reginald A

ASSOCIATE DEAN
Dean's Office - Liberal Arts
B.A., University of the District of Columbia, 1999
M.A., 2001, Ph.D., University of Connecticut, 2009

Wilcox, John M

CLINICAL ASSISTANT PROFESSOR
Occupational Therapy
B.S., Syracuse University, 1999
M.S., San Jose State University, 2007
D, Rocky MT Univ of Health Prof, 2010

Wilder, Allison

ASSOCIATE PROFESSOR
Recreation Management & Policy
B.S., Ithaca College, 1984
M.S., State University of New York at Cortland, 1992
Ph.D., Virginia Commonwealth University, 2008

Wiley, Mark R

ASSOCIATE STATE SPECIALIST/PROFESSOR
Youth and Family
B.A., Dartmouth College, 1975
M.S., University of New Hampshire, 1980

Wiley, Mary K

LECTURER
Thompson School of Applied Science
B.S., Mount Ida Jr Coll, 2005

Williams, Ann J

ASSOCIATE PROFESSOR
English
B.A., 1980, M.A., University of New Hampshire, 1990
M.F.A., University of Iowa, 1997

Williams, Charles H

EXTENSION SPECIALIST EMERITUS
B.S., Pennsylvania State University, 1956
M.S., Michigan State University, 1967

Williams, Daniel

ASSOCIATE PROFESSOR EMERITUS
B.A., Northwestern University, 1966
Ph.D., University of California - Santa Barbara, 1970
B.A., University of California, 1970

Williams, Donald M

SENIOR LECTURER
Art and Art History
B.F.A., University of New Hampshire, 1977

Williams, Leah D

SENIOR LECTURER
English
B.A., Indiana University - Bloomington, 1997
M.F.A., University of Iowa, 2004

Williams-Barnard, Carol

ASSOCIATE PROFESSOR EMERITA
A.S., Vermont College of Fine Arts, 1970
B.S.N., 1972, M.S.N., 1975, D.N.Sc., Catholic University of America, 1979

Willkomm, Therese

CLINICAL ASSOCIATE PROFESSOR
Occupational Therapy
B.S., University of Wisconsin, 1982
M.S., Drake University, 1984
Ph.D., University of Pittsburgh, 1997

Wilson, Fiona S

CLINICAL ASSOCIATE PROFESSOR
Management
M.B.A., Simmons College, 1997
D.B.A., Boston University, 2009

Wilson, John A

ASSOCIATE PROFESSOR EMERITUS
B.S., Tufts University, 1958
M.S., 1960, Ph.D., Northeastern University, 1970

Winans, Daniel R

LECTURER
Hospitality Management
B.S., University of New Hampshire, 1993
A.O.S., Culinary Institute of America, 1999
M.A., University of Gastronomic Science, Italy, 2007

Winans, Katharine A

SENIOR LECTURER
Chemistry
B.A., Williams College, 1989
M.A., University of Houston, 1995
Ph.D., University of California - Berkeley, 2001

Windgaetter, Nina S

LECTURER
Philosophy
B.A., 2009, M.A., University of Pennsylvania, 2009
Ph.D., 2017, M.A., University of Michigan, 2019

Wing, Barbara H

ASSOCIATE PROFESSOR EMERITUS
B.A., Middlebury College, 1955
M.A.T., Harvard University, 1956
M.A., Middlebury College, 1971
Ph.D., Ohio State University, 1980

Wing, Henry J

ASSOCIATE PROFESSOR EMERITUS
B.M., 1952, M.M., Oberlin College, 1953
Ph.D., Boston University, 1966

Winslow, Deborah

ASSOCIATE PROFESSOR EMERITA
B.A., Brandeis University, 1968
M.A., 1970, Ph.D., Stanford University, 1982

Wirth, Clifford Joseph

ASSOCIATE PROFESSOR EMERITUS
B.A., Muhlenberg College, 1969
M.P.A., San Diego State Univ, 1971
Ph.D., Southern Illinois University - Carbondale, 1975

Withers, Sara A

SENIOR LECTURER

Anthropology

B.A., Bowdoin College, 1999

B.A., 2002, Ph.D., Brandeis University, 2009

Witt, Charlotte E

PROFESSOR

Philosophy

B.A., Swarthmore College, 1975

M.A., 1978, Ph.D., Georgetown University, 1980

Witzling, Mara R

PROFESSOR EMERITA

B.A., Queens College of the City University of New York, 1967

M.A., 1970, Ph.D., Cornell University, 1978

Wojchowski, Don M

PROFESSOR

Molecular, Cellular, & Biomedical

B.A., Colby College, 1978

Ph.D., University of Massachusetts - Amherst, 1984

Wollheim, Wilfred M

ASSOCIATE PROFESSOR

Natural Resources & The Environment

B.S., Cornell University, 1989

M.S., University of Wyoming, 1994

Ph.D., University of New Hampshire, 2005

Wolper, Ethel S

ASSOCIATE PROFESSOR

History

B.A., 1982, M.A., University of Chicago, 1984

Ph.D., University of California - Los Angeles, 1994

Wong, Edward H

PROFESSOR EMERITUS

B.S., University of California - Berkeley, 1968

Ph.D., Harvard University, 1975

Wood, Craig H

ASSOCIATE PROFESSOR EMERITUS

A.B., Stanford University, 1972

M.B.A., University of Chicago, 1974

Ph.D., Ohio State University, 1991

Wood, Deanna D

ASSOCIATE PROFESSOR EMERITUS

B.A., Reed College, 1969

M.A., University of Denver, 1972

M.P.A., University of New Hampshire, 1995

Wood, Dorothy

ASSOCIATE EXTENSION EDUCATOR EMERITA

B.S., Boston University, 1949

Wood, Stephen A

ASSISTANT EXTENSION EDUCATOR EMERITUS

B.S., University of Maine, 1973

Woodman, Betty

LECTURER

Management

B.S., University of Massachusetts - Amherst, 1982

M.A., Georgia State University, 2003

Ph.D., Emory University, 2012

Woods, Leah K

ASSOCIATE PROFESSOR

Art and Art History

B.A., Depaul University, 1994

M.F.A., Rochester Institute of Technology, 2000

Woodward, Robert S

FD MCKERLEY PROFESSOR EMERITUS

B.S., Haverford College, 1965

Ph.D., Washington University - St Louis, 1972

Woodward, William R

PROFESSOR

Psychology

B.A., Harvard University, 1967

M.A., Princeton University, 1969

M.A., 1973, Ph.D., Yale University, 1975

Wormwood, Jolie B

ASSISTANT PROFESSOR

Psychology

B.A., Ithaca College, 2007

Ph.D., Northeastern University, 2012

Wosnik, Martin M

ASSOCIATE PROFESSOR

Mechanical Engineering

B.S., Technical University of Darmstadt, Germany, 1992

M.S., 1994, Ph.D., State University of New York at Buffalo, 2000

Woytonik, Kristen A

LECTURER

History

B., Smith College, 2008

Wraith, Jon M

DEAN

Dean's Office - LS & A

A.A., Butte Community College, 1981

B.S., Humboldt State Univ, 1984

M.S., 1986, Ph.D., Utah State University, 1989

Wright, John J

PROFESSOR EMERITUS

B.S., Worcester Polytechnic Institute, 1965

Ph.D., University of New Hampshire, 1969

Wright, Peter S

PROFESSOR

UNHL Clinic

B.A., Pennsylvania State University, 1976

J.D., Franklin Pierce Law Center, 1980

Wright, Steven C

PROFESSOR
Kinesiology
B.S., St. Lawrence University, 1979
M.Ed., 1980, Ed.D., Boston University, 1992

Wrightsmann, Dwayne

PROFESSOR EMERITUS
B.S., Manchester College, 1958
M.B.A., Indiana University - Bloomington, 1959
Ph.D., Michigan State University, 1964

Wu, Kang

ASSISTANT PROFESSOR
Chemical Engineering
B.S., Tianjin University, China, 2003
M.S., 2008, Ph.D., University of Illinois at Urbana-Champaign, 2010

Wymore, Adam S

RESEARCH ASSISTANT PROFESSOR
Natural Resources & The Environment

X**Xiao, Jingfeng**

RESEARCH ASSOCIATE PROFESSOR
Earth Systems Research Center
B.S., Lanzhou University, China, 1997
M.S., Beijing University, China, 2000
Ph.D., University of North Carolina at Chapel Hill, 2006

Xie, Wenjuan

ASSOCIATE PROFESSOR
Accounting and Finance
B.B.A., 2000, M.A., Peking University, China, 2002
Ph.D., University of Wisconsin - Madison, 2008

Xu, Dongpeng

ASSISTANT PROFESSOR
Computer Science
B.E., Jilin University in P R China, 2009
Ph.D., Pennsylvania State University, 2018
MENGR, University of Science and Technology,

Xu, Le

ASSOCIATE PROFESSOR
Accounting and Finance
B.S., Beijing University, China, 1999
Ph.D., University of Massachusetts - Amherst, 2003

Y**Yalcinkaya, Goksel**

ASSOCIATE PROFESSOR
Marketing
B.S., Ege University, 1993
M.B.A., Suffolk University, 1998
M.S., Northeastern University, 2003
Ph.D., Michigan State University, 2007

Yamamoto, Yutaka

ASSOCIATE PROFESSOR EMERITUS
B.S., University of California - Berkeley, 1957
M.A., 1967, Ph.D., University of Michigan, 1973

Yarensky, Peter

PRINCIPAL LECTURER EMERITUS
B.A., Univ of Hartford, 1972
M.A., 1974, Ph.D., University of New Hampshire, 1983

Yi, Nan

ASSISTANT PROFESSOR
Chemical Engineering
B.S., Qingdao University of Science and Technology, 2000
M.S., Fudan University, China, 2005
Ph.D., Tufts University, 2012

Yoon, Hyewon

LECTURER
Art and Art History
B.A., Seoul National University, Korea, 2005
M.A., 2009, Ph.D., Harvard University, 2016

Yoon, Se Young

ASSISTANT PROFESSOR
Electrical & Computer Eng Dept
B.S., 2005, M.S., Washington University - St Louis, 2005
Ph.D., University of Virginia, 2011

Yost, Israel J

PRINCIPAL LECTURER EMERITUS
B.A., Upsala College, 1968
M.S., University of New Hampshire, 1991

Yount, Janet A

PROFESSOR EMERITA
B.A., Grinnell College, 1972
M.A., 1973, Ph.D., University of Chicago, 1980

Yount, John A

PROFESSOR EMERITUS
B.A., Vanderbilt University, 1960
M.F.A., University of Iowa, 1962

Yu, Lih-Hwa

LECTURER
Theatre & Dance
M.F.A., University of Texas, 2010
B.F.A., Tapei National University of the Arts, Taiwan, 2010

Yu, Qiaoyan

ASSOCIATE PROFESSOR
Electrical & Computer Eng Dept
B.S., Xidian University, China, 2002
M.S., Zhejiang University, China, 2005
M.S., 2007, Ph.D., University of Rochester, 2011

Z**Zabarsky, Melvin J**

PROFESSOR EMERITUS
B.F.A., Boston University, 1958
M.F.A., University of Cincinnati, 1960

Zago, Susan D

ASSISTANT PROFESSOR
UNHL Library
B.A., Westfield State College, 1991
M.L.I.S., Simmons College, 1995
J.D., Western New England Univ, 2001

Zahabi, Liese L

ASSISTANT PROFESSOR
Art and Art History
B.F.A., Eastern Michigan Univ, 2000
MGD, North Carolina State University, 2010

Zaimes, Peter J

LECTURER
Decisions Sciences
M.B.A., Boston University, 2002

Zambon, Kate

ASSISTANT PROFESSOR
Communication
B.A., Vassar College, 2007
M.A., 2012, Ph.D., University of Pennsylvania, 2017

Zang, Jiadong

ASSISTANT PROFESSOR
Physics
B.S., 2007, Ph.D., Fudan University, China, 2012

Zang, Richard A

EMERITUS
B.Tech., 1978, M.A., State University of New York at Binghamton, 1980
Ed.D., Rutgers University, 1994

Zaso, Gus C

ASSOCIATE PROFESSOR EMERITUS
A.B., Syracuse University, 1957
M.A., Central Michigan Univ, 1962
Q, Indiana University - Bloomington, 1965

Zercher, Charles Kent

INTERIM DEAN
Dean's Office - CEPS
B.A., Messiah College, 1981
M.S., State University of New York at Buffalo, 1984
Ph.D., University of Notre Dame, 1989

ZeZula, Jerilee A

ASSOCIATE PROFESSOR EMERITA
B.S., 1970, D.V.M., Michigan State University, 1971

Zhang, Lin

ASSISTANT PROFESSOR
Communication
B.A., Beijing Foreign Studies Univer, 2007
M.Phil., The Chinese University of Hong, 2011

Zielinski, Mark D

SENIOR LECTURER
Music
M.M., 1998, B.M.Ed., Indiana University, 1999

Ziervogel, Kai

RESEARCH ASSISTANT PROFESSOR
Ocean Process Analysis Lab
Ph.D., 2004, M.S., University of Rostock, Germany, 2005

Ziffla, Ermira

ASSISTANT PROFESSOR
Decisions Sciences
B.B.A., Istanbul University, Turkey, 2008
M.S., Sanbanci Univeristy, Turkey, 2009
Ph.D., Temple University, 2018

Zimmerman, Dawn R

CLINICAL ASSISTANT PROFESSOR
Communication Sciences & Disorders
B.A., Baldwin-Wallace College, 1994
M.S.P., University of South Carolina, 1998

Zimo, Ann E

ASSISTANT PROFESSOR
Classics, Humanities & Ital Studies
B.A., University of Chicago, 2005
M.A., Cardiff University, Wales, 2007
Ph.D., University of Minnesota, 2016

Zunz, Sharyn J

ASSOCIATE PROFESSOR EMERITA
B.A., University of Wisconsin, 1970
M.S.W., New York University, 1972
Ph.D., Fordham University, 1993

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