

# Undergraduate Catalog

2007–2008 BULLETIN









*A PLACE TO DISCOVER*

*Combining the atmosphere of a small New England liberal arts college with the resources and opportunities of a major research university, the University of New Hampshire is a place where all students can find or create their own niche and succeed.*

*From classroom to coastline, the driving force at UNH is the spirit of discovery. Discovery describes the core educational experience we provide for students, in which new knowledge, ways of thinking, problem-solving skills, and skills of citizenship are acquired and practiced.*



UNIVERSITY of NEW HAMPSHIRE

---

**Undergraduate Catalog**

2007–2008 BULLETIN









## CONTENTS

<b>Introduction</b>	2	<b>Thompson School of Applied Science</b>	121
<b>Admission</b>	3	<b>University of New Hampshire at Manchester</b>	131
<b>Financial Aid</b>	5	<b>Graduate School</b>	141
<b>Campus Life</b>	6	<b>Continuing Education and Summer Session</b>	143
<i>Housing</i>	6	<b>Description of Courses</b>	145
<i>Dining</i>	6	<i>Durham</i>	145
<i>Memorial Union Building</i>	7	<i>Thompson School of Applied Science</i>	250
<b>Programs and Services for Students</b>	8	<i>UNH Manchester</i>	259
<b>Health Services</b>	13	<b>Trustees and Administrative Officers</b>	270
<b>Fees and Expenses</b>	14	<b>Faculty</b>	271
<b>University Academic Requirements</b>	16	<b>Enrollment Statistics</b>	299
<b>Degrees and Major Programs of Study</b>	21	<b>Calendar</b>	300
<b>Program Abbreviations</b>	23	<b>Campus Map</b>	301
<b>College of Liberal Arts</b>	24	<b>Directions to Campus</b>	302
<b>College of Engineering and Physical Sciences</b>	53	<b>Frequently Called Numbers</b>	302
<b>School of Health and Human Services</b>	72	<b>Index</b>	303
<b>College of Life Sciences and Agriculture</b>	83	<b>Appendix</b>	306
<b>Whittemore School of Business and Economics</b>	102		
<b>Special University Programs</b>	109		
<i>University-Wide</i>	109		
<i>Interdisciplinary</i>	110		
<i>Preprofessional</i>	114		
<i>Off-Campus</i>	115		
<i>Study Abroad</i>	116		
<i>Other</i>	119		



# GENERAL INFORMATION

## Introduction

What makes the University of New Hampshire (UNH) a great institution? Every day, brilliant, dedicated, inventive, hard-working people come together to teach, learn, and discover, always with an entrepreneurial spirit that has made many of our academic and research programs world-class. They are motivated by passion, by a spirit of inquiry, and by a desire to give back to their communities.

What makes UNH outstanding is that we combine the “best of both worlds.” We offer students the living and learning environment of a small New England liberal arts college with the breadth, spirit of discovery, and civic commitment of a land-, sea-, and space-grant research university. This is rare among American institutions of higher education, and students and faculty will tell you it is our greatest asset.

## The University Today

Today the University of New Hampshire is made up of dozens of academic departments, interdisciplinary institutes, and research centers that attract students and faculty from around the world. As state-of-the-art facilities are built to support academic growth, and new residence and dining halls are built to meet the growing popularity of campus life, the University continues to rest lightly on the Durham landscape. Some 13,000 students and hundreds of faculty and staff live and work amid the rolling hills and riverbeds of one of the most beautiful campuses in the nation.

The University of New Hampshire is strong and highly responsive to the needs of its public mandate—one that increasingly results in productive partnerships not only with the state, but the region and nation. The University of today has met its greatest expectations and stands on the threshold of unlimited possibilities.

Look around the University today: what you see is not one, but a great many communities brought together in the process—at once profoundly personal and inextricably social—of discovery and engagement concerning issues of the greatest public importance.

You see a campus in which world-class research centers and laboratories, graduate seminars, undergraduate honors classes, service-learning projects, and student internships have mobilized the University’s capacities for teaching, research, and partnership building.

You see faculty and students from health and human services and liberal arts working as part of the Carsey Institute to undertake applied and policy research on improving the quality of family life. You see the University’s working scientists, mathematicians, engineers, and educators engaging in the Joan and James Leitzel Center to improve mathematics, science, and engineering education from kindergarten through college. You see researchers come together from across the University to undertake a ground-breaking study of the complexities of improving the region’s air quality in the era of modern industry.

## A Powerful Linking of Teaching and Research

Where the University of New Hampshire has linked teaching and research programs with the practical realities of life, it has set the international standard with centers and institutes whose names have become synonymous with excellence in such fields as computer interoperability, ocean mapping, child study and development, and experiential education.

Such research power translates into exceptional educational opportunities for our talented students. The University prides itself on graduating students who have undertaken significant research. In recent years hundreds of students, from all disciplines,

have experienced the thrill of designing their own research projects, collaborating with faculty, and presenting their findings in a public forum. Robust undergraduate research programs enable students to conduct research year-round, as freshmen and seniors, on campus and around the world.

The University’s international research opportunities program was the first of its kind and serves as a model for others nationwide. Today the internationalization of the University is an accomplished fact. The study abroad program and international studies major are strong and growing. Faculty are in demand as visiting professors at universities around the globe (many as Fulbright Fellows), and bring their experiences back to Durham.

## Mission

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

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

*Teaching.* All undergraduate programs of instruction at the University are built on a program of general education. The objec-





tives of general education 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 special 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, through the Office of Continuing Education and Summer Session, and through research and consultation on particular needs of New Hampshire citizens. The University is dedicated to collaborative learning inside and outside the classroom.

### The UNH Library

The UNH Library consists of the main Dimond Library, four specialized branch libraries, an extensive government documents collection, and the Douglas and Helena Milne Special Collections and Archives. In addition to more than a million volumes and 6,000 periodical subscriptions, the library has government publications, maps, sound recordings, compact discs, video cassettes, DVDs, and manuscripts. The library offers extensive electronic resources including indexes in a wide variety of subject areas, databases supplying full-text periodical and newspaper articles, and statistical data sets. Experienced librarians and staff provide expert service to people seeking information or research assistance.

The library is a member of the elite Boston Library Consortium, whose members include some of the most well-known research institutions in the nation. Through the consortium, UNH faculty, faculty emeriti, students, and staff at both the Durham and Manchester campuses have full access to a combined collection of more than 31 million volumes via interlibrary loan and on-site visits to member libraries.

The Dimond Library offers three grand reading rooms, seating for 1,200, 21 miles of shelving for books, and the Dimond Academic Commons (DAC). The DAC (Main Floor) features "one-stop" shopping for information needs, including reference assistance, IT help, high-tech equipment, and collaborative work space. Wireless access, computer workstations, and laptop hookups are available throughout the building.

The four branch libraries specialize in science, mathematics, and engineering. The Biological Sciences Library is located in Kendall Hall, the Chemistry Library is in Parsons Hall, the Engineering/Mathematics/Computer Science Library is in Kingsbury Hall, and the Physics Library is in Nesmith Hall. All branches have reserve materials, reference collections, circulating collections, periodicals, and electronic resources. All branch materials are indicated in the UNH Library catalog.

For more information on Dimond and the branch libraries, visit [www.library.unh.edu](http://www.library.unh.edu).

### The Campus

The home of the main campus of the University is Durham—one of the oldest towns in northern New England—near the picturesque seacoast of New Hampshire. The 200-acre campus is surrounded by more than 2,400 acres of fields, farms, and woodlands owned by the University. A stream flowing through a large wooded area in the middle of campus enhances natural open space among the buildings. College Woods, on the edge of campus, includes five miles of well-kept paths through 260 acres of forest.

During the last decade, major building and renovation projects have revitalized the UNH campus while maintaining its traditions. In 2002, the University celebrated the completion of Mills Hall, its newest and very beautiful residence hall; 2003 saw completion of the new Holloway Dining Commons. Renovations of Murkland and Congreve Halls have also been completed. The soon-to-be-completed Kingsbury Hall renovation and expansion project will give science students new project space, a modern lab wing, and high-tech classrooms.

In 2004, UNH was named one of the Top 25 Most Entrepreneurial Colleges by The Princeton Review and Forbes.com, ranking 10th in the nation.

According to The Princeton Review, while there are more than 2,000 colleges in the United States, few concentrate on raising the next generation of successful entrepreneurs. Schools named to the Top 25 show a commitment to creating programs to encourage young entrepreneurs on campus, as well as looking at how their alumni have fared in the real world.

UNH's ranking was based on the efforts of the Whittemore School of Business and Economics. UNH was the only public university in the Northeast to make the top 10.

### Accreditation

The University of New Hampshire is accredited by 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 evaluated and found to meet standards agreed upon by qualified educators. Specialized programs of study are also accredited by various professional organizations.

All degree programs at the University are approved for veterans' educational benefits. Individuals are encouraged to contact the veterans coordinator in Stoke Hall about specific questions.

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 its applicants for admission.

---

### Admission

UNH welcomes campus visitors. Prospective students are encouraged to contact the Office of Admissions in order to arrange a campus tour and/or group information session. 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. Please call the Office of Admissions at (603) 862-1360 for further information or to schedule a visit, or visit the Web at [www.unh.edu/admissions](http://www.unh.edu/admissions).

### 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 candidates' secondary school course selections and achievement, recommendations, and the results of the SAT and/or ACT exam. Consideration is also given to character, initiative, leadership, and special talents.

Most successful candidates present at least four years of English and mathematics, three or more years of laboratory science, three or more 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 or 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 should have also 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.

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 school and college divisions in Durham and at UNH Manchester.

(For information concerning bachelor and associate degree programs offered through UNH Manchester, see page 131; for information concerning the Thompson School of Applied Science, see page 121.)

Many University students request a change in major during their undergraduate years, and most are approved. These changes are possible after a student has been at the University for at least a semester and has permission from the appropriate college dean and department chairperson. In recent years, however, the University has not always been able to honor all requests for a change of major, most notably into nursing or occupational therapy.

### Admission Test Requirements

All candidates for admission to bachelor's degree programs are required to submit the results of the SAT or ACT exam, both with essays. Applicants graduating from high school in 2006 or later must submit SAT or ACT results with the new essay portion. 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).

### Music Candidates

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

### Admission Deadlines

The Admissions Office welcomes high school students who seek fall semester freshman admission to apply any time after the start of the senior year and before the February 1 priority deadline. Admission notifications are provided on a continuous basis through April 15th. Admitted freshmen have until May 1 to confirm their intent to enroll at the University.

The review of freshman candidates begins as soon as a complete application (including official grade reports through the first marking period of senior year and a confirmed senior-year course schedule, the results of the SAT or ACT, and a letter of recommendation) is on hand. To apply ensuring early action (an "early reading" by mid-January of the senior year), candidates must submit admission applications by November 15. In some cases, the Admission Committee will request senior mid-year grade reports in order to make a final admission decision.

All positive admission decisions made prior to the completion of a candidate's coursework in progress are considered "provisional" and are subject to the verification of satisfactory senior year achievement when final high school transcripts are reviewed by the Admission Committee.

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

### 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. 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 course-work 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).

The University accepts AP Tests in every subject area, with credit and course equivalency based on the score achieved. Contact the Office of Admissions for further information (603) 862-1360 or visit [www.unh.edu/admissions/ap](http://www.unh.edu/admissions/ap).

The University awards 8 semester credits for each IB Higher Level Examination Test Results of 5, 6, or 7. Students should have official results sent directly to the Admission Office. 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 for all credit by exam and advanced placement testing is 64 semester hours.

### Associate Degree Candidacy

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

Students may be considered for admission to associate in applied science degree programs offered by the University's Thompson School of Applied Science. Candidates applying as high school seniors must submit the results of the SAT or ACT, both with essay. Students granted freshman admission to the Thompson School are eligible to live in a University residence hall.

### Eligibility for Degree Candidacy

Applicants who meet the appropriate requirements for admission may become candidates for any undergraduate degree offered by the University. However, applicants having a bachelor of arts 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 Business Management).

### 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 Affairs 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. Applications from suspended students should include a statement about the applicant's readiness to resume University work.

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 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 to qualify for general education consideration. Transfer credit evaluations are provided with the offer of admission.

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.

Some programs may have enrollment limitations. Transfer students may contact

the Department of Housing (603) 862-2120 to determine the availability of on-campus housing or (603) 862-0303 for assistance locating off-campus housing.

Priority deadlines for transfer applicants are October 15 for the spring semester and March 1 for the fall semester.

No portion of a student's grade-point average will transfer; that is, external averages will not be calculated with UNH grades.

### New England Regional Student Program

The University participates in the New England Regional Student Program, in which each public 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, or call (617) 357-9620, [www.nebhe.org](http://www.nebhe.org).

### 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. Special (non-degree) students register for coursework through the Registrar's Office. In evaluating requests for full-time status, the Office of Admissions generally applies the same criteria used in the review of applicants for admission to degree candidacy. Special students have full access to academic support services. Students must maintain satisfactory achievement to continue with University coursework.

### 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 applicants living in New Hampshire are required to submit a notarized statement to the effect that they, if financially indepen-

dent, 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 non-resident 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.

---

## 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 brochure 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 may obtain the FAFSA from local high schools or from the UNH Financial Aid Office.

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 Stafford



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, Perkins Loan, 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.

Note: There is reference on the FAFSA to a "deadline" of May 1. 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. Students must reapply each year for a grant.

### Loan Programs

Two loan funds are administered by the University: UNH Loan Fund and Federal Perkins Loans. Admitted undergraduate and graduate degree candidates who will attend the University on at least a half-time basis may be considered for these loans. Financial need must be clearly demonstrated, and loans may be used only for educational expenses.

Most states now have higher education loan plans established by the Higher Education Act of 1965. Contact your local bank, other lender, or the Financial Aid Office for information.

### 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 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) 862-1078 or the Air Force, at (603) 862-1480.

---

## Campus Life

At the University of New Hampshire, getting involved is a big part of campus life. Inside the classroom and beyond, UNH students bring energy and passion to everything they do.

### Housing

The University offers students a variety of housing options, including small halls of approximately 100 students to medium halls and large halls (ranging from 400 to 600 students). Our newest residence halls offer students suite style living ranging from four to eight person suites. Upperclass undergraduates may also choose from either of two on-campus apartment complexes: the Gables and Woodside apartments. These apartment complexes are designed to meet the more independent and self-reliant lifestyles of upperclass students. Theme-based housing is offered in many buildings on campus. Some of our programs are located in the minidorms, where each house focuses on a theme, and Smith Hall, where the focus is on international and intercultural

activities. There is also a residence hall for students participating in SELF (Students Electing to Live Free), a program whose participants have chosen not to use alcohol or any chemical substances.

The Department of Housing and the Residential Life Office are committed to providing a living environment that maintains high standards of health and safety. Full-time professional directors manage the residence halls and work with a student staff to offer special programs and enforce hall standards.

Undergraduate University housing is available to all full-time baccalaureate degree candidates and to associate in applied science degree candidates. Offers of housing to associate in arts degree and Division of Continuing Education students are made on a case-by-case basis. Students are not required to live on campus.

Offers for on-campus housing are sent to all accepted new freshmen. Transfer and readmitted students may apply for housing upon admission to the University. Offers will be made on a space-available basis. All application materials are available at the Department of Housing located in Pettet House.

For more information, contact the Department of Housing (603) 862-2120 or visit the department's Web site at [www.unh.edu/housing/](http://www.unh.edu/housing/).

### Dining

UNH Dining is committed to exceeding the expectations of our guests and takes pride in maintaining our position as a leader in the food service industry. The freshest ingredients, flexible menus, various meal plans, and special events have earned us over 20 awards presented by the National Association of College and University Food Services. Flexible meal plans give students the option of eating at one of the three dining halls or using Dining Dollars or Cat's Cache at one of six retail locations around campus. Our three dining halls serve all-you-care-to-eat meals in comfort. Menu choices include popular favorites such as pizza, burgers, and stir-fry as well as vegan and vegetarian options, a well-stocked deli, and tremendous salad bars. Fresh-baked breads, desserts, and other selections are also available. Students who have dietary needs or concerns can meet with a registered dietician and executive chef to review menu selections. Parents can send goodie packages or personalized birthday cakes to students. As a land-grant University, UNH is committed to supporting and advancing the state's agricultural economy. Small, family farms are not only



part of the state's heritage, but play a vital, active role in current economy and culture. In recognition of the many benefits a vibrant agriculture affords in New Hampshire, our sustainability efforts raise awareness and educate students, staff, and community members about the local agricultural landscape and its role in sustaining physical and economic health and well-being, now and in the future.

### Memorial Union Building

The Memorial Union Building (MUB) is the University's community center and is the official war memorial of the state of New Hampshire. The MUB provides opportunities for student involvement and offers space for programs, meetings, and study, as well as for major public events, movies, and other entertainment. Students, faculty, and staff serve on the Memorial Union Board of Governors and work with the director to set policies and establish the budget for the building's operation. The original building was a gift from UNH alumni and first opened its doors in 1957. Currently, the MUB has complete wireless capabilities in all public spaces and meeting rooms.

Headquartered in the MUB are the Information Center; Office of Multicultural Student Affairs, two movie theaters; the UNH Copy Center; the UNH Bookstore; the Ticket Office; specific lounge/study space for nontraditional, commuter and graduate students; and Granite Square Station & Shipping, which provides undergraduate mail boxes and UPS shipping service. Computing and Information Services provides a computer cluster and Help Desk with walk-in service. The Games Room is equipped with pool and ping pong tables. The Entertainment Center and Wildcat Den provide a comfortable atmosphere for relaxing with live acoustical performances as well as socializing and study space. The Food Court offers expanded dining options, and food service is also available at the Coffee Office. The Student Senate Office, WUNH-radio, The New Hampshire (the student newspaper), and nearly 60 other student organizations have office space in the MUB.

The Leadership Center (MUB 122) currently serves as the hub for student involvement at the University of New Hampshire and is home to four offices: Greek Affairs, Off-Campus & Commuter Student Services, Student Organization Services, and Project LEAD. Whether a student is interested in joining a student organization or starting a new one, participating in one of

many leadership development programs, or simply learning about campus resources-this is the place! Student and professional staff members oversee the University recognition process for all student organizations and are available for advising or training on topics related to organizational development and program planning.

Off-Campus and Commuter Student Services strives to connect the half of the student population who do not live in University housing to campus. Programs, such as Good Morning Commuters and the Commuter Connection listserv, bring information to students about campus happenings, events, and activities. Off-Campus and Commuter Services also helps students understand the ins and outs of moving off campus by providing educational sessions in the residence halls.

Recognized student organizations and University departments are encouraged to use rooms in the MUB. Reservations can be arranged via the scheduling Web site [www.unh.edu/mubscheduling](http://www.unh.edu/mubscheduling), calling MUB Scheduling at (603) 862-1526, or stopping in the Office of the Memorial Union to fill out a form. For a complete listing of Memorial Union programs, services, and events, phone the Information Center at (603) 862-2600 or visit the Web site at [www.unhmub.com](http://www.unhmub.com).

### Cultural Events

Students at the University can participate in a rich cultural life. Numerous lectures, films, concerts, exhibitions, meet-the-artist receptions, master classes, dance performances, and theatrical productions are offered throughout the year. The UNH Celebrity Series, the Art Gallery, and the Departments of Music, Theatre and Dance, and Art and Art History bring artists of international stature to campus.

The fine and performing arts are an integral part of undergraduate education. Programs are frequently incorporated into coursework. For further information or a brochure call the numbers listed below:

Department of Music	(603) 862-2404
The Art Gallery	(603) 862-3712
Art and Art History	(603) 862-2190
Theatre and Dance	(603) 862-2919
UNH Celebrity Series	(603) 862-3242
or	<a href="http://www.unh.edu/celebrity">www.unh.edu/celebrity</a>
Traditional Jazz Series	(603) 862-2404
Memorial Union	
Ticket Office	(603) 862-2290
or	<a href="http://www.unhmub.com">www.unhmub.com</a>

### Campus Recreation

Many opportunities for leisure activities, regardless of skill or ability, are offered through Campus Recreation. The Hamel Student Recreation Center is available to all full-time matriculating students and recreation pass holders, seven days a week (excluding UNH holidays and shutdowns). The center offers participants two multipurpose courts, a group exercise studio, club/martial art studio, an 8,000 square foot fitness center with more than 100 exercise stations, with cardio-theater including five TVs, three basketball/volleyball courts, an indoor track, a lounge, several classrooms, locker rooms, towel and lock service at the equipment room, saunas, and synthetic sports fields. The Department of Campus Recreation offers a variety of activities designed to make it easier to reach personal fitness goals and have fun. Participants may take part in one of the many group exercise classes such as step aerobics, Reebok cycling, water aerobics, or cardio kickboxing. Other opportunities include yoga, pilates, racquetball, personal training, massage therapy, or running in the Homecoming 5K Race. Noncredit courses are also offered including CPR and First Aid, and many more. Recently a climbing boulder was added for those perfecting their climbing skills. Many outdoor adventure trips are also available each year.

The intramural sports program consists of 25 different sports and activities offered to co-rec, men's and women's teams. Intramural sports are organized, competitive leagues and tournaments officiated by trained students. These activities generally take place Sunday through Thursday and are 3-7 week leagues or short elimination tournaments. The Department of Campus Recreation assists special interest groups or sport club teams to reflect the varied recreation and cultural preferences of campus community members. Some of the 27 clubs are intensely competitive, requiring a daily commitment to workouts and conditioning. They compete either on an inter-collegiate basis with New England teams or sponsor University tournaments. Other clubs meet on a casual "come when you can" basis. The wide variety of clubs can meet every interest or skill level.

Campus Recreation also operates the Swazey indoor pool (located in the field house) and the UNH outdoor pool. The indoor pool is an 8-lane by 25-yard facility with 1- and 3-meter diving boards. Offerings include many open swim hours, water aerobics classes, American Red Cross courses and swim lessons, masters swimming, and many other programs/events/rentals.



The UNH outdoor pool is located beside the recreation center and is operated seasonally and hosts several special events throughout the summer. Offerings include private and group swim lessons, masters swimming, birthday party rentals, and other special events.

In addition to the Recreation Center, the Department of Campus Recreation offers ice skating in the Whittemore Center arena, manages a large outdoor recreation facility on Mendum's Pond in Barrington with its own sailing and canoe center, runs a children's camp (Camp Wildcat) in the summer, and supports the men's crew boat house. One of the largest student employers on campus, Department of Campus Recreation provides opportunities for more than 300 student employees in a variety of positions. For further information call (603) 862-2031 or visit [campusrec.unh.edu](http://campusrec.unh.edu).

---

## Programs and Services for Students

From international education to residential life, academic advising to internships and writing, 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 adviser, 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.

### Center for Academic Resources (CFAR)

The Center for Academic Resources offers a comprehensive program of academic-related services to undergraduate students. Participants work on an individual basis or in group seminars with trained staff members to improve their academic performance and enhance their educational experience. The center offers learning skills instruction, drop-in subject area tutoring, study groups, computer usage, course information, clarification of academic goals, personal advising, and referral. The center serves approximately 1,600 students a year. There is no cost associated with these services.

Additional services are available through the Student Support Services component for students enrolled in four-year programs who meet income and disability criteria. These services include individualized subject-area

tutoring, support for students with learning disabilities, graduate school advising and preparation, computer support, and scholarship search assistance. Student Support Services is 82 percent federally funded through a \$303,868 grant from the U.S. Department of Education. UNH contributes 18 percent or \$67,236 as matching funds.

Located at Wolff House (8 Ballard Street, next to Health Services), the center is open weekdays from 8:00 a.m. to 4:30 p.m. and evenings by appointment. For further information call (603) 862-3698 (voice/TTY), fax (603) 862-0840, or visit the Web site at [www.cfar.unh.edu](http://www.cfar.unh.edu).

### Counseling Center

The Counseling Center offers confidential professional consultation, individual and group therapy, and educational workshops for a broad range of emotional, psychological, and interpersonal concerns. Services are provided for all students who have paid their Health Services/Counseling fee and who may be facing a major crisis, confusion, depression, family difficulties, or other personal problems.

The center provides a scheduled intake system. Intake appointments can be made over the phone or in person. In addition, emergency services are offered by the Counseling Center during regular business hours, 8:00 a.m.-5:00 p.m., Monday through Friday, and after hours by calling the Counseling Center at (603) 862-2090. When necessary, the center's staff assists with outside mental health referrals.

The staff, which includes licensed psychologists, counselors, and consulting psychiatrists, is committed to the welfare and development of UNH students. The staff is available for consultation with faculty, administrative staff, and parents on matters relating to the welfare of students. The Counseling Center is fully accredited by the International Association of Counseling Services, Inc. and offers a predoctoral internship training program that is accredited by the American Psychological Association.

All information about a student's visits to the Counseling Center is confidential and cannot be released without the written permission of the student.

For information or to schedule an appointment, call (603) 862-2090 or visit the Counseling Center's Web site at [www.unhcc.unh.edu/index.html](http://www.unhcc.unh.edu/index.html).

### Athletics, Men's and Women's

UNH participates in the following intercollegiate men's athletics programs: basketball, cross country, football, hockey, skiing, soc-

cer, and track and field. UNH also participates in the following intercollegiate women's athletics programs: basketball, cross country, field hockey, gymnastics, ice hockey, lacrosse, skiing, soccer, swimming, track and field, and volleyball. An undergraduate athletic pass provides access to certain sporting events on a space available basis. (See also Campus Recreation, page 7.)

### Cat's Cache

Cat's Cache is a debit account accessed with a UNH ID card. Cat's Cache is a convenient way to make purchases on-campus at many locations including all UNH dining operations, the UNH bookstore, and most vending machines, the Acorns Restaurant at the New England Center, the pro shop at the Hamel Recreation center, and many off-campus merchants. There are no minimums, no fees, and no penalty for withdrawals. Account balances carry from semester to semester and year to year. Cat's Cache is available to all campus community members including students, faculty, and staff.

All UNH ID cardholders have a Cat's Cache account. To make a deposit, use one of our convenient account management centers with cash or a credit or debit card, at [onlinecardoffice.com/unh](http://onlinecardoffice.com/unh) with a credit or debit card, or in person at the Dining and ID Office located in Room 101 of Holloway Commons with cash or a check. You may also make deposits through the on-line remittance form during eligible periods.

Cat's Cache is intended for purchases and not for cash withdrawals as an ATM card would allow. You cannot withdraw cash from your account unless you withdraw the entire amount. For more information about Cat's Cache, visit [www.unh.edu/dining](http://www.unh.edu/dining) and follow the Cat's Cache links.

### Computing and Information Services [www.unh.edu/cis](http://www.unh.edu/cis)

*Computer access.* All students have access to networked computing resources on campus. UNH has five student computing clusters that offer more than 200 computer systems running Windows XP, Mac OS X, and Linux, as well as scanners and high-speed laser printers. All clusters are completely networked, offer a suite of productivity and design software, provide access to the World Wide Web and other Internet resources, and give students personal network storage for documents. The clusters are staffed by student consultants who assist with questions or problems. One location is available 24 hours a day. For information and cluster hours, call (603) 862-0058 for an automated recording, or visit [clusters.unh.edu](http://clusters.unh.edu).



**Training.** Each semester, courses are offered on a variety of topics. Register for a course via the Web at [training.unh.edu](http://training.unh.edu). For more information, call (603) 862-4242.

**Purchase and repair.** Students may purchase their own computers at the UNH Computer Store, which sells Apple and Dell computers; Apple, Epson, Dell, and Hewlett-Packard printers; and a variety of supplies, peripherals, and software at educational pricing to members of the UNH academic community. Warranty service and computer maintenance and repair are provided through the Computer Service Center. The UNH Computer Store is located at the CIS Center, Hewitt Annex, 54 College Road. The computer service center has a customer service counter at the MUB, room 201.

**CIS Help Desk and Dispatch Center.** As a unit of Help Desk Professional Services, the CIS Help Desk and Dispatch Center provides UNH and USNH faculty, students, and staff with a centralized contact point for computer-related questions and concerns. Telephone consulting to address inquiries on various computer applications is available at (603) 862-4242. Inquiries may also be made online at [www.unh.edu/HelpDesk](http://www.unh.edu/HelpDesk). Supported products include Macintosh- and Windows-compatible software, communication and network products, Internet utilities, central computer applications, and USNH central administrative software applications. For a list of CIS-supported products, go to [www.unh.edu/supported-products/](http://www.unh.edu/supported-products/). The Help Desk and Dispatch Center also provides central UNH computer-user accounts administration and support as well as UNH network connection problem assistance.

**Walk-In Services.** CIS Telecommunications and Client Services coordinates Walk-In Services, located at MUB 109. Walk-In Services offers kiosks for e-mail access, Web browsing, and CIS Knowledge Base searches. Staff is available to discuss UNH computing and voice communication-related issues, including central system account distribution, voice mail and account password resets, virus scanning services, wireless connectivity, file conversion, and disk/file repair and recovery. Walk-In Services also distributes CD Loaner Kits containing the latest anti-virus software and UNH network software programs.

**ResNet.** UNH's Residential Network provides a high speed network connection, as well as anti-virus and spyware educational programs, for each student living in the

residence halls and undergraduate apartments on campus. There are no monthly fees or time limits for using ResNet. There are minimum standards for hardware and software. For information, visit the ResNet Web site at [at.unh.edu/resnet](http://at.unh.edu/resnet).

**UNHINFO.** UNH's main Web server functions as the starting search point to find any on-line University information such as events, jobs, courses, directories, departments, and much more. UNHINFO is accessible to computers with a network connection, including the student computing clusters, dorms, and Internet service providers, at [www.unh.edu](http://www.unh.edu).

### Disability Services for Students

The University of New Hampshire is committed to providing students with documented disabilities equal access to University programs and facilities. The University will make reasonable accommodations to promote student independence and access to the full range of college activities at UNH.

All students with a disability, who anticipate the need for services, should self-identify and provide written documentation to Disability Services for Students. Please submit documentation as soon as possible after acceptance to smooth coordination of available services. Documentation requirements are available at [www.unh.edu/disabilityservices](http://www.unh.edu/disabilityservices). Disability Services is located in the Memorial Union Building, room 118, (603) 862-2607 (voice/TTY).

### General Information for Students with Disabilities

Students seeking accommodations, assistive technology, or arrangements for accessible classroom locations should contact Disability Services for Students at (603) 862-2607 (voice/TTY).

Most major buildings have ramps and many have elevators and adapted restroom facilities. Contact Disability Services or Affirmative Action with questions about building facilities.

Students with disabilities who require handicap parking permits for on-campus use must seek the permits from the Department of Motor Vehicles (DMV) of their home state (that is, the state where their driver's license was issued). Applications for New Hampshire handicap permits are available at Parking Services. Processing of New Hampshire permits, however, must still be done by the DMV of the student's home state. Please note: All students using handicap parking permits must still purchase either a commuter or on-campus

resident pass. Questions about temporary handicap parking should be directed to Parking Services at (603) 862-1010.

For more information about dietary restrictions due to disability please contact Food Service: University Hospitality Services at (603)862-2583.

Students with disabilities who need accessible housing and plan to live in campus residence halls should contact Housing early to allow for timely arrangements of appropriate rooms and location. Please contact Housing at (603) 862-2120.

UNH has specifically-equipped vans with lifts which transport students on campus to other locations along the Wildcat transit routes. For information on this service or for special arrangements possible during periods of inclement weather; please contact Wildcat Access (formally known as Handivan) at (603) 862-2630.

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 that the disability will prevent him or her from successfully mastering the foreign language requirement. Students wishing to pursue this process must contact Disability Services for Students.

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 Act (ADA), or Section 504 of the Rehabilitation Act of 1973 should be addressed to the ADA/504 Compliance Officer, Affirmative Action Office at (603) 862-2930 (Voice/TTY).

### Greek Life at UNH

Greek life at UNH has a long and rich history, with the first fraternity founded in 1896 and the first sorority founded in 1913. Today the Greek community at UNH has more than 800 members, which is about 8 percent of the student body. The Greek System is comprised of five national sororities, seven national fraternities, and one local fraternity, all governed by the Interfraternity and Panhellenic Councils. These organizations commit themselves to the values of scholarship and academics, leadership and campus/community involvement, social development, philanthropy and community service, and brotherhood and sisterhood. Fraternities and sororities are special living and learning environments providing members with hands-on



experience in developing leadership, organization, and communication skills. Greek life can enhance the college experience with long-lasting friendships and the special bonds of brotherhood and sisterhood.

The Office of Greek Affairs directly supervises the governing councils and individual chapters. This office is staffed by a full-time coordinator and various part-time and volunteer assistants. Any questions regarding membership in these organizations can be directed in person to the Office of Greek Affairs, 122A Memorial Union Building, or by phone, (603) 862-1002.

### **International Students and Scholars**

The Office of International Students and Scholars (OISS) promotes international education at UNH by facilitating the enrollment and employment of foreign nationals and by providing them with essential support services. The OISS coordinates programs which encourage interaction between the international, campus, and local communities, thereby fostering awareness and appreciation of other cultures. It is the responsibility of the OISS to ensure University compliance with U.S. immigration and employment regulations and to assist international students, exchange scholars, faculty, and staff in the achievement of their academic and professional goals.

The OISS staff provides counseling, information on University policies, administrative support, and referral services. A variety of social and educational programming activities are offered, including orientation for incoming students, faculty, and staff, and others designed to enhance student interaction with the broader community and provide opportunities for sharing in family events. For more information on programs and services, visit the OISS Web site at [www.unh.edu/oiss](http://www.unh.edu/oiss). To schedule an appointment, call (603) 862-1288 or send e-mail to [OISS@unh.edu](mailto:OISS@unh.edu).

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.

### **Multicultural Student Affairs**

The Office of Multicultural Student Affairs (OMSA) creates opportunities for people to participate in an inclusive community and to explore and understand diversity, injustice, and equity. Their work is grounded in an understanding of diversity that includes people of all abilities, ages, ethnicities, genders, nationalities, races, religions/spiritual traditions, socioeconomic classes, and sexualities.

Providing support and development for students of color (Asian/Asian American/Pacific Islander, Black, Middle Eastern, Latino/a, Native American, Biracial/Multiracial), and for lesbian, gay, bisexual, transgender, questioning (LGBTQ) and allied students is at the heart of their work.

OMSA offers cultural and educational programs, opportunities for exploring leadership potential within a multicultural context, provides referrals to obtain support and help from other people and programs on campus, gets students connected, helps students to learn more about race, sexuality, and gender, responds to acts of intolerance, and helps all members of the University Community to feel safe and welcome at UNH.

The office provides computers for student use, social and study space, a media library, and educational resources for faculty and staff. Staff members include the director; the LGBTQ coordinator; and a multicultural coordinator. For more information, stop by the office in room 327 of the Memorial Union Building (MUB), phone (603) 862-2050 or e-mail [omsa.info@unh.edu](mailto:omsa.info@unh.edu).

### **Nontraditional Student Services**

Since the 1970s, the nontraditional student population at the University of New Hampshire has been an active, hardworking group. These students remain dedicated to their education, to their families, and to helping one another deal with issues and concerns often experienced by those having challenging lives apart from a university setting.

To assure that the University and its activities respond to the needs, desires, and lives of nontraditional students, Off-Campus and Commuter Student Services provides support, resources and services.

Off-Campus and Commuter Student Services is located in the Leadership Center, MUB 122. Great information about services, resources, campus and local communities can be found at [www.unhmub.com/off-campus](http://www.unhmub.com/off-campus).

In addition, the Non-Traditional Student Organization (NTSO) offers programs and support to students. The NTSO office is located in the Memorial Union Building (MUB), across the hall from the Non-Traditional Student Lounge (MUB 112). Students are encouraged to get involved with the NTSO, stop by for information, study in the lounge, or visit and relax with other students.

### **Office of Conduct and Mediation**

The Office of Conduct and Mediation administers the student conduct process. Through the Student Code of Conduct, the

office maintains community standards of behavior that are intended to preserve and protect the University's educational mission of teaching, research, and public service, as well as promote the student's academic achievement and personal development. To attain these aspirations, students must live, work, and learn in an environment of civility and respect where both rights and responsibilities are deeply valued. For the University community to thrive, the rules of conduct must be clear and understood by all members of the community. The Student Code of Conduct codifies and explains community standards of behavior and responsibility, as well as the rights and remedies accorded to all members of the community. It is available online at [www.unh.edu/student/rights](http://www.unh.edu/student/rights).

More specific information regarding the Student Code of Conduct and the conduct process can be found in Student Rights, Rules and Responsibilities. For more information, please call the Office of Conduct and Mediation at (603) 862-3377, or visit the Web site at [www.unh.edu/ocm](http://www.unh.edu/ocm).

The UNH Mediation Program provides community members with an opportunity to talk about and resolve disputes in an alternative and non-adversarial manner. Students or University community members or organizations can access mediation or conflict resolution training or consultation by self-referral. Mediation and/or conflict resolution training or consultation is also available as an alternative to filing conduct charges against a student in some situations. Mediation is provided by trained neutral mediators, who are in charge of and guide the process in a neutral setting and confidential process. The mediators are not involved in the dispute, do not take sides, and do not make any decision for the disputants. The mediators are part of this community-based mediation program and are supervised by the Office of Conduct and Mediation Programs. Some examples of situations appropriate for mediation include issues arising out of relationships such as roommate, friendships, dating partners, neighbors, teammates, organization members, landlord/tenants, etc. Through mediation, disputants are able to identify the issues in a conflict, have their perspective be heard and acknowledged, and communicate about how to better understand and solve their problem(s). The mediators, who are often peers, facilitate communication between the parties and empower the students to generate options for resolution and ultimately assist the development of their own resolution to the dispute. The Mediation Program is a larger component of the effort



to provide students with the opportunity to develop important life skills such as conflict resolution, anger management, and effective communication skills. For more information call (603) 862-3377.

### **President's Commission on the Status of Women**

The mission of the UNH President's Commission on the Status of Women is to create equal employment and educational opportunities for all UNH women by promoting an environment free of sexism and discrimination through policy, advocacy, and education. Established in February, 1972, to serve as a sister organization to the New Hampshire State Commission on the Status of Women, its functions include: collecting information on the status of women in the UNH community; recommending policies to the president and other University administrators; providing education and programs to help women develop their skills; increasing networking among women; and informing the community of issues relating to the status of women. The commission reports annually to the president on its activities and findings. Commission membership consists of a chairperson and volunteer representatives from University students, faculty, and staff. Candidates for membership are recommended by the commission and appointed by the UNH president. Located in Thompson Hall, the commission also maintains an e-mail discussion list for those interested in its activities. Call (603) 862-1058, send e-mail to [womens.commission@unh.edu](mailto:womens.commission@unh.edu), or visit the commission's Web page at [www.unh.edu/womens-commission](http://www.unh.edu/womens-commission) for more information.

### **President's Commission on the Status of People of Color**

The UNH President's Commission on the Status of People of Color proposes, recommends, and evaluates programs, policies, and services aimed at enhancing diversity and supporting people of color within the UNH community. Established in 1997, the commission acts to ensure implementation of goals to increase campus diversity through minority student, faculty, and staff recruitment and retention, and through curriculum development. As an advocacy group, the commission identifies, recommends, and supports creative strategies for promoting and supporting campus diversity; it responds to issues, needs, and concerns identified within the community; it works to establish effective and collaborative working relationships among departments, offices,

committees, commissions, and special programs that play a role in fostering diversity on campus and ensuring that the environment is supportive of the minority populations. A central resource for people of color on campus is the Office of Multicultural Student Affairs (OMSA). Contact OMSA at (603) 862-2050 or on the Web at [www.unh.edu/omsa](http://www.unh.edu/omsa). The commission is located in Thompson Hall. Call (603) 862-1058 or visit the commission's Web page at [www.unh.edu/cspc](http://www.unh.edu/cspc) for more information.

### **President's Commission on the Status of Gay, Lesbian, Bisexual, and Transgender Issues**

The mission of the UNH President's Commission on the Status of Gay, Lesbian, Bisexual and Transgender Issues is to facilitate the development of a university community that is equitable and inclusive of all sexual orientations and gender identity and expressions. The commission assists the president in monitoring the campus climate for gay, lesbian, bisexual, and transgender faculty, staff, and students; reviews policies and programs; and makes recommendations for improving the campus climate.

Established in 1992, the commission meets monthly during the academic year. Its membership includes gay, lesbian, bisexual, transgender, and allied University faculty, staff, and students who are appointed by the president. Students from the gay, lesbian, bisexual, transgender, and allied community who are interested in participating on the commission are encouraged to contact the chair. Call (603) 862-1058, or visit the commission's Web page at [www.unh.edu/glbtt](http://www.unh.edu/glbtt).

### **Police, University**

The University Police Department, which is committed to the enforcement of laws and University policies supportive of the rights and dignity of all persons, seeks to maintain a campus environment in which learning may thrive. Officers, professionally trained in their respective areas, staff both the police and Security Services units.

Police department staff members participate in a number of programs for the UNH community including adopt-a-dorm and a women's self-defense program. The department also provides literature regarding crime prevention. On request, staff members will meet with groups to share precautions for increasing personal safety and protection of personal property. A walking patrol provides an escort service for students, faculty, and staff. Engraving pencils to inscribe identification numbers on property in case of theft

are loaned free of charge to members of the campus community. To take advantage of any of these services, contact the University Police Department, (603) 862-1427.

### **Residential Life**

Residential Life staff members focus on integrating students' learning outside the classroom with traditional learning in the classroom. Staff members work with students, helping them to succeed academically, become positively involved in the hall and University community, and make friends. They accomplish this by providing students with social and educational opportunities, along with daily interaction.

The Residential Life staff includes a director, a team of 30 professional staff members, and 150 resident assistants (RAs) who are a carefully selected group of undergraduate and graduate students. Each residence hall is staffed with at least one full-time professional and several resident assistants.

The director of residential life also serves as assistant vice president for student and academic services. In addition, Residential Life staff members often initiate responses to individual student emergencies. The assistant vice president also assumes co-responsibility for leadership development, establishing joint ventures with academic programs, orienting new students to the University, and educational and social programming.

Students are welcome to stop by the Residential Life Office, located in 13A Hitchcock Hall, or call for more information at (603) 862-2268.

### **Sexual Harassment and Rape Prevention Program (SHARPP)**

SHARPP is a University of New Hampshire-based crisis intervention center dedicated to providing free and confidential services to survivors of sexual assault, sexual harassment, childhood sexual abuse, incest, intimate partner violence, and stalking, and their allies. In addition, SHARPP's Outreach Program provides education and awareness programs on sexual and interpersonal violence to the greater University of New Hampshire community. SHARPP's services are largely supported by volunteers; volunteering for SHARPP provides many opportunities for the development of leadership skills.

SHARPP's Direct Services include a 24-hour crisis line, emergency medical accompaniment, criminal justice and University judicial process advocacy, support in obtaining academic assistance, support groups,

and information and referrals. SHARPP also provides crisis services and support for those who are close to the survivor, including roommates, parents, friends, family members, and instructors.

SHARPP's Outreach program provides the highest quality awareness and educational programming, including campus-wide peer education programs for students in the residential halls, classrooms, and Greek houses, and orientation activities and training for athletic teams, student organizations, and faculty and staff. SHARPP also sponsors awareness events and activities throughout the year.

The SHARPP office is located at 6 Garrison Ave., Verrette House. The office is open Monday through Friday, 8:00 a.m.-4:30 p.m. The Web site is [www.unh.edu/sharpp/](http://www.unh.edu/sharpp/). The crisis line and administrative number is (603) 862-3494. SHARPP is also available through a toll free number at 1-888-271-7233 and by TTY at 1-800-735-2964. After hours, all calls will be returned by a trained advocate within 10 minutes. All calls are free and confidential.

### **Student and Academic Services**

The University of New Hampshire has made a commitment to "provide students an innovative, high quality, coherent, and integrated educational experience." This commitment-outlined in the Academic Plan-obligates us to create a learning environment that offers students the greatest opportunity to grow and that provides sufficient connection to the "outside world" for the opportunity to test the relevance and the effectiveness of what they are learning. Such an approach to higher education also requires that we provide the support and direction necessary for the success of our students' endeavors.

The Division of Student and Academic Services seeks to forge integral links between the academic and non-academic aspects of student life, to create better connections between curriculum and co-curricular experiences, and to foster high expectations for academic and personal excellence for all students. The focus of this division is on assisting students to be successful at UNH, contributing to a process of intellectual, personal, and social development that produces graduates who are well-educated, well-adjusted, and prepared to realize their goals and contribute to their communities and society with intellect, professional competence, social awareness, the capacity for effective civic engagement, and respect and understanding for the diversity of people and the world around them.

The Office of the Vice President for Student and Academic Services provides students with information, assistance in problem resolution, and referrals. For more information or assistance, call the office at (603) 862-2053.

### **University Advising and Career Center**

The University Advising and Career Center, Hood House, (603) 862-2064, provides academic advising to undeclared students in the College of Liberal Arts, provisional English and provisional psychology majors. It supports all students and alumni in career exploration. 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, and aiding in securing employment. Vocational assessments (Myers-Briggs type indicator and Jackson Vocational Interest Survey) are offered to help individuals to identify potential majors and careers. A career library, a nationwide parent/alumni career mentor network comprised of more than 500 members, and an internship office help students explore career possibilities. Job opportunities are offered through online recruiting. Specific job notices are also offered on the center's Web site. Additionally, the center sponsors a variety of fairs and activities that bring students into contact with prospective employers and internship opportunities, and help to prepare students for careers.

The center is also the campus resource for students seeking admission to medical and related health profession schools and law school. More broadly, the center assists students considering graduate education, sponsors a graduate and professional school fair, administers national tests for post-baccalaureate study, and guides individuals to resources across the University. The center's Web page is at [www.unh.edu/uacc/](http://www.unh.edu/uacc/).

### **University Internships**

Supported by the federally funded Job Locator Development Program, the internship office in University Advising and Career Center helps students locate preprofessional 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 should consult with an appropriate faculty sponsor regarding the possibility of receiving academic credit.

Students who wish to secure internships should consult the internship postings listed on the UNH Monster Trak link on the center's Web site. Postings are also listed in the center. Several academic departments also have internship listings posted.

For more information regarding internships, consult the center's Web site at [www.unh.edu/uacc](http://www.unh.edu/uacc) or contact the center at (603) 862-2064.

### **Veterans Information**

The UNH veterans' coordinator, located in the Registrar's Office at (603) 862-1595, provides counseling on all aspects of veterans' benefits and assistance in procuring and completing the required forms and certifications for veterans' benefits. The veterans' coordinator maintains a comprehensive directory to assist veterans in contacting state, local, and University resources for housing, day care, career planning, employment, financial aid, tutorial assistance, remedial training, handicapped services, and Vietnam Veterans Outreach. The coordinator also provides a framework for networking among campus veterans. For further information, send e-mail to [Lonn.Sattler@unh.edu](mailto:Lonn.Sattler@unh.edu).

### **University Writing Program**

The University Writing Program is dedicated to making all UNH students successful writers. The University Writing Committee and program staff research, organize, develop, and support a wide range of activities that help students and faculty. The writing program conducts routine and directed assessments of the University writing requirement and the writing intensive (WI) courses that all undergraduates must take. The Writing Committee reviews applications for WI course status as well as student petitions and waivers that allow non-standard and transfer courses to count as writing intensive. UNH has a highly successful writing fellows program that allows specially prepared students to work with writers in specific writing intensive courses. Frequent seminars, workshops, and classes offer both faculty and students the opportunity to learn more about writing, teaching with writing, and emerging technologies for writing.

### **Robert J. Connors Writing Center**

The Robert J. Connors Writing Center provides individual writing conferences to members of the University community. Collaborating on writing helps students excel in classes and beyond. Writers of all skill levels are encouraged to visit the center to have conversations about their writing. Peer



tutors are trained to help students with writing issues from thesis clarity to sentence structure to questions about genre writing and citation styles.

The Connors Writing Center stresses a focus on higher level concerns such as organization, development of ideas, and clarity, but writing assistants are also equipped to discuss sentence-level concerns such as grammar and punctuation. The center welcomes *all* students, including those whose first language is not English. Writing assistants are trained to work with ESL and EFL students of all levels.

The center offers one-on-one conferences by appointment or by walk-in. Conferences are free and usually last about 50 minutes. The writer's goals set the course for the conference, and students decide whether tutors communicate the results of the conference to their instructors.

Students may call (603) 862-3272 for an appointment or visit the Writing Center in Hamilton Smith, room 7. The Writing Center also offers a walk-in satellite location at Dimond Library. Visit the Writing Program's Web site at [www.unh.edu/writing](http://www.unh.edu/writing).

---

## Health Services

The University has a state-licensed and nationally-accredited (aaahc.org) health and wellness program.

### Health and Counseling Fee

All undergraduate and graduate degree candidates and all full-time non-degree candidates pay a mandatory health and counseling fee. For the academic year 2006-2007, the health and counseling fee was \$535. The health fee covers many outpatient care needs that are available at Health Services. However, charges not covered by the health fee are the responsibility of the student. Students should check with the Health Services business office at (603) 862-2840 with any questions.

### Health Insurance

The University is undergoing changes at this time with regard to health insurance for undergraduate students. Please contact the Director of Finance and Administration at Health Services at (603) 862-2853 or check the Web site at [www.unh.edu/health-services](http://www.unh.edu/health-services) for current information about health insurance.

## Health Record Requirement

In order to provide effective care, Health Services requires that undergraduate students who have been formally accepted for a bachelor's or associate's degree candidacy, and who register for five or more credits, must have health information on file with Health Services. This information will include three forms provided by Health Services on its Web site at [www.unh.edu/health-services](http://www.unh.edu/health-services). These include a physical assessment and immunization form, to be completed by a medical provider and mailed to Health Services, and a health history form, to be completed by the student on-line.

Proof of immunity to MMR is mandatory (UNH Academic Policy 02.14). Students must meet one of the following criteria for proof of immunity: have received two vaccinations at least one month apart after 12 months of age, have positive titers (blood test), have health provider documentation of past history of the diseases, or have been born before 1957. Students requesting a religious exemption from measles vaccinations must complete the UNH Health Services Request for Exemption, form 202.5. 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 complete the forms before the beginning of classes. Any student failing to complete these requirements may not be cleared to register for future classes.

## Medical Services

Health Services provides comprehensive, student-focused, primary medical care, laboratory testing, radiology, and pharmacy services. During the regular academic year, the clinical staff consists of board-certified physicians, nurse practitioners, nurses, and medical assistants who have experience working with adolescents and young adults and are committed to prevention and holistic care. They work in teams, three of which focus on general medicine services, commonly seeing, for example, infectious diseases, injuries, and mental health concerns. The fourth team focuses on women's health and provides annual exams, PAP tests, and numerous other services for women. There is also a travel clinic providing clearance and immunizations for foreign travel and an allergy clinic providing allergy shots. One may speak by telephone with a triage nurse for advice at any time. Limited services are available for faculty and staff.

The staff maintains close relationships with outside specialists in the Seacoast area to whom they may refer patients. Well-staffed and well-equipped community hospitals are nearby and an emergency ambulance service is available in Durham at all times. For after-hours urgent care, Health Services has an agreement with one of the local hospitals to provide care for students.

General medical appointments may be made by calling (603) 862-2856, and women's health appointments by calling (603) 862-1806.

## Medical/Psychological Withdrawals

All students seeking assistance with medical withdrawals or those who will be out of school for extended periods of time due to medical emergencies should be in touch with Health Services at 862-1098. Information is also available on the Web at [www.unh.edu/health-services/withdrawal.html](http://www.unh.edu/health-services/withdrawal.html).

## Office of Health Education and Promotion

The Office of Health Education and Promotion (Room 249, Health Services Center) presents educational workshops and facilitates ongoing educational groups on a variety of physical and emotional health issues. Confidential assessment and referral are also available. The office offers alcohol and other drug counseling, nutrition counseling, stress management counseling, tobacco cessation services, and confidential HIV counseling and testing. A health educator/nurse provides education and support to students living with chronic illnesses. Massage therapy is also available. The resource library (Room 218) contains information on physical and emotional health issues, including HIV/AIDS, alcohol, tobacco, and other drugs, men's and women's health issues, wellness, stress management, sexuality, nutrition, and eating concerns. These services and programs reflect Health Services's commitment to assisting students in achieving optimal health and well-being. Appointments are made at the Office of Health Education and Promotion, or by calling (603) 862-3823.



## Fees and Expenses\*

The cost for 2006-2007 at the University averages about \$21,000 for residents of New Hampshire and about \$33,500 for nonresidents. See the following chart for a breakdown of these costs.

UNH bills are sent electronically only. Bills are posted to student MyUNH (blackboard.unh.edu) accounts. Students are notified through UNH assigned e-mail addresses when new bills are posted.

### Fees and Expenses (2006-2007)\*\*

	In-state residents	Non-residents
<b>Tuition</b>	<b>\$8,240</b>	<b>\$20,690</b>
<b>Fees</b>		
Activity fee	92	92
Recreational fee	350	350
Memorial Union fee	300	300
Student athletic fee	726	726
Health and counseling fee	535	535
Technology fee	108	108
Transportation fee	50	50
<b>Subtotal of Required Expenses</b>	<b>\$10,401</b>	<b>\$22,851</b>
Room and Board		
Double room	4,606	4,606
Silver Meal Plan	2,978	2,978
<b>Subtotal</b>	<b>\$7,584</b>	<b>\$7,584</b>
Estimated Expenses (to cover books, supplies, transportation, misc.)	3,000	3,000
<b>Approximate Costs</b>	<b>\$21,000</b>	<b>\$33,500</b>
<b>Optional Fee</b>		
Parents Association Sponsorship	45	45

### Tuition\*

Tuition for the academic year 2006-2007 was \$8,240 for N.H. residents and \$20,690 for nonresidents. The rates per credit hour in 2006-2007 were \$343 for N.H. residents and \$862 for nonresidents.

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.

(See per-credit hour rates above.) No refund will be made 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. 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 Whittemore School of Business and Economics (WSBE) will be charged a tuition differential. The differential is the same rate for both N.H. residents and nonresident students. In 2006-2007 the CEPS differential was \$533 per academic year and the WSBE differential was \$583 per academic year. CEPS and WSBE students who register for fewer than 12 credits pay a differential per-credit hour (\$22 for CEPS and \$24 for WSBE per-credit in 2006-2007).

All admitted students must pay an enrollment fee-\$300 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.

Three-fourths of tuition and mandatory fee charges will be refunded to students withdrawing or dropping courses within one week of the first day of classes; one-half after one week and within 30 days; 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.

A \$25 fee must be paid by all students dropping courses after the third Friday of classes. The \$25 fee will not be charged to persons changing to a reduced load or withdrawing; in both of these cases, the regular tuition rebate policy will apply. If a student has received permission to add a course after the third Friday of classes, a \$25 fee will be assessed for each course added. A change of section within the same course is accomplished by a "drop" of one section and an "add" of another; however, only one \$25 fee is assessed under these circumstances.

### Fees\*

Required fees for 2006-2007 included a Memorial Union fee (\$300) for the use and administration of the student union; a recreational fee (\$350) for support of recreational facilities; a student activity fee (\$92) for support of the undergraduate newspaper, yearbook, student government, student lawyer, student radio station, and other student organizations; a technology fee (\$108); a student athletic fee (\$726) to provide support for athletic programs; a health and counseling fee (\$535) to provide general health care through University Health Services; and a Transportation fee (\$50) 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 international students are required to purchase the International Sickness and Injury Plan sponsored by UNH. There are no exceptions to this policy.

A \$45 contribution may be included to sponsor the UNH Parents Association.

### 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 Services Fee

For information on health services, see page 13.

#### Memorial Union Fee

For more information on the Memorial Union Building, see page 7.

#### Athletic Fee

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

\*All charges quoted in this section reflect 2006-2007 rates.

\*\*The University reserves the right to adjust charges for such items as tuition, board, student fees, and room rent. Such charges will be announced as far in advance as possible.



**Activity Fee**

Support for the following organizations:

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

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

**Technology Fee**

Support for the following:

- Student computing clusters
- Walk-in Help Desk services
- Technology-enhanced classrooms 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\***

Room and board charges averaged \$7,584 for the 2006-2007 academic year for a double room with a mandatory meal plan.

New students accepting a space on campus must include a \$200 housing deposit with a signed application; for returning students, the deposit is \$500. Written notification of cancellation of the room application or assignment received before August 15 will result in forfeiture of the deposit only. Written notification of cancellation after August 15 and before Friday of the first week of class will result in a charge of one-fourth of the full semester's housing fee.

If the student fails to occupy the assigned room by Friday of the first week of class 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 classes and before thirty days after registration will result in a 50 percent refund of the semester's housing fee. Cancellation thirty 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, the total

amount of the housing deposit will be applied against any unpaid University charges.

Refunds of meal plans will be granted only on approval waivers or upon withdrawal from the University. If a refund is approved for an Unlimited Meal Plan, the balance will be prorated by the number of weeks the student attended classes. Block Meal Plans will be prorated by the number of meals consumed. Unused Dining Dollars will be refunded minus any applicable bonus. If a student has spent any part of the bonus, that amount will be charged to the student account.

**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 charge will be made for individual lessons in music, as noted in the description of applied music courses. 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. Thompson School students pay curriculum fees to cover special costs in their programs (see the Thompson School section). 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 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 that 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' MyUNH (blackboard.unh.edu) 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 student's UNH-assigned e-mail addresses notifying students when new bills have been posted.

Through the online system students can view a history of electronic bills and payments and access a real-time view of their accounts. Students may also set up accounts to allow payments from parents or other authorized payers. Payment may be made online by check, or the bill may be printed and mailed with payment. UNH does not accept credit card payments from Durham undergraduates.



# UNIVERSITY ACADEMIC REQUIREMENTS

To graduate from the University of New Hampshire, baccalaureate and associate in arts students must fulfill four types of University requirements: writing, general education, degree, and major. For associate in applied science degree requirements, see page 122.

## University Writing Requirement

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, 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.

## Writing Intensive Courses

All bachelor's degree candidates are required to complete four "writing intensive" courses, which must include English 401 (Freshman Composition) 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. Specific courses that fulfill the writing requirement are listed at [unhinfo.unh.edu/registrar/registration.html](http://unhinfo.unh.edu/registrar/registration.html). Some courses have both writing intensive and non-writing intensive versions, such as HIST 405 and HIST 405W. In those cases, only the sections attached to the "W" courses will be writing intensive.

Please note that some cross-listed courses are also writing intensive. For the most current information on cross-listed courses, visit the Web site listed above.

## General Education Program

The general education program is designed to emphasize the acquisition and improvement of those fundamental skills essential to advanced college work, especially the abilities to think critically, to read with discernment, to write effectively, and to understand quantitative data. It aims to acquaint the student with some of the major modes of thought necessary to understanding oneself, others, and the environment. It seeks to develop a critical appreciation of both the value and the limitations of significant methods of inquiry and analysis. Its goal, moreover, is the student's achievement of at least the minimal level of literacy in mathematics, in science and technology, in historical perspectives and the comprehension of our own and other cultures, in aesthetic sensibility, and in the diverse approaches of the humanities and the social sciences to understanding the human condition.

General education is intended to serve as a foundation for any major. It aims to go beyond the mastery of job-related skills and educate students so that they learn how to learn. The program is based on the premise that change is the dominant characteristic of our times and that the truly useful education stresses intellectual adaptability and the development of those problem-solving abilities, cognitive skills, and learning techniques vital to lifelong learning.

## General Education Requirements

Students must fulfill the following general education requirements:

1. one course in writing skills, which must be taken during a student's first year. This course will satisfy the English 401, First Year Writing component of the writing requirement;
2. one course in quantitative reasoning, which must be taken during a student's first year;
3. three courses in biological science, physical science, or technology, with no more than two courses in any one area;
4. one course in historical perspectives;
5. one course in foreign culture (may also be satisfied by approved study abroad programs);
6. one course in fine arts;
7. one course in social science; and
8. one course in works of philosophy, literature, and ideas.

General education 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. The required courses cannot be taken on a pass/fail basis. No single course may be counted in more than one general education category. Academic departments may or may not permit general education courses to count toward requirements for a major. Each course must carry at least 3 credits to qualify for general education consideration.

The specific courses that fulfill each category of the general education requirements are printed below. Any course appearing in this list will fulfill a general education requirement if taken after September 1, 2007. For the most current listing of general education courses, go to: [unhinfo.unh.edu/registrar/geneduc/genedreq.html](http://unhinfo.unh.edu/registrar/geneduc/genedreq.html).

### 1. Writing skills

ENGL 401

### 2. Quantitative reasoning

ADM 430†  
ADMN 420  
BIOL 528  
CIS 425†  
CS 405, 407, 410  
EREC 525  
HHS 540  
MATH 420, 424, 425, 439  
PHIL 412  
PSYC 402  
SOC 502

### 3. Biological science, physical science, and technology

*Biological science*  
ANSC 401  
BIOL 411, 412, 413†, 414†, 416  
BSCI 405†, 406†, 431†  
HMP 501  
KIN 527, 607  
MICR 407, 501  
MLS 444A  
NR 410, 433  
NUTR 400  
OT 513  
PBIO 400, 412, 421  
ZOO 401, 412, 444A, 474, 507, 508



**Physical science**

CHEM 403, 404, 405  
 ESCI 401, 402, 405, 409, 420, 501  
 GEOG 473  
 NR 504  
 PHYS 401, 402, 406, 407, 408, 444A

**Technology**

BIOL 404, 520†  
 BSCI 421†, 422†  
 CHE 410  
 CHEM 444A  
 CIS 405†, 411†, 515†  
 CS 401, 403  
 ENE 520  
 HHS 450  
 HMP 444  
 MICR 444  
 MS 401  
 NR 415, 435, 444, 444A, 444B, 502  
 PBIO 405  
 PHIL 447, 450  
 PHYS 444  
 TECH 444, 583  
 ZOOL 444

**4. Historical perspectives**

ANSC 415, 444  
 CHEM 444  
 CLAS 405, 406, 550  
 ENGL 515  
 FS 444  
 GEOG 586  
 HIST 405, 406, 410, 421, 422, 435, 436, 444,  
 444A, 444B, 444C, 444D  
 483, 497, 505, 506, 511, 512, 521, 522,  
 531, 532, 565, 567, 579  
 HMP 505  
 HUMA 510C†, 511C†, 512C†, 513C†, 514C,  
 515C  
 ITAL 681A\*\*\*, 682A\*\*\*  
 KIN 444B, 561  
 POLT 403, 508  
 RS 483

**5. Foreign culture**

ANTH 411, 500, 512, 515, 650  
 CHIN 425, 503, 504  
 ENGL 581  
 FREN 425, 426, 503, 504, 525, 526  
 GEOG 401, 402, 541  
 GERM 503, 504, 523, 524, 525

GREK 503, 504, 505, 506  
 HIST 425, 563  
 INTR 438†  
 ITAL 425, 503, 504, 525  
 JPN 425, 503, 504  
 LATN 503, 504  
 LLC 444A, 444B  
 NR 660  
 POLT 553, 555, 556  
 RUSS 425, 503, 504  
 SPAN 503, 504, 525, 526

**6. Fine arts**

AMST 444C  
 ARTS 444A, 480, 487, 532, 570, 571, 572,  
 573, 574, 580, 581  
 CA 502†  
 FREN 522  
 HUMA 510A†, 511A†, 512A†, 513A†, 514A  
 515A†  
 INCO 480  
 LLC 444D  
 MUSI 401, 402, 444, 501, 502, 511  
 PHIL 421  
 SOC 580  
 THDA 435, 436, 438, 450, 459, 461, 462, 463,  
 487, 546, 548, 583

**7. Social science**

ADMN 444  
 ANSC 405, 444A  
 ANTH 412, 625  
 CD 415  
 CLAS 506  
 CMN 455, 457  
 ECN 411†, 412†  
 ECON 401, 402  
 EDUC 444, 444A  
 ENGL 405, 444B, 444F  
 EREC 409, 411  
 FS 525, 545  
 GEOG 581, 582  
 GERO 600  
 HHS 444, 510  
 HMP 401  
 HUMA 510D†, 511D†, 512D†, 513D†, 514D,  
 515D†  
 INCO 401, 402  
 KIN 444A, 560  
 LING 405, 444B, 444F  
 NURS 535  
 NUTR 405

POLT 402, 444, 504, 505, 560, 564, 565,  
 566, 567  
 PSYC 401, 444, 444A  
 RMP 444, 490, 550, 570  
 SOC 400, 444, 500, 520, 530, 540  
 SW 444, 525, 550  
 WS 401, 444

**8. Works of literature, philosophy, and ideas**

AMST 444A, 444B, 501, 502  
 ANTH 450  
 BIOL 444  
 CLAS 401, 402, 421, 422, 444, 500  
 CMN 456  
 ECN 444  
 ECS 400  
 ENGL 419, 444C, 444D, 444E, 511, 513,  
 514, 516, 517, 518, 521, 522, 523, 533, 555,  
 585, 586, 630, 631, 632, 651, 657, 681, 685  
 FREN 500, 651, 652  
 GERM 500, 520, 521  
 HIST 484  
 HUMA 401, 411†, 412†, 444, 500, 510B†,  
 511B†, 512B†, 513B†, 514B, 515B†, 519†,  
 520†, 650, 651  
 INCO 450  
 ITAL 500, 521, 522, 651, 652, 681B\*\*\*,  
 682B\*\*\*  
 LLC 440, 444, 444C  
 PHIL 401, 417, 424, 430, 435, 436, 444,  
 444A, 520, 525, 540, 560, 570, 660  
 POLT 401, 407, 444A, 520, 521, 522, 523,  
 524  
 PORT 500  
 PSYC 571  
 RMP 511  
 RS 484  
 RUSS 426, 500, 521, 522, 593  
 SPAN 500, 522, 650, 651, 652, 653, 654

\*Available only to honors program students and others who have obtained special permission.

\*\*Students may take either HUMA 480A or 480B but not both.

\*\*\*Students may not receive credit for both ITAL 681A and 681B or 682A and 682B.

†For students who complete the entire sequence of HUMA 510, 511, 512, and 513, enrolling in different discussion sections each time, a fifth general education requirement (in foreign culture) will be waived, although additional credit hours will not be granted.

‡Offered only at UNH Manchester.



## Degree Requirements

Requirements in this catalog apply to students who enter the University between July 1, 2007 and June 30, 2008. (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. Students are each provided one free copy of the catalog that is in effect at the time of their entry to the University. They are expected to keep that copy for the duration of their time at the University. Any other copies must be purchased, and availability cannot be guaranteed.

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.

### Bachelor of Arts

1. At least 128 credits in courses numbered 200-799, with a cumulative grade-point average of 2.00 for all courses taken at the University in which a grade is given.
2. Completion of the University general education requirements.
3. Completion of the University writing requirement.
4. Proficiency in a foreign language at the level achieved by satisfactory work in a one-year, college-level course. This requirement may be fulfilled by taking a College Board foreign language achievement test or by completing the equivalent of a full-year elementary course in any foreign language (must be 8 UNH credits or equivalent), or by completing the equivalent of a semester of a course in a foreign language beyond the elementary year (must be 4 UNH credits or equivalent), or by completing the equivalent of a one-year college-level course in American Sign Language (must be 8 UNH credits or

equivalent). Students should be aware that not all majors accept American Sign Language as a means to satisfy departmental foreign language proficiency requirements and should check with their advisers. 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.

*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 the Disability Services for Students Office, 118 Memorial Union Building, (603) 862-2607 (Voice/TDD).

### Bachelor of Fine Arts, Bachelor of Music

Requirements for the B.F.A. degree are on page 31; for the B.M. degree, on page 44.

### Bachelor of Science

1. At least 128 credits in courses numbered 200-799, with a cumulative grade-point average of 2.00 for all courses taken at the University in which a grade is given.
2. Completion of the University general education requirements.
3. Completion of the University writing requirement.
4. For specific requirements, check individual departmental or program listings.

See also pages 53, 72, 83, 102, and 131.

### Associate in Arts

For degree requirements, see page 131.

### Associate in Applied Science

For degree requirements, see page 122.

### Dual Degrees

The opportunity to pursue simultaneously two undergraduate degrees 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 (page 22), a student

may not pursue two different degree levels simultaneously.

### Requirements

1. Students desiring dual degrees must petition the college dean or deans involved for permission.
2. Students must have a minimum 2.50 cumulative grade-point average.
3. Students planning to take one degree in a highly prescribed curriculum should register as freshmen in the appropriate school or college for that curriculum.
4. It is expected that candidates for two degrees will complete 32 credits beyond those required for the first degree.
5. 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.
6. 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.

### Minimum Graduation Average

A cumulative grade-point average of 2.00 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 2.00 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.



**Quota of Semester Credits**

Students registering for more than 20 credits must receive the approval of the college dean.

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.

**Residence**

“Residence” means being enrolled in University of New Hampshire (including UNH Manchester) courses after admission to and matriculation in a degree program. Students who are candidates for a bachelor’s degree must attain the last one-quarter of total credits for the degree in residence unless granted permission by the Academic Standards and Advising Committee to transfer part of this work from other accredited institutions.

**Leave of Absence or Withdrawal from the University**

Students who leave the University are required to file formal notification with the registrar.

**Majors, Minors, and Options**

Majors and some interdisciplinary minors are described under their various schools and colleges; other interdisciplinary and intercollege minors are described in Special University Programs, page 109.

**Student-Designed Majors**

See Special University Programs, page 114, for requirements for a student-designed major.

**Second Majors**

Bachelor’s degree students may choose to fulfill the requirements of two dissimilar major programs, provided they obtain the approval of their principal adviser and the dean(s) of the college(s) in which the programs are offered, and comply as follows:

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

2. 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.

3. 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 2.00 grade-point average in courses that the minor department approves. Courses taken on the 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. Students should declare an 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.

**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 concentrations allow students to specialize within a discipline. The choice of option is recorded on the student’s transcript.

**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	(4.00)	Excellent
A-	(3.67)	Intermediate grade
B+	(3.33)	Intermediate grade
B	(3.00)	Superior
B-	(2.67)	Intermediate grade
C+	(2.33)	Intermediate grade
C	(2.00)	Satisfactory, competent
C-	(1.67)	Intermediate grade
D+	(1.33)	Intermediate grade
D	(1.00)	Marginal grade
D-	(0.67)	Intermediate grade
F	(0.00)	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 general education requirements, for writing intensive courses, for courses required by a student's major or second major, for option or minor requirements, for ENGL 401, 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 Whittemore School 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 page 131.

**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 a) completed at least 12 graded credits for that semester and earned at least a 3.20 semester grade-point average; or b) earned at least a 3.20 cumulative grade-point average and at least a 3.20 semester grade-point average regardless of the number of graded credits that semester.

These categories are used: 3.20 to 3.49 (honors); 3.50 to 3.69 (high honors); and 3.70 to 4.00 (highest honors).

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.

---

**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*.

# DEGREES AND MAJOR PROGRAMS OF STUDY

## College of Liberal Arts

The teacher education division of the College of Liberal Arts coordinates the five-year undergraduate/graduate teacher education program. See page 32.

Bachelor of Arts

Anthropology

The Arts

Art History

Art Studio

Classics

Communication

Media Practices

English

English/Journalism

English Literature

English Teaching

European Cultural Studies

French

French Studies

Geography

German

Greek

History

Humanities

International Affairs (dual major)

Justice Studies (dual major)

Latin

Linguistics

Music

Music History

Music Theory

Performance Study

Preteaching

Philosophy

Political Science

Psychology

Russian

Sociology

Spanish

Theatre

Women's Studies

## Bachelor of Fine Arts

Fine Arts

## Bachelor of Music

Music Education

Performance

Theory

## College of Engineering and Physical Sciences

### Bachelor of Arts

Chemistry

Chemistry and Physics Teaching

Earth Science Teaching

Earth Sciences

Oceanography

Mathematics

Physics

### Bachelor of Science

Chemical Engineering\*

Bioengineering

Energy

Environmental Engineering

Chemistry\*

Civil Engineering\*

Computer Engineering\*

Computer Science\*

Bioinformatics

Computer Engineering\*

Electrical Engineering\*

Environmental Engineering\*

Industrial Processes

Municipal Processes

Environmental Sciences\*

Hydrology

Ecosystems

Soil and Watershed Management

Geology\*

Mathematics\*

Mathematics Education\*

Elementary

Middle/Junior High

Secondary

Mathematics, Interdisciplinary

Computer Science

Economics

Electrical Science

Physics

Statistics

Mechanical Engineering\*

Physics\*

Chemical

Materials Science

## School of Health and Human Services

### Bachelor of Science

Communication Sciences and Disorders

Family Studies

Child and Family Studies

Health Management and Policy

Public Health

Kinesiology

Athletic Training

Exercise Science

Outdoor Education

Physical Education Pedagogy

Sport Studies

Nursing

Occupational Science

Recreation Management and Policy

Program Administration

Therapeutic Recreation

Social Work

## College of Life Sciences and Agriculture

### Bachelor of Arts

Plant Biology

Zoology

### Bachelor of Science

Animal Sciences

Bioscience and Technology

Equine Sciences

Preveterinary Medicine

Biochemistry

Biology

Ecology, Evolution, and Behavior Biology

General Biology

Marine and Freshwater Biology

Molecular, Cellular, and Developmental

Biology

Community and Environmental Planning

Dairy Management

Environmental Conservation Studies

Environmental Horticulture

Environmental and Resource Economics

Environmental Sciences\*

Hydrology

Ecosystems

Soil and Watershed Management

Medical Laboratory Science

Clinical Chemistry

Clinical Hematology

Clinical Immunohematology

Clinical Microbiology

Microbiology

Nutritional Sciences

Plant Biology

Tourism Planning and Development

Wildlife Ecology

Zoology

### Bachelor of Science in Forestry

Forestry\*

Forest Management

Forest Science

\*Designated degree (the name of the specialization is included on the diploma; e.g., B.S. in Chemistry).



**Whittemore School of Business and Economics**

**Bachelor of Arts**

Economics

- Financial and Managerial Economics
- International and Development Economics
- Public Policy Economics

**Bachelor of Science**

Business Administration

- Accounting
- Entrepreneurial Venture Creation
- Finance
- Information Systems Management
- International Business and Economics Management
- Marketing
- Student-Designed

Economics

Hospitality Management

**Thompson School of Applied Science**

*Associate in Applied Science*

- Applied Animal Science
- Applied Business Management
- Civil Technology
- Community Leadership
- Food Services Management
- Forest Technology
- Horticultural Technology

**University of New Hampshire at Manchester**

*Associate in Arts*

General Studies

*Associate in Applied Science*

Community Leadership

*Associate in Science*

- Biological Sciences
- Business Administration

**Bachelor of Arts**

- Business
- Communication Arts
- English
- History
- Humanities
- Politics and Society
- Psychology

**Bachelor of Science**

- Computer Information Systems
- Electrical Engineering Technology\*  
Computer Technology
- Mechanical Engineering Technology\*
- Nursing
- Sign Language Interpretation

**Five-Year Degree Programs**

- Bachelor of Arts and Master of Education\*\*
- Bachelor of Science and Master of Education\*\*
- Bachelor of Science and Master of Science in Accounting
- Bachelor of Science and Master of Science in Biochemistry
- Bachelor of Science and Master of Science in Occupational Therapy

**Interdisciplinary Majors**

**Bachelor of Arts/Bachelor of Science**

International Affairs

**Bachelor of Science**

- Environmental Sciences
- Hydrology

**Interdisciplinary Minors**

- Adolescent and Youth Development
- African American Studies
- Agribusiness
- Air Force Leadership Studies
- American Studies
- Animal Behavior
- Architectural Studies
- Asian Studies
- Canadian Studies
- Child Life
- Cinema Studies
- Community Planning
- Deaf and Hard of Hearing Studies
- Disabilities
- Environmental Engineering
- Genetics
- Gerontology
- History and Philosophy of Science
- Humanities
- Hydrology
- Illumination Engineering
- Justice Studies
- Latin American Studies

- Marine Biology
- Materials Science
- Ocean Engineering
- Oceanography
- Plant Pest Management
- Race, Culture, and Power
- Religious Studies
- Russian Studies
- Sustainable Living
- Technology, Society, and Values
- War and Peace Studies
- Wetland Ecology
- Women's Studies

*Women Studies*

**Advisory Committees**

- Prelaw
- Premedical/Prehealth Care Professional

**Graduate School**

- Master of Arts
- Master of Science
- Master of Arts in Liberal Studies
- Master of Arts in Teaching
- Master of Business Administration
- Master of Education
- Master of Fine Arts
- Master of Public Administration
- Master of Public Health
- Master of Science for Teachers
- Master of Social Work
- Certificate of Advanced Graduate Study
- Doctor of Philosophy

\*Designated degree (the name of the specialization is included on the diploma; e.g., B.S. in Chemistry).

\*\*Also Master of Arts in Teaching.

# PROGRAM ABBREVIATIONS

The following abbreviations are used to identify undergraduate and graduate courses offered at the University. An asterisk (\*) preceding the letters identifies those disciplines offering graduate-level coursework.

## College of Liberal Arts

ANTH	Anthropology
ARTS	Art and Art History
* ARTS	Painting
CHIN	Chinese
CLAS	Classics
CMN	Communication
* EDUC	Education
* ENGL	English
ECS	European Cultural Studies
FREN	French
GEOG	Geography
GERM	German
GREK	Greek
* HIST	History
HUMA	Humanities
ITAL	Italian
JPN	Japanese
* JUST	Justice Studies
LLC	Languages, Literatures, and Cultures
LATN	Latin
LING	Linguistics
* MUSI	Music
* MUED	Music Education
PHIL	Philosophy
* POLT	Political Science
PORT	Portuguese
* PSYC	Psychology
RS	Religious Studies
RUSS	Russian
SCSC	Social Science
* SOC	Sociology
* SPAN	Spanish
THDA	Theatre and Dance
WS	Women's Studies

## College of Engineering and Physical Sciences

* CHE	Chemical Engineering
* CHEM	Chemistry
* CIE	Civil Engineering
* CS	Computer Science
* ESCI	Earth Sciences
* ECE	Electrical and Computer Engineering
* ENGR	Engineering
ENE	Environmental Engineering
* MATH	Mathematics and Statistics
* ME	Mechanical Engineering
* MS	Materials Science
* OE	Ocean Engineering
* PHYS	Physics
TECH	Technology (nondepartmental)

## School of Health and Human Services

* COMM	Communication Sciences and Disorders
* FS	Family Studies
* HHS	Health and Human Services
* HMP	Health Management and Policy
* KIN	Kinesiology
* NURS	Nursing
* OT	Occupational Therapy
* PHP	Public Health
* RMP	Recreation Management and Policy
* SW	Social Work

## College of Life Sciences and Agriculture

* ANSC	Animal Sciences
* BCHM	Biochemistry
BIOL	Biology
CD	Community Development
* EREC	Environmental and Resource Economics
* GEN	Genetics
LSA	Life Sciences and Agriculture
* MICR	Microbiology
MLS	Medical Laboratory Science
* NR	Natural Resources
* NUTR	Nutritional Sciences
* PBIO	Plant Biology
* RAM	Resource Administration and Management
<del>* RECO</del>	<del>Resource Economics</del>
TOUR	Tourism Planning and Development
* ZOO	Zoology

## Whittemore School of Business and Economics

* ACFI	Accounting and Finance
* ADMN	Business Administration
DS	Decision Sciences
* ECON	Economics
HMG	Hospitality Management
MGT	Management
MKTG	Marketing

## Additional Programs

AERO	Aerospace Studies
AMST	American Studies
* ENED	Environmental Education
* EOS	Earth, Oceans, and Space
GERO	Gerontology
GRAD	Graduate School
IA	International Affairs
INCO	Intercollege
* LS	Liberal Studies
MILT	Military Science
* NRES	Natural Resources and Earth Systems Sciences

## Thompson School of Applied Science

AAS	Applied Animal Science
ABM	Applied Business Management
AM	Agricultural Mechanization
CT	Civil Technology
COM	TSAS Communication
CSL	Community Leadership
FORT	Forest Technology
FSM	Food Services Management
HT	Horticultural Technology
MTH	TSAS Mathematics
SSCI	TSAS Social Science

## University of New Hampshire at Manchester

ADM	Business Administration
ASL	American Sign Language
BSCI	Biological Science
CA	Communication Arts
CIS	Computer Information Systems
ECN	Economics
ET	Engineering Technology
INTR	Sign Language Interpretation
PS	Politics & Society

## Colleges and Schools

COLA	College of Liberal Arts
CEPS	College of Engineering and Physical Sciences
SHHS	School of Health and Human Services
COLSA	College of Life Sciences and Agriculture
WSBE	Whittemore School of Business and Economics
TSAS	Thompson School of Applied Science
UNHM	University of New Hampshire at Manchester
GRAD	Graduate School



[www.unh.edu/liberal-arts](http://www.unh.edu/liberal-arts)

Marilyn Hoskin, Dean  
John T. Kirkpatrick, Associate Dean  
Jeffrey M. Diefendorf, Senior Faculty Fellow  
Peggy Vagts, Senior Faculty Fellow

## Fine and Performing Arts Division

Department of Art and Art History  
Department of Music  
Department of Theatre and Dance

## Humanities Division

Department of English  
Department of Languages, Literatures, and Cultures  
Department of Philosophy

## Social Science Division

Department of Anthropology  
Department of Communication  
Department of Geography  
Department of History  
Department of Political Science  
Department of Psychology  
Department of Sociology

## Teacher Education Division

Department of Education

## Bachelor of Arts

Anthropology

The Arts

Art History

Art Studio

Classics

Communication

Education

English

English/Journalism

English Literature

English Teaching

European Cultural Studies

French

French Studies

Geography

German

Greek

History

Humanities

International Affairs Dual Major

Justice Studies Dual Major

Latin

Linguistics

Music

Music History

Music Theory

Performance Study

Preteaching

Philosophy

Political Science

Psychology

Russian

Sociology

Spanish

Theatre

Women's Studies

## Bachelor of Fine Arts

Fine Arts

## Bachelor of Music

Music Education

Organ

Piano

Strings, Woodwinds, Brass, or Percussion Theory

Voice

**I**t 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

The College of Liberal Arts offers three degrees: bachelor of arts, bachelor of fine arts, and bachelor of music.

### *Bachelor of Arts*

These programs primarily provide a broad liberal education along with a major in one of the fields listed on this page. For requirements for the bachelor of arts degree and information regarding these majors, see Degree Requirements and Programs of Study, pages 18 and 30.

### *Bachelor of Fine Arts*

This curriculum provides training for students who plan to enter a professional graduate school. For requirements for the bachelor of fine arts degree, see Art and Art History, page 30.

### *Bachelor of Music*

This curriculum provides professional training in performance, in musical theory, and in music education, and it allows students to develop their talent to a standard equivalent to the one achieved at conservatories of music. For requirements for the bachelor of music degree and information regarding the curriculum, see page 44.

Degrees include Music Education; Organ; Piano; Strings, Woodwinds, Brass, or Percussion Theory; and Voice.

### *Combined Programs of Study*

In addition to pursuing a single major, students may combine programs of study as follows:

*Minors:* See page 19; see also interdisciplinary minors, page 22, and below.

*Second Majors:* See page 19.

*Dual-Degree Programs:* See page 18.

*Student-Designed Majors:* See page 114.

*Other combined programs and interdisciplinary opportunities:* See page 110.

## Interdisciplinary Programs

### **African American Studies**

[www.unh.edu/afamstudies/](http://www.unh.edu/afamstudies/)

The African American studies minor provides students with an interdisciplinary approach to a central dimension of United States history, literature, and culture. 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 to the sciences. 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 African American experience.

African American studies consists of five 4-credit courses, including an introductory course, a required history course, and three other approved offerings. Students must take at least one course at the 600 or 700 level. The required core courses provide students with a general understanding of the broad and diverse spectrum of African American history, literature, and culture. Electives enable students to develop that understanding by way of special topics courses in their major fields of study, including some that provide students with an opportunity to relate African American issues to African history and culture. Students must earn a C- or better in each course, and maintain a 2.00 grade-point average in courses taken for the minor. Electives may include a senior seminar.

Students interested in minoring in African American studies should contact the coordinator, Funso Afolayan, Department of History, 415 Horton Social Science Center, (603) 862-3026, e-mail [fsa@unh.edu](mailto:fsa@unh.edu); or African American Studies office, 329 Huddleston Hall, (603) 862-3753; e-mail [afam.minor@unh.edu](mailto:afam.minor@unh.edu).

**Required Courses**

ENGL 517/AMST 502, Introduction to African American Literature and Culture or  
INCO 450, Introduction to Race, Culture, and Power  
HIST 505 or 506, African American History

**Elective Courses**

Electives are approved for the minor and announced each semester in the Time and Room Schedule and on the African American Studies Web site, [www.unh.edu/afamstudies](http://www.unh.edu/afamstudies). Although the minor is focused on African American Studies, this focus does not exclude the global context for African American Studies. Accordingly, courses in African, Caribbean, and other histories and cultures can count towards the minor. Often, too, courses that are only partly devoted to the concerns of African American Studies can count for the minor, if the instructor will allow the students to focus a significant amount of coursework to this field of study. Approval by both the minor coordinator and the course instructor is required for such courses. Among the courses that had been approved in the past are:

ANTH 500B, Peoples and Cultures of South America  
ANTH 500D, Peoples and Cultures of Sub-Saharan Africa  
ANTH 627, Urbanization in Africa  
ANTH 686, Gender, Sexuality, and HIV/AIDS in Sub-Saharan Africa  
ANTH 760, Race in Global Perspectives  
ARTS 671, Egypt and Nubia: Art, Architecture, and Rediscovery  
CMN 632, Communication Theory  
EDUC 797/ANTH 790, Seminar: Teaching Race  
ENGL 581/581H, Introduction to Post-Colonial Literature in English  
ENGL 609, Ethnicity in America: The African American Experience in the 20th Century  
ENGL 681, Introduction to African Literatures in English  
FREN 526, Introduction to Francophone Cultures  
FREN 676, Topics in Francophone Cultures  
FS 757/851, Race, Class, Gender, and Families  
HIST 444D, Slavery and Society in Pre-Colonial Africa  
HIST 497, The Civil Rights Movement  
HIST 531, Introduction to Latin America & the Caribbean  
HIST 587/588, History of Africa  
HIST 589, Islam in Africa  
HIST 600.02, Race, Gender, Science & African-American Experience  
HIST 611, History of the Civil War Era  
HIST 625, Southern History and Literature Since the Civil War  
HIST 684, History of Southern Africa Since 1652  
HIST 688, African Religions  
HUMA 592, Topic: The Blues  
HUMA 609, Ethnicity in America: The Black Experience in the 20th Century  
MUSI 460, Jazz Band  
PHIL 540, Philosophy of Race and Racism  
POLT 519, Civil Rights and Liberties  
PSYC 791A02, Psychology of Race  
SOC 530/530W, Race and Ethnic Relations  
SOC 745, Race, Ethnicity, and Inequality  
WS 401.06, Intro to Women's Studies  
WS 595, Black Women in America

**American Studies (AMST)**

[www.unh.edu/amstudies](http://www.unh.edu/amstudies)

(For course descriptions, see page 147.)

American Studies is the interdisciplinary study of United States culture in all its varied aspects. Students learn to connect history, art, politics, religion, popular culture, literature, and other features of American life and to examine both the differences and the similarities among, for example, different racial and ethnic groups, historical periods, and media. We are an intercollegiate minor drawing courses from fifteen departments, courses emphasizing the interrelationship among current methodologies, thought, and scholarship concerning the study of American culture and society. We encourage students to take advantage of the rich resources of the New England region through internships and independent studies at local museums, libraries, historical societies, and other institutions dedicated to the study and preservation of American culture. Students can also participate in exchange programs at universities with other regional or ethnic studies programs. Independent study, field work projects, and exchanges must be approved by the faculty member supervising the work and by the coordinator of the American Studies minor.

The American Studies minor consists of five courses. Students must take American Studies 501 as early in their careers as possible. In addition, students must take at least one other American Studies course (preferably more), and at least one course concentrating on issues of race, gender, or ethnicity in America (starred [\*] courses). No more than two courses of the five may be at the 500 level (departmental prerequisites may be waived for American Studies students at the discretion of the instructor). Students must earn a C- or better in each course and maintain a 2.00 grade-point average in courses taken for the minor.

Because of the range and breadth of possible American studies concentrations, students are urged to see the coordinator and fill out an intent to minor form as soon as they become interested in the minor, preferably by the beginning of their junior year. Students may wish to focus their coursework in the minor around a coherent topic, either chronologically or thematically. Examples include but are not limited to: a specific historical period (for example, the twentieth century); race, ethnicity, gender, or class in America; popular culture; the arts; Native American studies; regional studies; urban, rural, and natural environments; American institutions (education, sports, religion,

etc.). Students might also consider concentrating their major work in courses related to American Studies.

Interested students should contact the American Studies office, 329 Huddleston, (603) 862-3753; e-mail [amst.minor@unh.edu](mailto:amst.minor@unh.edu).

**Courses**

AMST 444A, Portable, Exportable Nation  
AMST 501, Introduction to American Studies, and one of the following:  
AMST 502, Introduction to African American Literature and Culture\*  
AMST 503, Introduction to Native American Studies  
AMST 603, Photography and American Culture  
AMST 604, Landscape and American Culture  
AMST 605, Film in American Culture  
AMST 607, Religion in American Life and Thought  
AMST 608, Women Artists and Writers, 1850-Present\*  
AMST 609, The African American Experience in the Twentieth Century\*  
AMST 610, New England Culture  
AMST 611, Indigenous New England  
AMST 612, Periods in American Culture  
AMST 613, Regions in American Culture  
AMST 614, Native American Studies Topics  
AMST 615, Asian American Studies Topics  
AMST 620, Internship  
AMST 665, Applied American Environmental Philosophy  
AMST 695/6, Special Topics in American Studies  
AMST 697/8, Seminar in American Studies  
AMST 750, Applied American Environmental Philosophy  
AMST 795/6, Independent Study

\*These courses concentrate on issues of race, gender, or ethnicity in America.

**Elective Courses**

Electives are approved for the minor and announced each semester in the Time and Room Schedule and on the American Studies Web site, [www.unh.edu/amstudies](http://www.unh.edu/amstudies).

**Asian Studies**

[www.unh.edu/asian-studies](http://www.unh.edu/asian-studies)

To appreciate the Asian peoples—their languages, their history, their society, their political/economic systems—and the Asian experiences in the United States, the Asian studies minor is designed to be broadly inclusive. Students are required to choose five courses from a variety of Asian courses offered at UNH, no more than three of which can be from one individual discipline. Students are strongly encouraged to enroll in Asian languages classes at UNH as well as explore Asian courses at other U.S. and Asian institutions. For further information, please contact Lawrence C. Reardon, coordinator, Department of Political Science, 241A Horton Social Science Center, (603) 862-1858; e-mail [chris.reardon@unh.edu](mailto:chris.reardon@unh.edu).



ANTH 500E, People and Cultures of South Asia  
 ARTS 697, Arts of the Far East  
 CHIN 401/2, Elementary Chinese  
 CHIN 425, Introduction to Chinese Culture and Civilization  
 CHIN 503/4, Intermediate Chinese  
 CHIN 795/96, Independent Study in Chinese  
 CLAS 413/4, Elementary Sanskrit  
 ENGL 581, Introduction to Postcolonial Literatures in English  
 ENGL 616C, Asian Americans in Film/Asian American Film  
 ENGL 750, Special Topics in Literature: Asian American Literature  
 GEOG 541, Geography of Japan  
 HIST 425, Chinese Civilization  
 HIST 579, History of China in Modern Times  
 HIST 580, History of Japan in Modern Times  
 HIST 681, Modern China Topics  
 JPN 401/2, Elementary Japanese\*  
 JPN 425, Introduction to Japanese Culture and Civilization  
 JPN 503/4, Intermediate Japanese\*  
 JPN 631/2, Advanced Japanese  
 JPN 795/6, Independent Study in Japanese  
 PHIL 520, Introduction to Eastern Philosophy  
 POLT 545, People and Politics in Asia  
 POLT 546, Wealth and Politics in Asia  
 POLT 556, Politics in China  
 POLT 566, Foreign Policies in Asia and the Pacific  
 POLT 569, Chinese Foreign Policy  
 POLT 797, Seminar in Chinese Politics

\*Japanese taught at UNH. Other Asian languages studied elsewhere may be substituted by approval.

### Canadian Studies

[www.unh.edu/cie/canada.html](http://www.unh.edu/cie/canada.html)

A minor in Canadian studies brings together expertise currently held by UNH faculty into a systematic program of study allowing students to add to their major program interests a specialization in some aspect of Canadian society. Students will be exposed to courses and independent study opportunities in subject areas including Canadian history, geography, political science, sociology, health care and management, linguistics, natural resources, business, and Québec language, literature, and culture.

Additionally, students will have opportunities to study in Canada through established study abroad opportunities between UNH and several universities in Québec and Nova Scotia. The possibility for internships at, for example, the Canadian Embassy in Washington, D.C., also exists.

Please consult the Canadian studies Web site regularly for further information. Canadian Studies students are required to earn 20 credits.

### Required Courses/16 credits

*Four courses chosen from*

HIST 567, History of Canada  
 GEOG 514, Geography of Canada and the US  
 FREN 426, Intro to Québec Studies

FREN 526, Intro to Francophone Cultures  
 FREN 676, Topics in Francophone Cultures  
 FREN 785, Francophone Literatures  
 POLT 558, Government and Politics of Canada  
 HMP 750, Comparative Health Care Systems  
*or*  
 Study abroad experience in Canada for up to 16 credits  
*or*  
 Combined study abroad, courses, internships (up to 4 cr. equivalent) or independent study (up to 4 cr. equivalent) for a total of 16 credits

### One course/4 cr. Independent study

This course can be taken in any department, but must be at the 700 level. The student will work with a willing faculty member who will supervise research having 100 percent Canadian content and which will result in a research paper.

### Cinema Studies

[www.unh.edu/cinema-studies/minor.htm](http://www.unh.edu/cinema-studies/minor.htm)

The minor in cinema studies offers a variety of opportunities to study a predominant contemporary form of narrative, aesthetic, and social discourse: the moving photographic image. Film is the primary medium of study for the minor, but the cinematic practices of video and television may also be included as potential areas of interest. Courses consist of interdisciplinary approaches to the analysis of cinema, covering works from the silent period to the present, from the U.S. and other nations, and from “mainstream” and “alternative” groups. Students learn the art, geography, history, technology, economics, and theory of cinema, while also learning the language for analyzing its forms and practices. The minor allows for organized and meaningful study of the moving photographic image, from a wide range of scholarly interests and approaches which complement the increasingly significant place of cinema in many major disciplines and other programs. Students in this program become keenly aware of themselves as members of a culture of the moving photographic image.

Cinema studies students are required to take five courses. Students must earn at least a C- in each course and maintain a 2.00 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 8 credits, if approved, will “double count.” Courses in cinema studies should be taken in the following sequence: first, one introductory course, ENGL 533, or CMN 550, followed by one history or theory of film course LLC 540, followed by at least two of the more advanced and/or focused courses, and one of the elective courses.

Interested students should contact the Cinema minor coordinator, Piero Garofalo, Languages, Literatures, and Cultures, (603) 862-3769.

### Introductory Course (one required)

ENGL 533, Introduction to Film Studies  
 CMN 550, Cinema and Society

### History and Theory of Film (one required)

LLC 540 History of Film  
 ENGL 613, Film Theory

### Advanced and/or Focused Courses (two required)

CMN 650, Critical Perspectives on Film  
 ENGL 616 A, Studies in Film: Genre  
 ENGL 616 B, Studies in Film: Authorship  
 ENGL 616 C, Studies in Film: Narrative and Style  
 GERM 523, Women and German Film  
 GERM 524, Special Topics in German Film  
 ITAL 525, Italian Cinema  
 LLC 440, Cultural Approaches to Film and Fascism  
 RUSS 426, Film and Communism  
 SOC 670, Sociology and Nonfiction Film

### Elective Courses (one required)

Electives are drawn from an approved list of courses for the minor, which is compiled and announced every semester. Students may also 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.

### History and Philosophy of Science

[www.unh.edu/history/golinski/file9.html](http://www.unh.edu/history/golinski/file9.html)

What is science? When people ponder this question, they are often led to seek answers outside the sciences themselves. This interdisciplinary minor is planned to help students address historical and philosophical questions about science. In the history of science, we ask: 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.

ECON 615, History of Economic Thought  
 ECON 698, Topics in Economics\*  
 ECON 798, Economic Problems\*  
 HIST 521, The Origins of Modern Science  
 HIST 522, Science in the Modern World  
 HIST 523, Introduction to the History of Science  
 HIST 621, 622, History of American Thought  
 HIST 651, 652, European Intellectual History  
 HIST 654, Topics in History of Science  
 HUMA 651, Humanities and Science: The Nature of Scientific Creativity  
 MATH 419, Evolution of Mathematics  
 PHIL 424, Science, Technology, and Society  
 PHIL 435, The Human Animal  
 PHIL 630, Philosophy of the Natural Sciences  
 PHIL 683, Technology: Philosophical and Ethical Issues  
 PHIL 725, Philosophy of the Social Sciences  
 PHIL 780, Special Topics in Philosophy\*  
 PSYC 571, The Great Psychologists  
 PSYC 591, Special Topics in Psychology\*  
 PSYC 770, History of Psychology  
 PSYC 771, Psychology in 20th-Century Thought and Society

\*with approval

## Humanities (HUMA)

### [www.unh.edu/humanities-program](http://www.unh.edu/humanities-program)

(For course descriptions, see page 196.)

The Humanities minor studies the fundamental questions and issues of human civilization. (For a more complete description of the Humanities Program, see Humanities, page 38.) The minor consists of a minimum of 20 credits of academic work (five courses), with a minimum grade of C from the following courses:

#### Two courses from the 510/511/512/513/514/515 sequence:

HUMA 510, The Ancient World: An Interdisciplinary Introduction  
 HUMA 511, The Medieval World: An Interdisciplinary Introduction  
 HUMA 512, Renaissance and Early Modern: An Interdisciplinary Introduction  
 HUMA 513, The Modern World: An Interdisciplinary Introduction  
 HUMA 514, The Twentieth Century, Part I: 1900-1945  
 HUMA 515, The Twentieth Century, Part II: 1945-1999

#### Two courses from other Humanities Program courses, one of which should be at the 600-level

HUMA 401, Introduction to the Humanities  
 HUMA 444, Idea of University  
 HUMA 500, Critical Methods in the Humanities  
 HUMA 592, The Blues  
 HUMA 607, The American Character: Religion in American Life and Thought  
 HUMA 608, Arts and American Society: Women Writers and Artists, 1850-Present  
 HUMA 609, Ethnicity in America: The Black Experience in the Twentieth Century  
 HUMA 610, Regional Studies in America: New England Culture in Changing Times  
 HUMA 650, Humanities and the Law: The Problem of Justice in Western Civilization  
 HUMA 651, Humanities and Science: The Nature of Scientific Creativity  
 HUMA 730, Special Studies in the Humanities

#### Humanities Program Seminar

HUMA 700, Seminar in the Humanities or another approved course

For more information on the Humanities major or minor, please consult the coordinator, Catherine Peebles, G19 Murkland Hall, (603) 862-3638; e-mail huma@unh.edu.

## Justice Studies Minor

### [www.unh.edu/justice-studies](http://www.unh.edu/justice-studies)

(For course descriptions, see page 199. For program information on the dual major in justice studies, see page 39.)

Justice studies 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 (e.g., history, political science), and professionally-oriented departments (education, family studies, social work). Some of the topics studied include courts, family violence, rights, substance abuse, juvenile justice, school law, children as witnesses, hate crimes, and community policing. 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 minor is intended for students who are looking for careers in the justice system but do not have the time in their academic schedule to complete the dual major program.

The minor in justice studies requires students to take a total of five courses (20 credits) each completed with a grade of C- or better in order to complete the program. Students are allowed to "double count" no more than two courses towards their major and minor, and are not allowed to take more than two courses from any one department (except for justice studies).

## Required Courses

POLT 507, Politics of Crime and Justice, and/or SOC 515, Introduction to Criminology  
 JUST 401, Introduction to Justice Studies

## Elective Courses

Students are required to select three elective courses from the Justice Studies approved course list. This list is approved and published yearly by the Justice Studies Executive Committee. Departmental offerings that are currently accepted for the minor include:

CD 717, Law of Community Planning (offered every other year)  
 CMN 698, Studying the Police  
 EC 718, Law of Natural Resources and Environment  
 EDUC 767, Students, Teachers and the Law  
 FS 794, Families and the Law  
 FS 797, Children, Adolescents and the Law  
 HMP 734, Health Law  
 HIST 497W, Crime and Punishment in Modern Society  
 HIST 509, Law in American Life  
 HIST 559/560, History of Great Britain  
 HIST 609, Special Topics: American Legal History  
 HMGT 625, Hospitality Law (only HMGT majors allowed)  
 HMGT 627, Employment Law  
 HUMA 650, Humanities and the Law: The Problem of Justice in Western Civilization  
 JUST 401, Introduction to Justice Studies  
 JUST 501, Justice Studies Research Methods  
 JUST 550/551, Mock Trial (must take year-long course)  
 JUST 601/602, Field Experience  
 JUST 650, Special Studies in Comparative Justice Systems  
 JUST 651, Field Studies in the Hungarian Justice System  
 JUST 695, Special Topics in Justice Studies (no more than two courses)  
 JUST 701, Senior Seminar (writing intensive course)  
 KIN 798, Sports Law  
 MGT 647, Business Law (only Business Administration, Accounting and Business Administration, and Management allowed)  
 MGT 648, Business Law II  
 NR 566, Wildlife Enforcement I  
 OES 552, Corrections, Treatment and Custody  
 OES 554, Juvenile Delinquency  
 PHIL 436, Social and Political Philosophy  
 PHIL 635, Philosophy of Law  
 PHIL 660, Law, Medicine and Morals  
 PHIL 701, Value Theory  
 PHIL 740, Advanced Topics in Philosophy of Law  
 POLT 407, Law and Society  
 POLT 507, Politics of Crime and Justice  
 POLT 508, Supreme Courts and the Constitution  
 POLT 513, Civil Rights and Liberties  
 POLT 520, Justice and the Political Community  
 POLT 660, Terrorism and Political Violence  
 POLT 701, The Courts and Public Policy  
 POLT 707, Criminal Justice Administration  
 POLT 708, Administrative Law  
 PSYC 591, Forensic Psychology  
 PSYC 755, Psychology of Law (Research Methods Prerequisite)  
 PSYC 756, Psychology of Crime and Justice (Research Methods Prerequisite)  
 PSYC 791, Advanced Topics: Psychology of Hate  
 RMP 772, Law and Public Policy in Leisure Services (must have junior/senior status)  
 SOC 515, Introductory Criminology (or POLT 507)



SOC 525, Juvenile Crime and Delinquency  
 SOC 535, Homicide  
 SOC 620, Drugs and Society  
 SOC 650, Family Violence (must have junior/senior status)  
 SOC 655, Sociology of Crime and Justice  
 SOC 697, Spc. Top. Perspectives on Terrorism  
 SOC 715, Criminological Theory  
 SOC 720, Sociology of Drug Use  
 SOC 780, Social Conflict  
 SOC 797, Special Topics: Crime and Justice  
 SW 525, Introduction to Social Welfare Policy  
 WS 595, Special Topics: Violence Against Women

Students who are interested in minoring in the justice studies program will need to file an Intent to Minor form. This form is available in the Justice Studies Office or can be downloaded from the Web site at [www.unh.edu/justice-studies](http://www.unh.edu/justice-studies). Offices are located in Room 202, Huddleston Hall, and are open Monday through Friday 9 a.m. to 12 p.m. and 1 p.m. to 4 p.m. For more information contact Professor Ellen Cohn at (603) 862-3197, e-mail [ellen.cohn@unh.edu](mailto:ellen.cohn@unh.edu); or Debbie Briand at (603) 862-1716, e-mail [justice.studies@unh.edu](mailto:justice.studies@unh.edu).

### Latin American Studies Minor

[www.unh.edu/amstudies/latam.html](http://www.unh.edu/amstudies/latam.html)

The Latin American Studies minor provides an interdisciplinary approach to the study of Latin America. People of Latin American or Latino heritage will soon comprise the largest minority group in the U.S. Knowledge of Latin America is especially valuable for students who plan to work in education, international organizations, government, social services and business, as well as for those who plan to undertake graduate study in Latin America. The minor requires five courses which represent three disciplines. Latin American History (HIST 531 or 532) is required. Spanish or Portuguese language courses through the intermediate level are required (completion of SPAN 504 or PORT 504 at UNH, or equivalent courses or equivalency testing). Academic study in Latin America is strongly recommended. Elective courses must be approved by the Latin American Studies minor coordinator or committee and at least 50 percent of any selected course must focus on Latin America.

ANTH 500B, Peoples and Cultures of the World: South America  
 ANTH 501, World Prehistory: Meso America  
 ANTH 697, Mayan Culture  
 AOE 630, Development of Food/Fiber  
 EC 535, Environmental Conservation\*  
 FOR 502, The Endangered Forest  
 FS 773, International Perspectives on Children and Families  
 HIST 425, Foreign Cultures\*\*

HIST 532, Modern Latin America  
 HIST 631, 632, Latin American History  
 POLT 554, Politics of Central America, Mexico, and the Caribbean  
 POLT 559, Politics of South America  
 POLT 565, United States- Latin American Relations  
 POLT 651, Selected Topics in Comparative Politics\*\*  
 PORT 401, Elementary Portuguese  
 PORT 503, 504, Intermediate Portuguese  
 SPAN 601, Phonetics  
 SPAN 522, Latin American Literature in Translation  
 SPAN 526, Latin American Culture and Civilization  
 SPAN 622, Latin American and Brazilian Literature in Translation  
 SPAN 653, 654, Introduction to Latin American Literature and Thought  
 SPAN 771, Latin American Drama  
 SPAN 772, Latin American Novel  
 SPAN 773, Latin American Short Story  
 SPAN 797, Latin American Literature

\*Since less than 50 percent of this course deals with Latin America, you must talk to the professor at the beginning of the semester and declare your intention to apply it to the Latin American Studies minor. All research paper/projects must focus on a Latin American topic.

\*\*When course content is relevant.

For more information on the Latin American studies minor, contact Professor Marco Dorfsman, Latin American studies minor coordinator, Murkland 209, (603) 862-3448; e-mail [marcod@cisunix.unh.edu](mailto:marcod@cisunix.unh.edu).

### Queer Studies Emphasis

[www.unh.edu/queerstudies/index.html](http://www.unh.edu/queerstudies/index.html)

The queer studies emphasis provides students with opportunities to research and understand the history, status, challenges, contributions, and changes in the lives of gay, lesbian, bisexual, and trans-gendered individuals and movements. This emphasis enables students to explore the relationship between gender and sexual orientation, and to understand queer discourse across the intellectual landscape, in the humanities, the arts, and the social sciences. The increasingly public face of queer life has generated new fields of study in the academy. As this new area evolves it provides a framework to address the phenomena of queer life and intellectual developments through the exploration of the ideas, social pressures, historical circumstances, constraints, and powers that guide queer communities.

The emphasis consists of interdisciplinary coursework in queer studies and is open to all students. Students who wish to pursue the queer studies emphasis should consult with the queer studies coordinator at [queer.studies@unh.edu](mailto:queer.studies@unh.edu) or contact the program through the women's studies office (603) 862-2194.

### QSE Course Offerings

ANTH 697, African Sexuality and AIDS  
 CMN 567, Images of Gender in the Media  
 CMN 583, Gender and Expression  
 ENG 798Q/ENG 694, LGBT Writing, Queer Reading  
 FS 624.02, Developmental Perspectives: Adolescence  
 FS 746, Human Sexuality  
 FS 757/857, Race, Class, Gender, and Families  
 HIST 497, Gender and Sexuality in African History  
 HIST 595, Colloquium: Gender and Sexuality in Pre-Modern Europe  
 HIST 595, Colloquium: Sex and Sexuality in Islamic History  
 HIST 596, Introduction to Gay and Lesbian History  
 HIST 665, Sex in the City  
 HUM 401, Sex and Love in Literature and Philosophy  
 INCO 404, Honors Seminar: History of Body and Sexuality  
 JUST 695, Topics in Race, Gender  
 POLT 525, Multicultural Theory  
 PSYC 595, Applied Psychology (Research, Field, or Academic Experience)  
 PSYC 791, Psychology of Hate  
 SOC 520, Sociology of the Family  
 SOC 570, Sexual Behavior  
 SOC 630, Sociology of Gender  
 SW 715/815, Social Work Practice with Gay, Lesbian, and Bisexual Clients  
 WS 444, Constructing Gender Identities and Expression  
 WS 595, Violence Against Women  
 WS 595W, Topics in Performing Gender  
 WS 595, Special Topic: Transgendered Identities and Politics in American Culture  
 WS 632, Feminist Thought (depending on instructor)  
 WS 632, Honors Thesis (or other departmental designation)  
 WS 795, Independent Study (or other departmental designation)  
 WS 797, Internship (or other departmental designation)  
 WS 798, Colloquium: Race, Gender & Representation  
 WS 798, Colloquium: Queer Theory  
 WS 798, Colloquium: Global Feminist Issues

### Approved Electives

ANTH 625.01, Female, Male, and Society  
 ARTS 690, Women Artists of the 19th & 20th Century  
 CMN 583.02, Gender and Communication  
 CMN 697.01, Contemporary Feminist Rhetoric  
 FS 545, Family Relations  
 PHIL 510, Philosophy of Feminism  
 PHIL 735.01, Feminist Phenomenology  
 POLT 721/821, Feminist Political Theory (may be available as a regular offering)  
 PSYCH 763, Community Psychology  
 SOC 630, Sociology of Gender  
 SOC 570, Human Sexual Behavior  
 SW 840, Implications of Race, Culture, and Oppression for Social Work Practice  
 WS 401, Introduction to Women's Studies  
 WS 595.01, Activism: VAW, Poverty, Repro Rights  
 WS 632, Feminist Thought (depending on instructor may be counted as a regular offering)

## Religious Studies

(For course descriptions, see page 237.)

**Director:** David Frankfurter

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.

Requirements of the religious studies minor include the basic two-semester sequence, History of World Religions (RS/HIST 483) and Patterns in World Religions (RS/HIST 484), the advanced Minors' Seminar in Religious Studies to be taken one's senior year (RS 699), and at least two other courses either cross-listed in religious studies, announced in the Religious Studies Bulletin, or otherwise relevant to the study of religion (by student's petition to the program director). 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 or higher. The program director can aid in advising such a major program.

Courses included in the biannual *Religious Studies Bulletin* 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 are generally offered at least once every two years:

### Historical-Cultural

RS/HIST 483, History of World Religions  
 HIST 585, Middle East History to the Medieval Islamic Era  
 HIST 587, Africa South of the Sahara  
 HIST 589, Islam in Africa  
 RS/ENGL/AMSTUD 607, Religion in American Life and Thought  
 RS/ANTH 617, Religion and Conflict in South Asia  
 HIST 642, Religious Conflict in Early Modern Europe  
 HIST 688, African Religions

### Theoretical

PHIL 417, Philosophical Reflections on Religion  
 RS/HIST 484, Patterns in World Religions  
 ANTH 616, Religion, Culture, & Society  
 RS/HIST 682, Cults & Charisma  
 RS 699, Senior Seminar in Religious Studies  
 RS/ANTH 770, Anthropology of the Sinister

### Textual

ENGL 518, The Bible as Literature  
 HIST/RS 576, The Hebrew Bible in Historical Context  
 HIST/RS 601, Seminar in Religious Texts  
 HIST/RS 689, The New Testament in Historical Context

Interested students should also be alert for special topics courses in history (HIST 600), English (ENGL 697/698), anthropology (ANTH 500), religious studies (RS 600), and other disciplines that might be relevant to the study of religion. Copies of the *Religious Studies Bulletin*, which includes all such courses each semester, can be picked up outside the director's office.

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. For more information, consult the director, David Frankfurter, Department of History, 436, Horton Social Science Center, (603) 862-3015; e-mail davidtf@hopper.unh.edu.

### Women's Studies Minor

[www.unh.edu/womens-studies](http://www.unh.edu/womens-studies)

(For course descriptions, see page 246.)

The women's studies minor offers students an interdisciplinary introduction to the status and contributions of women in various cultures and historical eras. (For a more complete description, see page 52.)

For the women's studies minor, students must complete 20 credits of women's studies courses. These must include WS 401, Introduction to Women's Studies, and WS 798, Colloquium in Women's Studies, normally taken at the beginning and end of the course sequence, respectively. It may be possible to substitute WS 797, (Internship) for WS 798, (Colloquium), but please discuss with your WS adviser. In between, students should select other women's studies courses or cross-listed courses from departmental offerings.

Other women's studies courses are WS 595, Special Topics in Women's Studies; WS 632, Feminist Thought; WS 795, Independent Study; WS 796, Advanced Topics in Women's Studies; and WS 797, Internships.

Departmental offerings include the following regularly repeated courses:

ARTS 487, Themes and Images in Art: Major Mythic Images of Women  
 ARTS 690, Women Artists of the Nineteenth and Twentieth Centuries  
 CMN 567, Images of Gender in the Media  
 CMN 583, Gender and Expression  
 ECON 698, Topics in Economics: Women in Economic Development  
 ENGL 585, Introduction to Women in Literature  
 ENGL 586, Introduction to Women Writers

ENGL 685, Women's Literary Traditions  
 ENGL 785, Major Women Writers  
 FS 545, Family Relations  
 FS 757, Race, Class, Gender, and Families  
 HIST 565, Women in Modern Europe  
 HIST 566, Women in American History  
 NURS 595, Women's Health  
 PHIL 510, Philosophy and Feminism  
 SOC 630, Sociology of Gender

Students may complete the minor requirements by selecting from other courses that are offered as special topics by the departments. In the past, such offerings have included the following:

AMST 696/HIST 609, Women, Law, and Culture  
 ANSC 415, Women in Science  
 ARTS/ENGL/HUM 608, Arts in American Society: Women Writers and Artists, 1850 to Present  
 CMN 597, Rhetoric of Early Women's Rights  
 CMN 696, Feminist Voices  
 EDUC 701, Sex Roles, Learning, and School Achievement  
 ENGL 694, GLBTQ Literature  
 ENGL 797, Shakespeare's Sisters: Women Writers of the English Renaissance  
 FREN 525, French Women: Subject and Object  
 FREN 635, French Women in Life and Literature  
 GERM 520, Women in German Literature and Society  
 GERM 523, Women in German Film  
 HIST 665, Themes in Women's History  
 FS 797, Race, Class, Gender, and the Family  
 PHIL 510, Philosophy and Feminism [Rev. 10/06]  
 SPAN 798, Women Writers of the 20th Century

Students who wish to minor in women's studies should consult with the coordinator, 203 Huddleston Hall, (603) 862-2194.

## Special Centers

### Center for the Humanities

The Center for the Humanities, located in Huddleston Hall, was established in 1986 to support the arts and humanities at UNH. It currently involves approximately twelve departments and more than 125 faculty members from across the University, representing such fields as literature, fine arts, anthropology, philosophy, folklore, history, religious studies, foreign languages, and literature. The Center for New England Culture is a unit of the Humanities Center.

Participation in the activities of the center is open to faculty members from across the University who are interested in the humanities as they are broadly defined. The center acts as a forum for discussion and intellectual cross-fertilization regarding humanistic issues and perspectives; it fosters and supports creative research in the humanities, both within and among disciplines; it assists humanities faculty in their educational and curricular activities in general,



and in the development of interdisciplinary courses and programs in particular; it serves the humanities faculty, students, programs, and community by assisting in the development and dissemination of educational and research materials; it fosters and develops outreach activities in the humanities for the state and region; and it is a focus for the humanities within the University, the state, and the region.

## Programs of Study

The bachelor of arts programs provide a broad liberal education with a concentration involving a minimum of 32 credits in a major field. Departments may specify certain (but not more than thirteen) required courses. Students must declare a major before the beginning of the junior year. Degree candidates also should satisfy the foreign language proficiency requirements by the start of their junior year. A bachelor of fine arts degree program and a bachelor of music degree program are also available.

### Anthropology (ANTH)

[www.unh.edu/anthropology/](http://www.unh.edu/anthropology/)

(For course descriptions, see page 151.)

**Chairperson:** Stephen P. Reyna

**Professors:** Joe L.P. Lugalla, Stephen P. Reyna, Nina Glick Schiller

**Associate Professors:** Justus M. Ogembo, Robin E. Sheriff, Deborah Winslow

**Assistant Professor:** William A. Saturno

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.

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

#### Required:

ANTH 412 or 413

ANTH 511

ANTH 701

ANTH 702

2 additional courses numbered below 599 (of which 1 must focus on a specific geographical area)

4 additional courses numbered 600 or above (of which 2 must be in designated seminar format, one seminar at the 700-level)

ANTH 411 may not be applied toward the requirement for the major.

American Sign Language may not be applied toward the foreign language requirement.

Honors in major and senior thesis options are also available.

Students who declare a major in anthropology are expected to make steady progress towards 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 their adviser.

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

The anthropology minor consists of 20 credits in anthropology courses with a C or better at least one of which must be numbered above 600.

### Art and Art History (ARTS)

[www.arts.unh.edu/](http://www.arts.unh.edu/)

(For course descriptions, see page 153.)

**Chairperson:** Michael McConnell

**Professors:** David S. Andrew, Grant Drumheller, Patricia A. Emison, Craig A. Hood, Scott Schnepf, David R. Smith, Mara R. Witzling

**Associate Professors:** Eleanor M. Hight, Maryse Searls McConnell, Michael McConnell, Jennifer K. Moses, Langdon C. Quin

**Assistant Professors:** Benjamin S. Cariens, Brian W.K. Chu, Julee Holcombe

**Affiliate Assistant Professor:** Vicki C. Wright

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 either studio art or art history and a bachelor of fine arts degree in studio art. Certification for art teaching in the public schools is also offered in cooperation with the Department of Education (see page 32).

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

#### *Bachelor of Arts Curriculum (Studio)*

Students selecting to work toward a bachelor of arts degree in studio art must complete a minimum of thirteen courses (52 credits), with a minimum grade of C- in each course.

#### The following courses are required:

ARTS 532, Introductory Drawing

ARTS 546, Introductory Painting

ARTS 567, Introductory Sculpture

ARTS 551, Photography

#### One of the following

ARTS 536, Introductory Printmaking: Intaglio

ARTS 537, Introductory Printmaking: Lithography

#### One of the following

ARTS 501, Ceramics

ARTS 525, Woodworking

#### Three additional courses in a studio concentration

ARTS 580, Survey of Art History I

ARTS 581, Survey of Art History II

Two 600-level art history courses

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

#### *Art History Major*

The art history major provides a comprehensive, in-depth study of Western art from the ancient world to the present and some exposure, as well, 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.

Students must complete a minimum of eleven courses (44 credits). Two introductory-level courses are required from one of the following three sequences: 1) ARTS 580 and 581; 2) ARTS 480 and one other 400-level art history; 3) ARTS 480 and one 500-level art history other than ARTS 580 or 581.

The upper-level requirements for the major include five 600- or 700-level courses (at least one each from the following categories: pre-Renaissance, Renaissance/Baroque, modern, and architectural history); and ARTS 795, Methods of Art History; ARTS 799, Seminar in Art History; ARTS 532, Introductory Drawing; and one other studio course. These courses must be completed with a minimum grade of C-. Art history majors receive preferential placement in ARTS 532. Students contemplating graduate school should learn German, and, if possible, either French, Italian, or another language relevant to their areas of interest.

### ***Bachelor of Fine Arts Major***

Incoming freshmen 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.) studio arts major. After taking the introductory studio art courses at UNH, interested students can then seek out two faculty members to sponsor their application for the B.F.A. program. Studio majors generally wait until they are well into the intermediate-level courses before submitting a portfolio for the B.F.A. review which is held before a full faculty committee twice a year.

The B.F.A. curriculum provides training for students who plan to enter professional graduate school or pursue careers as professional artists. Students selecting to work toward a B.F.A. degree must complete a minimum of 84 credits, with a minimum grade of C- in each course.

#### **The following courses are required:**

ARTS 532, Introductory Drawing  
ARTS 546, Introductory Painting  
ARTS 551, Photography  
ARTS 567, Introductory Sculpture  
ARTS 580, Survey of Art History I

ARTS 581, Survey of Art History II  
ARTS 598, Sophomore Seminar  
ARTS 632, Intermediate Drawing  
ARTS 798, Seminar/Senior Thesis (8 credits)  
Six courses in a studio concentration  
Three additional art electives  
Two 600-level art history courses

The possible areas of concentration within the department are: 1) painting, 2) sculpture, and 3) individualized programs. Individualized programs may be designed in the following subject areas: a) ceramics, b) drawing, c) printmaking, d) photography, and e) 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 semester one week before preregistration.

### ***Art Education Curriculum***

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 and required education courses and 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.

Art education majors may take accredited crafts courses at other institutions as art electives.

### ***Minors in the Department of Art and Art History***

All minors require five courses (20 credits). Students must receive a minimum grade of C- in all required courses. Only two courses from the art and art history major requirements can be applied towards 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 3 credits. Students with transfer courses that are accepted with less than 4 semester credits must still meet the 20 credit requirement for completion of the minor.

### ***Minor in Architectural Studies***

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 for their work. It is designed to assist those who a) are contemplating enrollment at a school of architecture; b) are particularly interested in architectural history; c) want to supplement their technical majors (e.g., civil engineering) with strong academic minors; or d) plan to pursue careers in preservation, education, community service, and public relations.

The minor in architectural studies consists of five courses (20 credits) distributed in the following way:

#### **Two courses in architectural history chosen from**

ARTS 574, Architectural History  
ARTS 654, 17th- and 18th-Century American Architecture  
ARTS 655, Early Modern Architecture: Revolution to World War I  
ARTS 656, Contemporary Architecture: The Buildings of Our Times  
ARTS 799, Seminar in Art History  
ARTS 455, Introduction to Architecture  
ARTS 532, Introductory Drawing

An elective chosen in consultation with the program coordinator of the architectural studies minor (an additional course in architectural history, a studio course, or some other appropriate elective)

Admission to the architectural studies minor will be authorized by the program coordinator. Interested students should consult with the coordinator in advance of selecting the minor.

### ***Minor in Art***

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.

### ***Minor in Art History***

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. The minor consists of five courses (20 credits) with a distribution that includes one introductory course from the 400-500 level and the remaining four courses chosen from the 600 level or above.

### ***Minor in Studio Arts***

The minor in studio arts consists of five courses (20 credits) with a distribution that includes Arts 532, Introductory Drawing; two studio courses from the 600 level or above; and two additional studio courses chosen from the offerings of the department.



**Chinese (CHIN)**

[www.unh.edu/languages/LLC/index.htm](http://www.unh.edu/languages/LLC/index.htm)

(For program description, see *Languages, Literatures, and Cultures*, page 40. For course descriptions, see page 160.)

**Classics (CLAS)**

[www.unh.edu/classics/](http://www.unh.edu/classics/)

(For program description, see *Languages, Literatures, and Cultures*, page 40. For course descriptions, see page 162.)

**Communication (CMN)**

[www.unh.edu/communication/](http://www.unh.edu/communication/)

(For course descriptions, see page 163.)

**Chairperson:** Lawrence J. Prelli

**Professors:** Beverly James, Sheila McNamee, Joshua Meyrowitz, Lawrence J. Prelli

**Associate Professors:** Patrick J. Daley, Melissa D. Deem, James M. Farrell, Sally W. Jacoby, John Lannamann

**Assistant Professors:** Jennifer L. Borda, Carol B. Conaway, Mardi J. Kidwell

**Lecturer:** R. Michael Jackson

The Department of Communication offers a major that emphasizes a range of integrative studies in human communication, including rhetorical studies, media studies, and interpersonal/small group studies. Students are taught analysis of communication transactions through historical, critical, and empirical investigations. Students examine verbal, nonverbal, and mediated messages across a wide spectrum of communication interactions: intrapersonal, interpersonal, group, and mass. They explore connections and interrelationships among various types of communication, theoretical perspectives, and methodological approaches.

While the major emphasizes critical analysis and understanding grounded in theory and research, application of understanding to a variety of communication settings and processes is an important dimension of study.

Students wishing to declare communication as a major should contact the director for majors, Professor Patrick Daley, for application information and requirements.

**Communication Major**

Majors must complete nine courses (36 credits) with a 2.00 overall average in the major. The distribution of required courses for the major is as follows:

**Three introductory courses**

CMN 455, 456, and 457 (12 credits). Majors must earn a grade of C or better in each introductory course before moving on to the same area 500-level courses.

**Three 500-level courses (12 credits), one from each of the following areas**

Media Studies (prerequisite: C or better in CMN 455): CMN 515, 519, 550, 567, 596

Rhetorical Studies (prerequisite: C or better in CMN 456): CMN 504, 507, 557, 597

Interpersonal Studies (prerequisite: C or better in CMN 457): CMN 503, 530, 572, 583, 598

Majors must earn a grade of C- or better in all intermediate-level courses. CMN 599 cannot be used to fulfill an intermediate course requirement.

Three advanced 600- and/or 700-level courses (12 credits) from among any of the three areas of study (prerequisites: CMN 455, 456, and 457 with grades of C or better, and an area-relevant 500-level prerequisite course with a grade of C- or better). Majors must earn a grade of C- or better in all advanced-level courses.

A maximum of 4 credits of independent study (CMN 795) may be counted toward the major. CMN 799 (Honors Thesis) and CMN 796 (Commentary) cannot be used to fulfill an advanced course requirement.

Transfer students must complete 18 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.

**Rhetoric and Public Address Minor**

The rhetoric minor consists of five courses (20 credits). Students must complete CMN 456, Propaganda and Persuasion, with a grade of C or better. Any additional four rhetoric courses with a grade of C- or better from the following list will satisfy the minor requirements; however, one of the listed 500-level courses is required prior to enrollment in any 600- or 700-level course: CMN 504, 507, 557, 600, 607, 645, 656, 657 (may be taken more than once, with different topics), 697, and 703.

**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. Qualified students who meet all requirements will graduate with a BA degree in Communication with a Media Practices Option. In addition to Communication major requirements, students are required to take two designated media practices courses at the

Manchester campus and complete a media practices internship (CMN 599). Students must maintain both an in-major and cumulative GPA of at least 2.5 to satisfactorily complete the Media Practices Option.

**Education (EDUC)**

[www.unh.edu/education](http://www.unh.edu/education)

(For course descriptions, see page 172.)

**Chairperson:** E. Scott Fletcher

**Professors:** Michael D. Andrew, John J. Carney, Todd A. DeMitchell, Ann L. Diller, Janet Elizabeth Falvey, David J. Hebert, Barbara E. Houston, Bruce L. Mallory, Sharon N. Oja

**Research Professor:** David C. Hagner

**Affiliate Professor:** Tom L. Franke

**Associate Professors:** Eleanor D. Abrams, Grant L. Cioffi, Elizabeth A. Finkel, E. Scott Fletcher, Virginia E. Garland, Georgia M. Kerns, Barbara H. Krysiak, Ann L. Loranger, Michael J. Middleton, Jan A. Nisbet, Justus M. Ogembo, Joseph J. Onosko, Harry J. Richards, Judith A. Robb, Paula M. Salvio, Thomas H. Schram, William L. Wansart, Dwight Webb, Ruth M. Wharton-McDonald

**Affiliate Associate Professor:** Wanda S. Mitchell

**Assistant Professors:** Vincent J. Connelly, Leslie J. Couse, Mary K. Fries, Suzanne E. Graham, John F. Hornstein, Loan T. Phan, Judy Sharkey

**Research Assistant Professors:** Cheryl Daly, Cheryl M. Jorgensen, Mary C. Schuh

**Affiliate Assistant Professors:** Cari A. Moorhead, Jeanne E. Ormrod

**Clinical Assistant Professor:** Jane Thompson

**Lecturers:** Timothy J. Churchard, Paul M. Loranger

**Basic Programs**

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

Students majoring in music, mathematics, nursery/kindergarten, 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. Students interested in agriculture and occupational education should contact Professor Michael Andrew in the Department of Education.

Elementary teaching and most secondary areas require completion 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 course work 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.\*

There are also opportunities for study or certification at the graduate level in administration, counseling, elementary and secondary teaching, early childhood, reading, special education, and adult and occupational 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 Education 500. For coursework that can be taken at the undergraduate level, students should see program advisers in the Department of Education.

### **Program Philosophy and Mission**

**Unit Mission Statement** The following conceptual framework guides all of the programs which 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 in the five-year program may combine their program for teacher licensure with a master's program in their major field department.

Students learn to establish caring environments which 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**

#### *Phase 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 could also leave enough time for other education course requirements.

Exploring Teaching is also available through the Live, Learn, and Teach summer program, which is open to juniors and seniors. For information, contact the Department of Education, 203 Morrill Hall. A positive recommendation from the Exploring Teaching instructor is required before further coursework is taken in the teacher education program.

#### *Phase 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). This co-adviser works with the students, along with the major adviser to plan the undergraduate portion of the five-year teacher education program.

Every student must take 4 credits in each of five areas (EDUC 700, Educational Structure and Change; EDUC 701, Human Development and Learning; Educational Psychology; EDUC 703, Alternative Teaching Models; EDUC 705, Alternative Perspectives on the Nature of Education; EDUC 751, Educating Exceptional Learners). EDUC 707,

Teaching Reading through the Content Areas, is required for some secondary subject licensure areas. 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.

### *Phase III. Internship and Graduate Phase of the Teacher Education Program*

Undergraduates should apply to the Graduate School by Nov. 1 in the first semester of the senior year for the final phase of the teacher education program.

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.

Students with an undergraduate G.P.A. of 3.2 or greater may be allowed to begin the program in the second semester of the senior year, earning a maximum of 8 graduate credits.

The year-long internship (EDUC 900/901) 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 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/October 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 at Manchester play a major role in identifying internship sites and should be consulted regarding placement. 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**

*Phase I* Exploring Teaching is open to all students subject to available space. Approximately 150 students are accepted each semester.

*Phase II* Continuation in Professional Coursework is dependent upon positive recommendations from Education 500, Exploring Teaching.

*Phase III* 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:

#### *1. Undergraduate Grade-point Average*

The undergraduate grade-point average of the middle 50 percent of students admitted to the graduate programs in teacher education falls in the range of 3.15-3.53.

#### *2. The Graduate Record Examination Scores*

The Graduate Record Examination (GRE) scores of the middle 50 percent of students admitted to the graduate programs in teacher education fall in the following range: Verbal, 410-550; Quantitative, 450-600; Analytical, 540-650.

#### *3. Recommendations*

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. Recommendations from undergraduate subject major professors are also important.

In our admission process, we seek evidence that our students have the following knowledge, abilities, and dispositions: 1) motives to teach that include a strong social commitment to contribute to society through education; 2) a disposition to care for students--each and every one; 3) the ability to interact positively with children and adults; 4) the capacity to win the respect of their peers and be effective in group interaction, showing openness to the needs and views of others; 5) 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; 6) perceptiveness: the ability to identify and process the relevant details in a given environment, especially in the context of a classroom; 7) the ability to make reasonable judgments in the context of complex situations that change from moment to moment; 8) the capacity for clear thinking and an ability to translate complex thoughts into simple and clear explanations; 9) superior academic skills: extensive knowledge of at least one major discipline, intellectual curiosity, and the ability to be open to the unknown; 10) a disposition to take charge of one's own learning, which includes the active pursuit of feedback and the willingness to take thoughtful risks.

#### *Early Admission*

Provision exists for UNH seniors to apply for early admission to the Graduate School, i.e., admission for the second semester of the senior year. Such candidates may petition to have up to 8 credits of graduate coursework simultaneously count toward the bachelor's

and master'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. A minimum of a 3.2 cumulative grade-point average is required to qualify for early admission.

Students interested in early admission apply using the regular graduate school application.

#### **Four-Year, Undergraduate Option**

A bachelor's degree including a one-semester teaching requirement allows students to be recommended for licensure in certain specialized areas. Those areas are: mathematics, music, nursery/kindergarten education, and physical education.

These program options include a major appropriate for the licensure being sought, in addition to the following core professional courses or their equivalent: EDUC 500, Exploring Teaching; EDUC 700, Educational Structure and Change; EDUC 701, Human Development and Learning: Educational Psychology; EDUC 703, Alternative Teaching Models; EDUC 705, Alternative Perspectives on the Nature of Education; EDUC 751, Educating the Exceptional Learner; and EDUC 694, Supervised Student Teaching.

For admission to supervised student teaching, a minimum 2.50 overall (2.80 for nursery/kindergarten) grade-point average at the time of application is required. Applications are due by March 1 of the junior year for the fall semester and October 15 of the senior year for the spring semester. An unofficial transcript and a current résumé must accompany your application. Return applications to the Department of Education Office, 203 Morrill Hall.

Students may also become licensed for kindergarten through grade three (early childhood licensure) by completing the master's degree program in early childhood.

#### **English (ENGL)**

[www.unh.edu/english](http://www.unh.edu/english)

(For course descriptions, see page 176.)

**Chairperson:** Janet Aikins Yount

**Professors:** Thomas A. Carnicelli, Mary Morris Clark, Walter F. Eggers, Burt H. Feintuch, Michael K. Ferber, Lester A. Fisher, Diane P. Freedman, Elizabeth H. Hageman, Jane T. Harrigan, Rochelle Lieber, John S. Lofty, Lisa Watt MacFarlane, Mekeel McBride, Andrew H. Merton, Thomas R. Newkirk, Charles D. Simic, David H. Watters, Janet Aikins Yount

**Associate Professors:** Brigitte Gabcke Bailey, Monica E. Chiu, Margaret-Love G. Denman, Susan Margaret Hertz, James Krasner, Douglas M. Lanier, Aya Matsuda, Paul Kei Matsuda, Lisa C. Miller, Naomi G. Nagy, Petar Ramadanovic, Siobhan Senior, Sarah Way Sherman, Sandhya Shetty, Rachel Trubowitz

**Assistant Professors:** Robin Hackett, Delia C. Konzett, Martin McKinsey, Sean D. Moore

Through studying a wide variety of literary materials, English majors deepen their understanding of history, culture, language, and human behavior. They also gain skill in writing, reading, and critical thinking. Upon graduation, English majors traditionally enter a broad range of vocational fields and areas of graduate study.

The Department of English offers four majors: the English major, the English Literature major, the English Teaching major, and the English/Journalism major. It also offers courses in writing nonfiction, fiction, and poetry; courses in linguistics; courses in film; courses in folklore; and courses for honors in English.

### *The English Major*

The English major has two chief objectives: to provide all students with a common core of literary experience and to provide each student with the opportunity of shaping a course of study to suit individual interests.

The flexibility and freedom inherent in the second of these objectives places a responsibility upon students to devise a program that has an intelligent rationale. For example, students with a strong interest in creative writing or linguistics may wish to take only the minimum number of advanced literature courses required for the major and fill their upper-division requirements with courses in the writing of fiction, poetry, creative non-fiction, or in the study of the English language, language formation, and other areas of linguistics. Students who intend to pursue graduate study in literature written in English should choose more than the minimum number of advanced literature courses and should seek a broad historical background. For these students, the "English Literature major" would perhaps be a more appropriate choice than the standard "English major." All students should secure the assistance and approval of their advisers in formulating an early plan for the major program.

For the English major, students must complete a minimum of 40 credits of major coursework with a grade of C- or better, with the exception of ENGL 419, which must be completed with a grade of C or better.

Students must complete ENGL 419, two 500-level courses (or one 500-level course and ENGL/LING 405), and seven courses numbered 600 and above. In selecting these courses, students must be sure to meet the following distribution requirements:

1. Two courses in literature written before 1800: either two advanced courses (numbered 600 or above), or one advanced course and ENGL 513.
2. Two courses in literature written since 1800: either two advanced courses, or one advanced course and one course from the following list: ENGL 514, 515, or 516.

Students interested in majoring in English should consult Susan Dumais, coordinator of the Department of English, (603) 862-1313.

### *The English Literature Major*

The English Literature major offers students the opportunity for a focused and comprehensive study of literature written in the English language. The English Literature major engages students in the range of approaches to literary study that now characterize the field: the historical study of national traditions, literary theory, the study of texts in cultural context, genre studies, and the critical analysis of representations of identity, especially in terms of race, gender, ethnicity, and sexuality. It builds onto the existing English major a series of requirements that ensure students' greater immersion in literature, and it foregrounds research. In these ways, the program will be especially useful to those students who wish to go on to graduate school in English and other fields, as well as various kinds of professional training, including law school.

For students planning other career paths, the English Literature major will help them gain the ability to read critically, write papers that synthesize research results in a sustained analysis, and develop familiarity with the historical and cultural contexts that inform written expression. Beyond these more practical career concerns, this major is ideal for students who are passionate about reading fiction, poetry, creative nonfiction, and other kinds of imaginative literature.

For the English Literature major, students must complete a minimum of 40 credits of major coursework with a grade of C- or better, with the exception of ENGL 419, which must be completed with a grade of C or better. Additional requirements include two 500-level courses, one of which must be a survey course; ENGL 619; and ENGL 787. Seven courses must be completed at the 600 level or higher. In selecting courses, students

must be sure to meet the following distribution requirements. Please note that, in many cases, a single course may satisfy a requirement in two or more categories.

1. Two courses in literature written prior to 1800. Either two advanced courses (600 level and above) or one advanced course and ENGL 513.
2. Two courses in literature written since 1800. Either two advanced courses or one advanced course and one of the following: ENGL 514, 515, or 516.
3. One American literature course at the 600/700 level.
4. One British literature course at the 600/700 level.
5. Two courses that investigate and question representations of identity (ENGL 517, 540, 555, 581, 585, 586, 681, 685, 690, 738, 739, 740, 775, 777); genre, including film, with the exception of ENGL 533 (616, 618, 630, 631, 632, 777); and/or theoretical positions (ENGL 713, 714). Other courses may count, when relevant and with prior written approval of the adviser.

Students interested in majoring in English Literature should consult Susan Dumais, coordinator of the Department of English, or the director of the English Literature program.

### *The English Teaching Major*

This major is designed for students wishing to teach English in middle or high schools. Completion of this undergraduate major does not in itself, however, meet state certification requirements. To meet these requirements, students should enroll in the undergraduate major and, by September 15 of their senior year, apply for the fifth-year teaching internship and master's degree program. (For a full description of the program, see page 32.) Undergraduate English Teaching majors must pass the following English courses with an average of 2.50 or better: ENGL 419, 514, 516, 619, 657, 725-726 or 710 and 792, 718 or 791, and two additional literature courses numbered 600 or above. ENGL 513 may be substituted for one of these two courses. A writing portfolio is also required.

Students interested in majoring in English Teaching should consult Susan Dumais, coordinator of the Department of English, or the director of the English Teaching program.



### ***The English/Journalism Major***

The English/Journalism major is designed for students considering careers in print journalism or related fields. Students who complete the program are ready for entry-level writing or editing positions on newspapers or magazines.

The program allows students to develop their writing, reporting, and editing skills while developing a strong background in English literature. English/Journalism majors must complete ENGL 419 with a grade of C or better and the literature requirements of the standard English major. In addition, they must complete ENGL 501 (Creative Nonfiction) and ENGL 621 (Newswriting) with a grade of B or better; ENGL 622 (Advanced Newswriting); at least one other on-campus journalism course (ENGL 703, 704, 708, 711, 721, 722, 723); and a journalism internship (ENGL 720) approved by the director of the journalism program. Except where otherwise noted, major courses must be completed with a C- or better. Many journalism students work for the on-campus student newspaper, *The New Hampshire*. Many students hold summer jobs in journalism, and some have part-time journalism jobs during the school year.

Students interested in the English/Journalism major should see Susan Dumais, coordinator of the Department of English, or the director of the English/Journalism program.

### ***Writing Programs***

The Department of English offers courses for students interested in becoming writers. Up to four consecutive creative writing workshops can be taken in fiction or in poetry, as well as a course in form and theory of either genre. The instructors for these courses are professional writers. Interested students should inquire at the department office.

### **European Cultural Studies (ECS)**

*(For course descriptions, see page 182.)*

European Cultural Studies (ECS) is an interdisciplinary major in which students study the field of cultural analysis in conjunction with an individually designed focus on a European topic. Each student will work with an adviser and the ECS Steering Committee to design a course of study that best suits the student's interests and goals. The ECS major is driven in part by the belief that language is an integral part of culture and not merely a tool for the study of literature. By the same token, the study of European history, philosophy,

politics, and so forth, can only be enriched by the addition of critical perspectives developed in literature and language study.

*The ECS major has five objectives:*

1. It will introduce students to the major contours of European history, politics, languages and arts.
2. It will introduce students to the social, political, economic, and cultural developments of the new unifying Europe.
3. The cultural studies component of the major highlights the contentious nature of this "unifying Europe." Thus the major will prepare students for work in fields related to Europe and European/American relations. More generally it will encourage a nuanced perception of cultural differences, which will in turn affect students' perceptions of themselves and others as participants in an uneasily shared world.
4. Cultural studies skills will facilitate and enable students to consider the past not just as an academic subject but as an unfolding inherited tradition.
5. A B.A. in European cultural studies will be a preparatory degree for graduate study in numerous fields from international relations to the humanities.

### ***European Cultural Studies Major***

The ECS major consists of 40 credits to be distributed in the following way:

1. Course on Europe (ECS 400). Course on European topics, covering art, literature, history, political science or other domains. (4 credits)
2. Course on cultural studies (ECS 500). Introduction to the field of Cultural Studies as applied to the study of Europe. In years when ECS 500 is not offered, students may take ENGL 619 (Critical Approaches to Literature) or HIST 625 (Intellectual European History). (4 credits)
3. Foundation Courses (8 credits)
  - a. Languages: 504 or equivalent in a European language or an approved alternate course.
  - b. Arts/Humanities or Social Sciences: One course from the following offerings: ARTS 580 or 581 (Survey of Art History), ENGL 651 or 652 (Comparative Literatures, when inclusive of European literatures), Humanities 501, 502, 503 (when focused on European topics), Music 402 (Survey of Music History), ECON 630 (Comparative Study of Economic Sys-

tems), HIST 435 or 436 (Western Civilization), HIST 565 (Women in European History), HIST 650 (European Socialism), HIST 656 (20th Century Europe), POLT 550 (Major Foreign Governments), POLT 552 (Contemporary European Politics).

4. Focus Courses: The focus of the major consists of an individually designed grouping of four courses that will allow students to pursue their interests and will give coherence to the major. Students will discuss their proposed curriculum with an ECS adviser and submit a proposal to the ECS Steering Committee. Possible foci include: European art and identity; politics and culture in modern Europe; history of European science and philosophy; focus by nation. At least two courses for the focus must be at the 600-level or higher (16 credits).

5. Course on Critical Methods in Cultural Studies prepares student for research and writing techniques needed to complete the senior thesis. (4 credits).

6. Senior Thesis (ECS 798/799). Students will work together with their advisers to formulate their topic, consider appropriate approaches, locate relevant resources and write a thesis. At the end of the semester, students present their work to a committee of three ECS faculty members (4 credits).

### ***European Cultural Studies Minor***

The minor in European cultural studies consists of 20 credits (five courses), including ECS 500, 504-level in a European language, two foundation courses in (one in arts/humanities, one in social sciences), and one elective.

### **French (FREN)**

[www.unh.edu/languages/LLC/French/index.htm](http://www.unh.edu/languages/LLC/French/index.htm)

*(For program description, see Languages, Literatures, and Cultures, page 39. For course descriptions, see page 40.)*

### **Geography (GEOG)**

[www.unh.edu/geography](http://www.unh.edu/geography)

*(For course descriptions, see page 186.)*

**Chairperson:** Alasdair D. Drysdale

**Professor:** Alasdair D. Drysdale

**Assistant Professor:** Blake Gumprecht

Geography is best defined as the discipline that describes and analyzes the variable character, from place to place, of the Earth as the

home of human society. As such, geography is an integrating discipline, studying many aspects of the physical and cultural environment that are significant to understanding the character of areas or the spatial organization of the world.

Geography aims to provide students with a basis for understanding the world in which we live.

Because its integrating character establishes common areas of interest with many other fields of knowledge, geography provides an excellent core discipline for a liberal education. Those who would understand geography must also know something of the earth sciences, as well as economics, cultures, politics, and processes of historical development.

Students who have a strong interest in the spatial organization of the world and the distinctive character of its major regions and who also want a broad educational experience can achieve these goals effectively by majoring in geography.

Students with degrees in geography have found their education valuable in such fields as urban and regional planning, locational analysis for industry and marketing organizations, cartography, geographical information systems (GIS), library work, military intelligence, international studies, the Foreign Service, travel and tourism, and journalism.

Students planning careers as scholars or teachers in the field should concentrate their coursework in geography and appropriate related disciplines and should plan to go on to graduate study after completing an undergraduate major in geography. Students from this department have been admitted to first-rate graduate schools in all parts of the United States.

Students who major in geography are required to take eleven courses with a minimum grade of C-.

#### Requirements for the major

To major in geography, the following course requirements must be fulfilled with a grade of C- or above.

All of the following core courses:

GEOG 401, Regional Geography of the Western World  
 GEOG 402, Regional Geography of the Non-Western World  
 GEOG 572, Physical Geography  
 GEOG 581, Human Geography  
 GEOG 658, Introduction to Geographic Information Systems  
 GEOG 797, Senior Seminar  
*and*

Any five additional geography courses.

Students who receive more than two grades below C- will be excluded from the program. No course may fulfill both a geography requirement and a general education or Discovery requirement.

The foreign language requirement may be met in any of the following: French, Italian, Spanish, Portuguese, German, Russian, Chinese, Japanese, Arabic, Latin, or Greek. Other languages may be considered by petition.

Students interested in majoring or minoring in geography should consult with the supervisor, Alasdair Drysdale.

#### German (GERM)

[www.unh.edu/languages/LLC/German/index.htm](http://www.unh.edu/languages/LLC/German/index.htm)

(For program description, see *Languages, Literatures, and Cultures*, page 39. For course descriptions, see page 187.)

#### Greek (GREK)

[www.unh.edu/languages/LLC/Classics/index.htm](http://www.unh.edu/languages/LLC/Classics/index.htm)

(For program description, see *Languages, Literatures, and Cultures*, page 39. For course descriptions, see page 188.)

#### History (HIST)

[www.unh.edu/history](http://www.unh.edu/history)

(For course descriptions, see page 190.)

**Chairperson:** Jan V. Golinski

**Professors:** Jeffrey M. Diefendorf, Ellen Fitzpatrick, David Frankfurter, Cathy A. Frierson, Jan V. Golinski, J. William Harris, Janet L. Polasky, Harvard Sitkoff, William R. Woodward

**Affiliate Professor:** Stephen H. Hardy, Benjamin Harris, Laurel Ulrich, William R. Woodward

**Associate Professors:** Funso Afolayan, W. Jeffrey Bolster, Kurk Dorsey, Eliga H. Gould, Nicoletta F. Gullace, Yan Lu, Gregory McMahon, Julia E. Rodriguez, Lucy E. Salyer, Cynthia J. Van Zandt, Ethel Sara Wolper

**Affiliate Associate Professor:** Robert L. Macieski

**Assistant Professors:** David Bachrach, Molly Girard-Dorsey, Amanda Wunder

**Research Assistant Professor:** Judith N. Moyer

**Lecturer:** Richard M. Brabander, Jeffrey A. Fortin

The study of history is an essential element of the liberal education. The history major provides both an awareness of the past and the tools to evaluate and express one's knowledge. The student who majors in history will have the opportunity to study the breadth of the human past and will acquire the skills in critical reading and writing which form the

foundation of the educated life. The study of history may include all of human culture and society and provides tremendous latitude in the subjects which may be studied. The interdisciplinary nature of the field makes it a natural focus for study which may encompass a variety of other fields.

To complete a major in history, students must take ten 4-credit history courses or their equivalent. Students who enter the University as history majors should plan to take the first required course, HIST 500 (Introduction to Historical Thinking) as soon as possible. To declare a major in history, students must have taken HIST 500 or have registered for it and have completed two other history courses with a C- or better. The second required course, HIST 797 (Colloquium in History), is usually taken during the senior year. Students should consult the list of topics for HIST 797 and may choose to complete HIST 797 in their junior year. Besides HIST 500 and HIST 797, a major must take at least eight courses, of which a minimum of three must be at the 600 level or above. 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 and HIST 797, and at least a C- in the other eight courses. They must maintain a 2.00 or better in all history courses. General education courses offered by the department may be counted for major credit or for general education credit, but not for both.

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 4 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 adviser. The area of specialization may be in a nation, region, a time period, or an interdisciplinary field.

2. *Complementary courses.* A student must select, in consultation with his or her adviser, at least three history courses in fields outside the area of specialization, chosen to broaden his or her understanding of the range of history. Normally, each major should take at least one course from each of Groups I, II, and III, unless explicitly excused by the student's adviser.



The program must be planned in consultation with an adviser. A copy of the program, signed by one's adviser, must be placed in one's file no later than the second semester of one's junior year. Courses at the 700-level will be judged by the adviser as to their applicability for area of specialization or complementation. The program may be modified with the adviser's approval.

For transfer students, a minimum of five 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 or its equivalent and HIST 797.

A minor in history consists of 20 semester credits with C- or better and at least a 2.00 grade-point average in courses that the Department of History approves. 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, a minimum of two of the semester courses, or 8 credits, must be taken at the University of New Hampshire with a grade of C- or better.

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 secretary in Horton 405. Suggested programs for students with special interests or professional plans are available in the department office.

#### **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 3.20 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 3.20 and a grade-point average of 3.20 or better in history courses.

### **Humanities (HUMA)**

[www.unh.edu/humanities-program](http://www.unh.edu/humanities-program)

(For course descriptions, see page 196.)

**Coordinator:** Catherine M. Peebles

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.

#### **Humanities Major**

The humanities major consists of a minimum of 40 credits of academic work, with a minimum grade of C, including the following core requirements:

*Critical Methods in the Humanities (HUMA 500)*. Students will be made acquainted with the methods and technology required for research in the humanities. Students should take this 4-credit course during the sophomore or junior year.

*Integrated Core Courses (HUMA 510, 511, 512, 513, 514, 515)*. Each student takes at least two courses (8 credits) from the 510-515 sequence, preferably in the freshman and/or sophomore year.

*Seminar in the Humanities (HUMA 700)*. Each student takes at least one offering (4 credits) of the Seminar in the Humanities, preferably during the junior or senior year. 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.

*Research Project in the Humanities (HUMA 798/799)*. Each student participates in the research seminar (for a total of 4 credits) throughout the senior year. The seminar provides a context within which students may discuss and receive directions 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.

*Additional Requirements.* Beyond the 20 credits of core requirements, each student must fulfill the following requirements: 1) a minimum of 8 additional credits from other Humanities Program courses; 2) an additional 12 credits from Humanities Program offerings and from the offerings of other departments and programs, 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.

#### **Humanities Minor**

The humanities minor consists of the following courses: 1) two courses (8 credits) from the 510/511/512/513/514/515 sequence; 2) two courses (8 credits) from other Humanities Program courses, one of which should be at the 600-level; and 3) seminar in the humanities (HUMA 700) or another approved course.

Inquiries about the humanities major and minor should be directed to Catherine Peebles, coordinator of the Humanities Program, G19 Murkland Hall, (603) 862-3638; e-mail [huma@unh.edu](mailto:huma@unh.edu).

### **International Affairs Dual Major**

(For program description, see *Special University Programs*, page 109.)

### **Italian Studies (ITAL)**

[www.unh.edu/languages/LLC/Italian/index.htm](http://www.unh.edu/languages/LLC/Italian/index.htm)

(For program description, see *Languages, Literatures, and Cultures*, page 39. For course descriptions, see page 199.)

### **Japanese (JPN)**

[www.unh.edu/languages/LLC/index.htm](http://www.unh.edu/languages/LLC/index.htm)

(For program description, see *Languages, Literatures, and Cultures*, page 39. For course descriptions, see page 199.)

## Justice Studies Dual Major (JUST)

[www.unh.edu/justice-studies/](http://www.unh.edu/justice-studies/)

The Justice Studies Dual Major Program 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). Some of the 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.

### Required Courses

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 GPA 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. No more than two courses can count for the first major and dual major. An unlimited number of dual major courses can be used to satisfy general education requirements.

JUST 401, Introduction to Justice Studies  
 JUST 501, Justice Studies Research Methods (Prerequisite: a statistics course)  
 JUST 601, Field Experience (juniors/seniors only) or JUST 602, Research Field Experience (juniors/seniors only)  
 JUST 701, Senior Seminar (Writing Intensive Course)  
 POLT 407, Law and Society and/or  
 SOC 515, Introductory Criminology, and/or POLT 507, Politics of Crime and Justice

### Elective Courses

Students are required to select three elective courses from the Justice Studies approved course list. This list is approved and published yearly by the Justice Studies Executive Committee.

CD 717, Law of Community Planning (offered every other year)  
 CMN 698, Studying the Police  
 EC 718, Law of Natural Resources and Environment  
 EDUC 767, Students, Teachers and the Law  
 FS 797, Children, Adolescents and the Law  
 FS 794, Families and the Law  
 HMP 734, Health Law  
 HIST 497W, Crime and Punishment in Modern Society

HIST 509, Law in American Life  
 HIST 559/560, History of Great Britain  
 HIST 609, Special Topics: American Legal History  
 HMGT 625, Hospitality Law (only HMGT majors allowed)  
 HMGT 627, Employment Law  
 HUMA 650, Humanities and the Law: The Problem of Justice in Western Civilization  
 JUST 401, Introduction to Justice Studies (required course)  
 JUST 501, Justice Studies Research Methods (required course)  
 JUST 550/551, Mock Trial (must take year-long course)  
 JUST 601/602, Field Experience (required course)  
 JUST 650, Special Studies in Comparative Justice Systems  
 JUST 651, Field Studies in the Hungarian Justice System  
 JUST 695, Special Topics in Justice Studies (no more than two courses)  
 JUST 701, Senior Seminar (required course, writing intensive course)  
 KIN 798, Sports Law  
 MGT 647, Business Law (only Business Administration, Accounting and Business Administration and Management allowed)  
 MGT 648, Business Law II  
 NR 566, Wildlife Enforcement I  
 OES 552, Corrections Treatment and Custody  
 OES 554, Juvenile Delinquency  
 PHIL 436, Social and Political Philosophy  
 PHIL 635, Philosophy of Law  
 PHIL 660, Law, Medicine, and Morals  
 PHIL 701, Value Theory  
 PHIL 740, Advanced Topics in Philosophy of Law  
 POLT 407, Law and Society  
 POLT 507, Politics of Crime and Justice  
 POLT 508, Supreme Court and the Constitution  
 POLT 513, Civil Rights and Liberties  
 POLT 520, Justice and the Political Community  
 POLT 660, Terrorism and Political Violence  
 POLT 701, The Courts and Public Policy  
 POLT 707, Criminal Justice Administration  
 POLT 708, Administrative Law  
 PSYC 591, Forensic Psychology  
 PSYC 755, Psychology of Law (Research Methods Prerequisite)  
 PSYC 756, Psychology of Crime and Justice (Research Methods Prerequisite)  
 PSYC 791, Advanced Topics: Psychology of Hate  
 RMP 772, Law and Public Policy in Leisure Services (must have junior/senior status)  
 SOC 515, Introductory Criminology  
 SOC 525, Juvenile Crime and Delinquency  
 SOC 535, Homicide  
 SOC 620, Drugs and Society  
 SOC 650, Family Violence (must have junior/senior status)  
 SOC 655, Sociology of Crime and Justice  
 SOC 697, Special Topics: Perspectives on Terrorism  
 SOC 715, Criminological Theory  
 SOC 720, Sociology of Drug Use  
 SOC 780, Social Conflict  
 SOC 797, Special Topics: Crime and Justice  
 SW 525, Introduction to Social Welfare Policy  
 WS 595, Special Topics: Violence Against Women

Students who are interested in becoming 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 our Web site at [www.unh.edu/justice-studies](http://www.unh.edu/justice-studies). Our offices are located in Room 202 of Huddleston Hall

and are open Monday through Friday from 9 a.m. to 12 p.m. and 1 p.m. to 4 p.m. For more information please contact Professor Ellen Cohn at (603) 862-3197, e-mail [ellen.cohn@unh.edu](mailto:ellen.cohn@unh.edu); or Debbie Briand at (603) 862-1716, e-mail [justice.studies@unh.edu](mailto:justice.studies@unh.edu).

For program information on the justice studies minor, see Interdisciplinary Programs, page 110.

## Languages, Literatures, and Cultures (LLC)

[www.unh.edu/languages/LLC/](http://www.unh.edu/languages/LLC/)

(For course descriptions, see page 204.)

**Chairperson:** Edward T. Larkin, German

**Professors:** Barbara T. Cooper, French; Edward T. Larkin, German; Ronald D. LeBlanc, Russian; Nancy Lukens, German; Claire L. Malarte-Feldman, French

**Associate Professors:** Nadine S. Bérenguier, French; Arna Beth Bronstein, Russian; Roger S. Brown, German; Stephen Andrew Brunet, Classics; John M. Chaston, Spanish; Marco Dorfsman, Spanish; Aleksandra Fleszar, Russian; Carmen García de la Rasilla, Spanish; Piero Garofalo, Italian; Janet Gold, Spanish; Lori Hopkins, Spanish; Lina Lee, Spanish; Mary E. Rhiel, German; Juliette M. Rogers, French; Robert Scott Smith, Classics; Stephen M. Trzaskoma, Classics

**Assistant Professors:** Richard E. Clairmont, Classics; Juame Marti-Olivella, Spanish;

**Instructor:** Nina Gatzoulis, Classics

**Affiliate Faculty:** Richard C. House, Director, Parker Language Resource Center

**Lecturers:** Mary Kathleen Belford, Spanish; Mayder Dravasa, Italian; Johannes Frank, German; Claire-Hélène S. Gaudissart, French; Kathleen Hill, Spanish; Darby Tench Leicht, Italian; Cindy Pulkkinen, Spanish; Anna K. Sandstrom, French; Katherine E. Stansfield, French; Elisa F. Stoykovich, Spanish; Linda J. Thomsen, Spanish

The Department of Languages, Literatures, and Cultures offers undergraduate majors in Classics, French, French Studies, German, Greek, Latin, Russian, Spanish, and European Cultural Studies, plus a minor in Italian and coursework in Chinese, Hittite, Sanskrit, Japanese, and Portuguese. A combined B.A. in French/M.B.A. degree and an M.A. in Spanish are also offered.

In addition, the department sponsors several study abroad programs and a variety of co-curricular activities including conversational hours and language clubs.

A B.A. degree at the University requires the fulfillment of a foreign language requirement. Students must fulfill this requirement by the end of their sophomore year. Please see the Bachelor of Arts Degree Requirements, page 18.



Undergraduates who choose to pursue a major or minor in the Department of Languages, Literatures, and Cultures may wish to consider complementing their studies with the dual major in International Affairs, with the teacher education program, or with any of the other majors and minors available through the University of New Hampshire. Such coursework will not only broaden a student's intellectual horizons, but may also serve to enhance his or her employment opportunities or prospects for graduate education.

### **Chinese (CHIN)**

[www.unh.edu/languages/LLC/index.htm](http://www.unh.edu/languages/LLC/index.htm)

(For course descriptions, see page 160.)

### **Classics (CLAS)**

[www.unh.edu/classics/](http://www.unh.edu/classics/)

(For course descriptions, see page 162.)

**Associate Professors:** Stephen A. Brunet, Robert Scott Smith, Stephen M. Trzaskoma

**Assistant Professor:** Richard E. Clairmont

While it is true that classical Greek and Latin are no longer spoken languages, the literature and art of the Ancients speak to us still. To study the classics is to come into direct contact with the sources of Western civilization and culture, both pagan and Christian. An intimate knowledge of our Greco-Roman heritage furnishes students of the classics with historical, political, and aesthetic perspectives on the contemporary world. An undergraduate classics major provides excellent preparations for careers not only in academic, but also in nonacademic professions. A background in classics is, moreover, highly advantageous for applicants to graduate and professional schools in English, modern languages, history, philosophy, law, medicine, and theology. Finally, for the qualified student who is undecided about a major but interested in a sound liberal arts education, classics may be the best option.

The classics major is offered by the classics program of the Department of Languages, Literatures, and Cultures. The minimum requirements for a major in classics are 40 credits offered by the classics program. Twenty-four of these must be in Greek and/or Latin. A classics major must complete as a minimum a 700-level course in one of the classical languages. A minimum of three courses must be taken at the Durham campus. Students will be encouraged to take courses in related fields such as ancient history, classical art, modern languages, and English, and to take part in overseas study programs in Greece and Italy.

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

The coordinator is R. Scott Smith, Murkland Hall; Languages, Literatures, and Cultures, (603) 862-2388; e-mail [rss3@cisunix.unh.edu](mailto:rss3@cisunix.unh.edu).

### **French (FREN)**

[www.unh.edu/languages/LLC/French/index.htm](http://www.unh.edu/languages/LLC/French/index.htm)

(For course descriptions, see page 184.)

**Professors:** Barbara T. Cooper, Claire Malarte-Feldman

**Associate Professors:** Nadine S. Bérenguier, Juliette M. Rogers

**Lecturers:** Claire-Hélène S. Gaudissart, Anna K. Sandstrom, Katharine E. Stansfield

The French major offered by the Department of Languages, Literatures, and Cultures provides knowledge of the language, literature, and culture of France and other French-speaking countries around the world. An undergraduate major in French is useful in a variety of careers, such as business, law, government or public service, and teaching. Students considering a career in teaching should consult with the Department of Education. In addition, they should include LING 505 (which also satisfies a general education requirement for group 7) in their overall program and make special note of the FREN 791 requirement (which does not count toward completion of a major in French). Students interested in other types of careers are urged to consult with members of the French faculty and with other appropriate departments early in their studies.

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 FREN 631-632, 651, 652, 790, and at least two 700-level literature courses at the Durham campus. 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 year-long UNH Junior Year in the Dijon Program is highly recommended. Only in exceptional circumstances will a student be able to attend a non-UNH program. Such an option will need to be carefully considered with a major adviser. Transfer students must earn a minimum of 12 major credits at the Durham campus. Of these 12 credits, one course must be FREN 790 and at least one 700-level course in French/Francophone literature. To complement their major, students are strongly encouraged to take either HIST 647 or 648

and courses in the literature of other countries as well as in fields such as music, art, philosophy, history, political science, and sociology that provide insight into nonliterary aspects of culture.

### **The French Studies Major**

This major gives students a variety of perspectives not only on French culture but also on Francophone cultures worldwide. 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.

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: FREN 631-632, 651, 652, 675 or 676 or 677, 790, and two 700-level courses in French or Francophone literature. In addition, at least three elective courses (12 credits) closely related to French and Francophone cultural studies are required. 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 year-long UNH Junior Year in Dijon Program is highly recommended. Other options are available, but non-UNH programs must be chosen in close consultation with a major adviser. Students are required to enroll in at least one French course each semester. Transfer students must earn a minimum of 12 credits on the Durham campus. Of these 12 credits, one course must be FREN 790 and at least one 700-level course in French/Francophone literature.

### **The French Minor**

A minor in French consists of 20 credits in French courses numbered 503 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, 526, 527, 621, 622) 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 or higher will be expected to complete FREN 651 or 652. FREN 791 does not count for the minor. Members of the department supervise the work of both majors and minors.

**The French Studies Minor**

The minor in French studies consists of 20 credits numbered FREN 503 or above. No fewer than three courses have to be taken at UNH. No more than one course conducted in English (FREN 525, 526, 527, 621, 622) will be counted toward the minor. Students entering the minor at FREN 504 or higher will be expected to complete FREN 651 or 652. FREN 791 does not count toward the minor. Members of the department supervise the work of both majors and minors.

**Study Abroad in Dijon**

The department offers a junior year and spring semester abroad at the University of Burgundy in Dijon, France (see FREN 690). 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 631-632, 651 or 652 by the end of their sophomore year. Early consultation with the director of the program is urged. Non-credit orientation meetings are required during the semester prior to departure.

**Study Abroad in Brest**

In addition to its summer school offerings at the Durham campus, the department sponsors a program at the Centre International d'Études des Langues (CIEL) in Brest, France, where students may enroll in courses equivalent to FREN 503, 504, 631, and 632, and above. Students interested in this program should consult the program's on-campus director early spring semester. This program is open to majors, minors, and other interested students.

**Study Abroad in Paris**

Students attend the University of Delaware program in Paris where they take one French language course—ranging from intermediate (FREN 503) to advanced (FREN 632)—and three or four other courses taught in English on French topics. Full semester credit, gen. ed. 5 credit. Two courses can be applied toward the French or French studies minor. Students should consult with the program director at the beginning of the fall semester. This program is not for French majors or French Studies majors.

**Teaching Assistantship in France**

Each year the French government offers a teaching assistantship in a French secondary school to a graduating French major nominated by the department. Applications are accepted during the fall semester.

**Five-Year Program in French and Business Administration**

This program permits students to earn both a B.A. in French and an M.B.A. in five years. Students must meet all requirements for both the French major and the M.B.A. program offered by the Whittemore School of Business and Economics. Students interested in this program should consult with the departmental adviser to the program early in their freshman year.

**German (GERM)**

[www.unh.edu/languages/LLC/German/index.htm](http://www.unh.edu/languages/LLC/German/index.htm)

(For course descriptions, see page 187.)

**Professors:** Edward T. Larkin, Nancy Lukens  
**Associate Professors:** Roger S. Brown, Mary E. Rhiel

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 of the languages and its literature with a minor or at least a meaningful sequence of courses in another subject. Dual majors are also possible. For certification requirements, see the section coordinator.

A major consists of 10 courses in German beyond German 402. Required for the major are GERM 503, 504, 525, 601, 631, 632 (or their equivalents) and 4 more courses which must be taken on the 600 or 700 levels. Majors are required to spend a minimum of one semester in an approved German-speaking study abroad program, or equivalent. For students spending one semester abroad, 3 of the 4 upper-level courses are normally taken in Durham. For students spending an academic year abroad, 2 of the 4 upper-level courses are normally taken in Durham. GERM 791 does not count for major credit: 791 is recommended as an elective and required for teacher certification.

A minor consists of 5 courses in German numbered 503 and above. The minor may include one course taught in English (521, 523, 524, 525) but not 791.

**Study Abroad**

(See also INCO 685, 686, GERM 585.)

The University allows both German majors and minors and other students at levels beyond GERM 504 to attend approved Study Abroad programs for UNH credit. UNH is part of the New England Universities consortium (Maine, Vermont, Connecticut, and Rhode Island) which sponsors a program in Salzburg, Austria. UNH students get a discount on Salzburg Program tuition and have an easy transfer of credits. Students may also attend other accredited semester or year 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 intensive language study at any level, students may attend Goethe-Institut centers in Germany for one or more four or eight-week courses. For details, see the foreign study coordinator, Center for International Education, or the German coordinator. Students beyond the 504 level may also do an internship in a German firm or organization (see GERM 595). Financial aid applies to all approved programs.

**Greek (GREK)**

[www.unh.edu/classics](http://www.unh.edu/classics)

(For course descriptions, see page 188.)

**Associate Professors:** Stephen Andrew Brunet, Robert Scott Smith, Stephen M. Trzaskoma

**Assistant Professor:** Richard E. Clairmont

The Greek major is offered by the classics program of the Department of Languages, Literatures, and Cultures.

The minimum requirements for a major in Greek are: 32 credits in Greek, including GREK 401-402. A Greek major must complete as a minimum a 700-level course in the Greek language. A minimum of three courses must be taken at the Durham campus. A Greek minor requires 20 credits of coursework in Greek. Students are encouraged to take courses in related fields such as Latin, classics, and ancient history, and to take part in overseas study programs in Greece. The coordinator is R. Scott Smith, Murkland Hall; Languages, Literatures, and Cultures, (603) 862-2388; e-mail [rss3@cisunix.unh.edu](mailto:rss3@cisunix.unh.edu).



**Italian Studies (ITAL)**

[www.unh.edu/languages/LLC/Italian/index.htm](http://www.unh.edu/languages/LLC/Italian/index.htm)

(For course descriptions, see page 199.)

**Associate Professor:** Piero Garofalo

**Lecturers:** Marie Dravasa, Darby Tench Leicht

The Italian Studies minor is offered by the Department of Languages, Literatures, and Cultures. It provides students with the opportunity to explore the language, culture, and society of Italy through an interdisciplinary program. The minor consists of five courses beyond the Elementary Italian (ITAL 401-402) sequence and may include one course from a related field of study (e.g., ARTS 681-682, ECS 400, HIST 641) with a minimum grade of C. In addition, students must demonstrate linguistic proficiency at the level of intermediate Italian (ITAL 504 or an equivalent).

The Italian Studies 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.

New students will be assigned to the proper course in consultation with the section coordinator.

**Study Abroad**

Students may participate in the UNH-Italy Program in the medieval city of Ascoli Piceno for a semester, year, or summer (see ITAL 684-686). The program allows students to register for UNH courses taught by UNH faculty. Students with advanced language skills may also enroll in courses at the University of Ascoli Piceno. Internships are also available. There is no language prerequisite.

**Japanese (JPN)**

[www.unh.edu/languages/LLC/index.htm](http://www.unh.edu/languages/LLC/index.htm)

(For course descriptions, see page 199.)

**Latin (LATN)**

[www.unh.edu/classics](http://www.unh.edu/classics)

(For course descriptions, see page 204.)

**Associate Professors:** Stephen Andrew Brunet, Robert Scott Smith, Stephen M. Trzaskoma

**Assistant Professor:** Richard E. Clairmont

The Latin major is offered by the classics program of the Department of Languages, Literatures, and Cultures.

The minimum requirements for a major in Latin are 32 credits in Latin, excluding LATN 401-402. A Latin major must complete as a minimum a 700-level course in the Latin language. A minimum of three courses must be taken at the Durham campus. A Latin minor requires 20 credits of coursework in Latin. Students are encouraged to take courses in related fields such as Greek, classics, and ancient history, and to take part in overseas study programs in Italy. The coordinator is R. Scott Smith, Murkland Hall; Languages, Literatures, and Cultures, (603) 862-2388; e-mail [rss3@cisunix.unh.edu](mailto:rss3@cisunix.unh.edu).

**Portuguese (PORT)**

[www.unh.edu/languages/LLC/index.htm](http://www.unh.edu/languages/LLC/index.htm)

(For course descriptions, see page 233.)

**Russian (RUSS)**

[www.unh.edu/languages/LLC/Russian/index.htm](http://www.unh.edu/languages/LLC/Russian/index.htm)

(For course descriptions, see page 237.)

**Professor:** Ronald D. LeBlanc

**Associate Professors:** Arna Beth Bronstein, Aleksandra Fleszar

The Russian major 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 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.

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 401-790 range, a grade of C or better is required to advance to the next course in the language series (401, 402, 503, 504, 631, 632, 790).

The Russian major consists of a minimum of 40 credits above RUSS 504. Specific course requirements are RUSS 425, 521, 522, 601, 631-632, 691, and 790 and two or three electives depending upon choice of option and concentration. Majors are required to spend a semester or summer on an approved study abroad program in Russia. Majors are required to take RUSS 631-632 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.

The minor in Russian consists of a minimum of 20 credits above RUSS 402; it must include RUSS 503-504 and at least one of the following: RUSS 631, 632, 691, 721, 725, or 790.

Students wishing to major in Russian should contact the program coordinator in Murkland Hall.

**Russian Studies Minor**

The Russian studies minor offers students an opportunity to pursue area study of Russia and the new states through an interdisciplinary program. The minor consists of a minimum of 20 credits (5 courses) with a minimum grade of C. In addition to the required courses and electives, students must demonstrate a Russian language proficiency at the level of RUSS 504 or an equivalent.

Students wishing to minor in Russian studies should consult with any faculty member in Russian studies.

**Spanish (SPAN)**

[www.unh.edu/languages/LLC/index.htm](http://www.unh.edu/languages/LLC/index.htm)

(For course descriptions, see page 241.)

**Associate Professors:** John M. Chaston, Marco L. Dorfsman, Carmen Garcia de la Rasilla, Janet Gold, Lori Hopkins, Lina Lee

**Assistant Professor:** Jaume Marti-Olivella

**Lecturers:** Mary Kathleen Belford, Kathleen Hill, Cindy Pulkkinen, Elisa F. Stoykovich, Linda J. Thomsen

The major in Spanish is offered by the Department of Languages, Literatures, and Cultures. It is designed for students who wish to acquaint themselves more thoroughly with the language, culture, and literature of the Spanish-speaking peoples. In addition, the department offers courses in Portuguese. Students also have the option to complete honors in major.

Students who major in Spanish may prepare themselves for a variety of fields in which proficiency in the Spanish language and knowledge of Hispanic cultures are desirable. Such fields might include international relations, business administration, government work, social service, and communications. In



addition, students can prepare to teach Spanish at the elementary and secondary levels and in bilingual education programs through the 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.

The UNH study abroad program in Granada, Spain, open to majors and nonmajors, offers students the opportunity to live and study abroad for a semester or a full academic year. A six-week summer immersion program in Puebla, Mexico is also available to students. Financial aid is available for eligible students. Contact the departmental program directors for further information.

The major consists of a minimum of 40 credits. All coursework required for the Spanish major or minor must be completed with a grade of C or better. Specific course requirements are 1) language and culture: 525 or 526, 601, 631, and 632; 2) three of the following 600-level courses: 650, 651, 652, 653, 654 or equivalent; 3) three courses taught in Spanish at the 700 level. 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 Spanish minor consists of 20 credits in courses numbered 503 and above, including 631 and 632.

For more information on the major, the minor, and options for the study abroad experience, please see the coordinator of Spanish.

## Linguistics (LING)

[www.unh.edu/linguistics/](http://www.unh.edu/linguistics/)

(For course descriptions, see page 205.)

**Professors:** Thomas Carnicelli, English; Mary Clark, English; Willem deVries, Philosophy; Rochelle Lieber, English

**Associate Professors:** John Chaston, Spanish; Aleksandra Fleszar, Russian; Piero Garofalo, Italian; Sally Jacoby, Communication; Lina Lee, Spanish; Fred C. Lewis, Communication Disorders; John E. Limber, Psychology; Aya Matsuda, English; Gregory McMahon, History; Paul McNamara, Philosophy; Naomi Nagy, English; Penelope Webster, Communication Disorders; James Weiner, Computer Science

**Assistant Professors:** Richard Clairmont, Classics; Mardi Kidwell, Communication

Linguistics is the study of one of the most important characteristics of human beings—language. It cuts across the boundaries be-

tween 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 [www.unh.edu/linguistics](http://www.unh.edu/linguistics).

A minor in linguistics is also available and consists of any five linguistics courses, including LING 405 or ENGL 405, approved by the linguistics coordinator.

### Requirements for the Major

#### All of the following

LING 405, Introduction to Linguistics  
LING 605, Introduction to Linguistic Analysis  
LING 793, Phonetics and Phonology  
LING 794, Syntax and Semantic Theory

#### One course in historical linguistics

CLAS 506, Introduction to Comparative and Historical Linguistics  
ENGL 752, History of the English Language  
GERM 733, History and Structure of the German Language  
ITAL 733, History of Italian  
RUSS 733, History and Development of the Russian Language  
SPAN 733, History of the Spanish Language

Two years college study (or equivalent) of one foreign language

#### One of the following cognate specialties

One year college study (or equivalent) of a second foreign language from a different language family or subfamily (Old English may count as the second foreign language if the first foreign language is not in the Germanic family)  
PSYC 712, Psychology of Language (with its prerequisite, either PSYC 512, Psychology of Primates, or PSYC 513, Cognitive Psychology)  
PHIL 745, Philosophy of Language (with its prerequisite PHIL 412, Beginning Logic, or PHIL 550, Logic)  
CS 765, Introduction to Computational Linguistics (with its prerequisite)

#### Two elective courses from the list below

Anthropology: 670, Language and Culture; 795, 796, Reading and Research in Anthropology; B. Anthropological Linguistics  
Communication: 572, Language and Behavior; 583, Gender and Communication; CMN 666, Conversation Analysis; 672, Theories of Language and Discourse  
Communication Disorders: 522, The Acquisition of Language; 775, Advanced Language Acquisition  
Computer Sciences: 765, Introduction to Computational Linguistics

English: 444B, The Secret Lives of Words; 715, TESL:

Theory and Methods; 716, Curriculum, Materials, and Assessment in English as a Second Language; 717, World Englishes; 718, English Linguistics and Literature; 719, Sociolinguistics Survey; 727, Issues in Second Language Writing; 752, History of the English Language; 790, Special Topics in Linguistics; 791, English Grammar

LLC: 791, Methods of Foreign Language Teaching

German: 733, History and Structure of the German Language  
Italian: 733, History of Italian

Latin: 795, 796, Special Studies in Latin (when topic is appropriate)

Linguistics: 444B, The Secret Lives of Words; 620, Applied Experience in Linguistics; 717, World Englishes; 719, Sociolinguistics Survey; 790, Special Topics in Linguistics; 795, 796, Independent Study

Philosophy: 550, Symbolic Logic; 618, Recent Anglo-American Philosophy; 650, Logic: Scope and Limits; 745, Philosophy of Language

Psychology: 512, Psychology of Primates; 513, Cognitive Psychology; 712, Psychology of Language. (Students may count either PSYC 512 or 513 toward the linguistics major or minor, but not both.)

Russian: 733, History and Development of the Russian Language

Sociology: 797F, Sociolinguistics

Spanish: 601, Spanish Phonetics; 645, Introduction to Spanish Linguistics; 733, History of the Spanish Language; 790, Grammatical Structure of Spanish

### Capstone Experience

Either LING 779, Linguistic Field Methods, or LING 695, Senior Thesis.

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.

## Music (MUSI)

[www.unh.edu/music/](http://www.unh.edu/music/)

(For course descriptions, see page 215.)

**Chairperson:** Mark S. DeTurk

**Professors:** Christopher Kies, Nicholas N. Orovich, David E. Seiler, Robert Stibler, Peggy A. Vagts

**Affiliate Professor:** Clark Terry

**Associate Professors:** Michael J. Annicchiarico, Daniel Beller-McKenna, Andrew A. Boysen, Mark S. DeTurk, Lori E. Dobbins, Robert W. Eshbach, William G. Kempster, David K. Ripley, Peter W. Urquhart, Larry J. Veal

**Assistant Professors:** Jenni Carbaugh Cook, Robert Haskins

**Lecturers:** Casey S. Goodwin, Arlene P. Kies

**Adjunct Faculty:** Sharon Baker, Kendall Betts, Mimi Bravar, Les Harris, Jr., Margaret Herlehy, John B. Hunter, David Newsam, Janet E. Polk, Mark Shilansky, Jared Sims, Nancy Smith

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.

### ***Bachelor of Arts Program***

The bachelor of arts 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 the five-year undergraduate-graduate program in teacher education or graduate study leading to the M.A. or Ph.D. 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 four options: music history, performance study, music theory, and preteaching. The B.A. may also be taken as a degree in music with no option specified. We refer to this as the undifferentiated B.A. in music. Students wanting to declare theory as their option must submit a music portfolio in addition to an audition on the major instrument. The following courses are required of all students: Theory I, Ear Training I, and Functional Piano I (MUSI 471-472, 473-474, 475-476); Theory II, Ear Training II, and Functional Piano II (MUSI 571-572, 573-574, 575-576); History and Literature of Music (MUSI 501-502); one Advanced Music History (MUSI 703-715); and one course from MUSI 771 (Counterpoint) or MUSI 781, 782 (Analysis: Form and Structure). Students will be given the opportunity to test out of MUSI 475-476 and MUSI 575-576. Additional requirements, grouped by option, are shown below.

B.A. students may use a maximum of 8 ensemble credits toward graduation.

#### **Undifferentiated B.A. in Music**

Any combination of advanced theory and history (12 credits); performance and/or ensemble study, any combination from MUSI 536-564 or MUSI 736-764 inclusive and/or MUSI 441-464 inclusive (8 credits).

#### **Option 1, Music History**

Advanced theory (3 credits); advanced music history (9 credits); performance study, any one of MUSI 536-564 or MUSI 736-764 inclusive (8 credits); conducting, MUSI 731 (2 credits); ensemble study, any combination from MUSI 441-464 inclusive (4 credits).

#### **Option 2, Music Theory**

Advanced theory (12 credits); performance study, any one of MUSI 536-564 or MUSI 736-764 inclusive (8 credits); conducting, MUSI 731 (2 credits); ensemble study, any combination from MUSI 441-464 inclusive (4 credits).

#### **Option 3, Performance Study**

Performance study, any one of MUSI 536-564 or MUSI 736-764 (16 credits-2 credits per semester); conducting, MUSI 731 (2 credits); ensemble study, any combination from MUSI 441-464 inclusive (8 credits). Voice students must also complete MUSI 520-521 (4 credits).

#### **Option 4, Music Preteaching**

EDUC 500; conducting, MUSI 731-732; orchestration, MUSI 779; techniques and methods (9 credits); choral methods, MUED 741 (2 credits); performance study, any one of MUSI 536-564, 736-764 (8 credits); ensemble study (8 credits). Of the 8 credits in ensemble performance (MUSI 441-464) required during the course of study, it is expected that at least four credits will be from Concert Choir (MUSI 441), Orchestra (MUSI 450), Wind Symphony (MUSI 452), and/or Symphonic Band (MUSI 453). At least 1 credit of performance in a jazz ensemble (MUSI 460 or 464) and 1 credit of Marching Band (MUSI 454) are highly desirable. The music preteaching option is a part of the five-year undergraduate-graduate certification program (see Department of Education, page 32). The department also offers a four-year program leading to teacher certification, the bachelor of music in music education.

For all the options listed, but excluding the undifferentiated B.A. in music, a public performance is given during the senior year. For students in the music history option, this must be a half lecture or half lecture-recital; for those in performance study, a full recital; for students in the music theory option, a half lecture, half lecture-recital, or a half recital including at least one original composition; for those in the preteaching option, a half recital is required.

### ***Bachelor of Music 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.

Three degrees are offered in the bachelor of music curriculum: Bachelor of Music in Music Education; Bachelor of Music in Performance; Bachelor of Music in Theory. Students wanting to declare theory as their option must submit a music portfolio in addition to an audition on their major instrument.

Students in music education must maintain an overall minimum 2.50 grade-point average at the time of application for student teaching (February 15 of junior year). Techniques and methods courses must include MUED 745 (strings), 741 (choral), 747 (woodwinds), 749 (brass), 751 (percussion), and 765 (instrumental).

The Bachelor of Music program in Music Education leads 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.

Regarding ensemble requirements for music education students: Of the 8 credits in ensemble performance (MUSI 441-464) required during the course of study, it is expected that at least 4 credits will be from Concert Choir (MUSI 441), Orchestra (MUSI 450), Wind Symphony (MUSI 452), and/or Symphonic Band (MUSI 453). At least 1 credit of performance in a jazz ensemble (MUSI 460-464) and 1 credit of Marching Band (MUSI 454) are highly desirable.

Students in the Bachelor of Music in Music Education and the Bachelor of Music in Theory degree programs may use a maximum of 8 ensemble credits toward graduation.

Students in the Bachelor of Music in Performance degree program are required to perform a junior recital.

All bachelor of music students are required to give a public performance during their senior year. For music education students, a half recital is required; for students in the performance option, a full recital is required; for those in theory, a full lecture, lecture-recital, or recital including at least one original composition is required.

#### **The following courses are required of all Bachelor of Music students:**

Theory I, Ear Training I, and Functional Piano I (MUSI 471-472, 473-474, 475-476); Theory II, Ear Training II, and Functional Piano II (MUSI 571-572, 573-574, 575-576); History and Literature of Music (MUSI 501-502); Conducting (MUSI 731), and one Advanced Music History (MUSI 703-715). Students will be given the opportunity to test out of MUSI 475-476 and MUSI 575-576. Additional requirements, grouped by option, are shown below.

**Bachelor of Music in Music Education**

MUED 741, choral methods; MUED 745-751, techniques and methods of the primary instrumental families; MUED 765, instrumental methods; MUED 790-791, elementary and secondary music education; MUSI 732, conducting; one course from MUSI 771, counterpoint or MUSI 781 or 782, analysis: form and structure; MUSI 779, orchestration; EDUC 500, exploring teaching, 694, supervised teaching/music, 700, 701, 705, and 751B; performance study; any one of MUSI 536-564 or MUSI 736-764, inclusive (8 credits), ensemble study; MUSI 441-464, inclusive (8 credits, please refer to the paragraph about ensemble requirements for music education majors.)

**Bachelor of Music in Performance***Voice*

MUSI 520-521, diction for singers; ITAL 401-402, GERM 401-402, or FREN 401-402 (8 credits); MUED 755, vocal pedagogy; MUED 741, choral methods; MUSI 713, the art song or MUSI 715, survey of opera; one course from MUSI 771, counterpoint or MUSI 781 or 782, analysis: form and structure; MUSI 545/745, performance study (25 credits); ensemble study, MUSI 441-442, 448 or 461 inclusive (8 credits). Group 5 general education requirement must be fulfilled with an intermediate level foreign language.

*Piano*

Two courses from MUSI 771, counterpoint; MUSI 781 or 782, analysis: form and structure; MUED 743, piano methods; MUSI 795E, piano literature (1 to 2 credits); MUSI 795V, advanced piano pedagogy (2 credits); one additional 700-level advanced music theory or one additional advanced music history; MUSI 703-715; MUSI 541/741, performance study (25 credits); MUSI 455, piano ensemble (4 credits) and MUSI 441-464 inclusive (4 credits).

*All Other Instruments*

One course from MUSI 771, counterpoint or MUSI 781 or 782, analysis: form and structure; one methods class in the appropriate instrumental family, MUED 745-751 (2 or 3 credits); one additional 700-level advanced music theory or one additional advanced music history, MUSI 703-715; performance study, MUSI 546-564/746-764 inclusive (25 credits); ensemble study, MUSI 448-460 and MUSI 463-464 inclusive (12 credits).

**Bachelor in Music Theory**

GERM 401-402; MUSI 771-772, counterpoint; MUSI 781-782, analysis: form and structure; MUSI 775-776, composition; MUSI 777, advanced composition (6 credits); MUSI 779, orchestration; one additional 700-level advanced music theory class; one additional advanced music history, MUSI 703-715; performance study, MUSI 541-564/741-764 inclusive (8 credits); ensemble study, MUSI 441-464 inclusive (4 credits).

**Minor in Music**

All students minoring in music must complete a minimum of 20 credits of coursework in music, of which the following are required: MUSI 471-474 or MUSI 411-412; and MUSI 501-502, or MUSI 401 or 402 and 511.

**Philosophy (PHIL)**

[www.unh.edu/philosophy/](http://www.unh.edu/philosophy/)

(For course descriptions, see page 225.)

**Professors:** Willem A. deVries, R. Valentine Dusek, Robert C. Scharff, Duane H. Whittier, Charlotte Elizabeth Witt

**Associate Professors:** Drew Christie, Paul McNamara, Ruth J. Sample, Timm A. Triplett

**Affiliate Associate Professor:** Alan Ray

**Assistant Professor 230.:** Nicholas J. Smith

Each semester, detailed course descriptions are posted in the department office and on the department Web page.

Philosophy has always been 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 dreamt 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 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 has also always 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?

**Career Opportunities**

Philosophy offers excellent 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), 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 pre-law 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 reflected on, provide the philosophy major with an extremely adaptive and resilient mind-set. Philosophy provides superior preparation for a variety of vocational and professional endeavors, and perhaps more importantly, for being a professional.

**The Philosophy Major**

Majors must take a total of ten philosophy courses. The following courses constitute a core required of all majors: PHIL 412, 500, 530, 570, 580, and one additional course in the history of philosophy (525, 571, 616, 618, 620, or an approved seminar). Majors must also take two seminars (i.e., courses at the 700 level). At least one course must concentrate on major works of 20th-Century European philosophy (525, 620, or an approved seminar) and one course must concentrate on major works of 20th-Century Anglo-American philosophy (618 or an approved seminar). Please note that a single course can satisfy multiple requirements for the major. Courses used to satisfy requirements for the major may be used to satisfy general education requirements. PHIL 495, 795, and 796 normally do not count toward fulfilling major requirement credits; exceptions may be granted by special permission.



**Special-Interest Program**

Students may add to the above major a special-interest program of value in planning for postgraduate education or entry into such areas as law, medicine, business, education, theology, or social work. Special advisers are prepared to provide informal counsel to philosophy majors interested in these areas.

**Graduate Preparatory Emphasis**

This emphasis is strongly recommended for students who plan to do graduate work in philosophy. Beyond the ten program courses, such students should select, with their advisers' approval, two additional philosophy courses above the 400 level, for a total of twelve courses. One of these should be PHIL 550.

**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 receive Honors in Philosophy a student will be expected to pursue a philosophy curriculum that demands greater depth and rigor than required by the major; they will be expected to complete the curriculum at a consistently high level of achievement; they will be expected to engage in independent study and research (under the supervision of a faculty member) beyond the requirements of their course-work; 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 Philosophy Department website for more details.

**Philosophy Minor**

A philosophy minor consists of five philosophy courses, one of which must be at the 500-level or higher (PHIL 495, 795, 796 with special approval only).

**Political Science (POLT)**

[www.unh.edu/political-science/](http://www.unh.edu/political-science/)

(For course descriptions, see page 230.)

**Chairperson:** Warren R. Brown

**Professors:** Marla A. Brettschneider, Melvin Dubnick, Marilyn Hoskin

**Associate Professors:** Warren R. Brown, John R. Kayser, Aline M. Kuntz, Lawrence C. Reardon, Susan J. Siggelakis, Stacy D. Vandever, Clifford J. Wirth

**Assistant Professors:** Roslyn Chavda, Alynna J. Lyon, Mary Malone, Jeannie Sowers

**Lecturers:** Tama Andrews, Kamal Chavda, Lionel R. Ingram

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. 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 will also be valuable for students seeking careers in journalism, international organizations, and the public affairs and administrative aspects of labor, financial, and business organizations.

The major program in political science consists of at least ten courses (40 credits) and not more than twelve 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:

1. Three 400-level courses. Once they declare the major, students must complete these three introductory courses within the first calendar year.
2. Six 500- and/or 600-level courses. Of these, at least one shall be chosen from each of the four fields in which the department's courses are organized: American politics, political thought, comparative politics, and international politics.
3. One 700-level course. The Department of Political Science will allow the use of one 400-level course (401, 402, 403) to "double count" as a major requirement and a general education requirement.

**Minor in Political Science**

The political science minor consists of five courses (20 credits total). These courses may be taken in any combination of the four fields and levels (400-700) offered. The fields to choose from are: American politics, political thought, comparative politics, and international politics. No more than two courses can 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 a political science adviser to determine eligibility toward the minor.

**Internships and Advanced Study**

In addition to the courses regularly offered, the department will have available selected topics, advanced study in political science, and internships. Interested students should check with the department office to learn of the offerings for a given semester.

The department also offers several internship opportunities giving students experience in various aspects of government, policy making, and the legal system at the local, state, and national levels. Students need not be political science majors, but a 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. Washington placements are made either through the Department of Political Science or through the Washington Center located in the National Student Exchange Office in Hood House; major credit must be arranged through the department.

**Portuguese (PORT)**

[www.unh.edu/languages/LLC/index.htm](http://www.unh.edu/languages/LLC/index.htm)

(For program description, see *Languages, Literatures, and Cultures*, page 39. For course listings, see page 233.)

**Psychology (PSYC)**

[www.unh.edu/psychology/](http://www.unh.edu/psychology/)

(For course descriptions, see page 233.)

**Chairperson:** Kenneth Fuld

**Professors:** Victor A. Benassi, Ellen S. Cohn, Peter S. Fernald, Kenneth Fuld, Benjamin Harris, Robert G. Mair, John D. Mayer, Edward J. O'Brien, David B. Pillemer, Rebecca M. Warner, William R. Woodward

**Associate Professors:** Victoria L. Banyard, Robert C. Drugan, Michelle D. Leichtman, John E. Limber, Carolyn J. Mebert, William Wren Stine, Daniel C. Williams

**Affiliate Associate Professors:** Kathleen A. Kendall-Tackett, Julie E. Williams

**Assistant Professors:** J. Pablo Chavajay, Brett M. Gibson, Jill A. McGaughy

**Research Assistant Professors:** Lisa M. Jones, Kimberly J. Mitchell

**Lecturers:** Robert P. Eckstein, Mark J. Henn, Richard I. Kushner, Michael A. Mangan, Kelly Peracchi, Peter Yarensky

**Department Coordinator:** Janice Chadwick

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.

Students majoring in psychology must complete 44 credits with a minimum grade of C- in each course and a 2.00 overall average in all major requirements. 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 must pass a competency exam in order to apply to the major and/or register for PSYC 502. Students with a first major in psychology may not use any psychology courses to fulfill general education requirements.

### **Requirements for the Major**

#### **A. Three core courses: PSYC 401, 402, and 502**

#### **B. Four breadth (500-level) courses as follows**

##### *Two courses from Group I*

PSYC 511, Sensation and Perception  
PSYC 512, Psychology of Primates  
PSYC 513, Cognition  
PSYC 521, Behavior Analysis  
PSYC 531, Psychobiology

##### *Two courses from Group II*

PSYC 552, Social Psychology  
PSYC 553, Personality Psychology  
PSYC 561, Abnormal Psychology  
PSYC 571, The Great Psychologists  
PSYC 581, Child Development  
PSYC 582, Adult Development and Aging

#### **C. Four depth (700-level) courses as follows**

##### *Two courses from Group I*

PSYC 702, Advanced Statistics (if not used in group II)  
PSYC 705, Tests and Measurements (if not used in group II)  
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, A-D Advanced Topics

##### *Two courses from Group II*

PSYC 702, Advanced Statistics (if not used in group I)  
PSYC 705, Tests and Measurements (if not used in group I)  
PSYC 755, Psychology and Law  
PSYC 756, Psychology of Crime and Justice  
PSYC 758, Health Psychology  
PSYC 762, Counseling  
PSYC 763, Community Psychology  
PSYC 771, Psychology in 20th Century Thought and Society  
PSYC 780, Prenatal Development/Infancy  
PSYC 783, Cognitive Development  
PSYC 785, Social Development  
PSYC 791, A-G Advanced Topics  
PSYC 793, Internship

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.

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 4 credits each must make up for any credit deficit created by acceptance of transfer credits into the psychology major. Of the four 700-level courses required for the major, at least three must be taken at UNH.

Specific course selections should be discussed with advisers. Exceptions to the requirements for the major require a petition to the department.

Psychology majors planning to go on to graduate study in psychology are advised to include PSYC 702 and/or 705 among their courses.

The minor in psychology consists of five psychology department courses (20 credits), including PSYC 401. No more than 4 credits of PSYC 795 may be applied to the minor. A maximum of 9 approved psychology transfer credits can be applied to the UNH psychology minor.

See the department student services assistant for further details on the major or minor in psychology.

### **Advising System**

Students who enter the University as psychology majors are considered "provisional majors"

and are advised in the University Advising Center until they complete PSYC 401 and 402, at which time they can confirm their major. "Provisional majors" are accorded all the rights and privileges of any psychology major. Undergraduate advising in the department is conducted jointly by the department's academic counselor and the full-time faculty. The academic counselor has primary responsibility for advising confirmed and newly declared freshman and sophomore psychology majors and is the initial contact for all majors in a state of transition (readmitted, transfer, newly declared students, etc.). The academic counselor assists students in all phases of educational planning and decision making, including preregistration, long-range academic planning, degree and program requirements, and career selection and planning. 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 3.20 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 3.20 or above and 3.4 in major courses
2. Completion of PSYC 401, 402, and 502 with a grade of B or above in each

#### **Requirements of the program include**

1. Three 700-level psychology honors courses or equivalent
2. PSYC 797, Senior Honors Tutorial (fall)
3. PSYC 799, Senior Honors Thesis (spring)

Students interested in applying to the honors program should contact the department's academic counselor.



### **Undergraduate Research Conference**

The Department of Psychology sponsors the annual George M. Haslerud Undergraduate Research Conference each spring. Undergraduates are invited to submit empirical or theoretical papers for presentation at the conference. Contact the department's academic counselor for more information.

### **Russian (RUSS)**

[www.unh.edu/languages/LLC/Russian/index.htm](http://www.unh.edu/languages/LLC/Russian/index.htm)

*(For program description, see Languages, Literatures, and Cultures, page 39. For course descriptions, see page 237.)*

### **Sociology (SOC)**

[www.unh.edu/sociology/](http://www.unh.edu/sociology/)

*(For course descriptions, see page 239.)*

**Chairperson:** James Tucker

**Professors:** Michele Dillon, Cynthia M. Duncan, David Finkelhor, Lawrence C. Hamilton, Murray A. Straus, Heather A. Turner, Sally Ward

**Clinical Professor:** John T. Kirkpatrick

**Associate Professors:** Linda M. Blum, Benjamin C. Brown, Sharyn J. Potter, James Tucker

**Research Associate Professor:** Glenda Kaufman Kantor

**Assistant Professors:** Cesar Rebellon, Thomas G. Safford, Karen Van Gundy

**Research Assistant Professor:** Wendy A. Walsh

**Lecturers:** Jean Elson, Priscilla S. Reinertsen

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.

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 sociology department includes 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, or government or private services, where a major might work in education, health services, social welfare, criminal justice, or research. An undergraduate degree in sociology is also excellent preparation for graduate work in law, social work, 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 sociology 400 during their first semester and earn a grade of C to maintain status in the program.

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 2.00 or better in sociology courses. Soc 400, 502, 599, 601, and 611 are required; majors must take 599 no later than their junior year. At least two of the additional major courses must be at the 600 or 700 level. Students can count SOC 595 toward the fulfillment of one of their lower level (500 level) electives. SOC 502 (Statistics) may not be used by sociology majors for General Education requirement Category 2 (Quantitative Reasoning). Statistic courses in other disciplines are generally acceptable as a substitute for SOC 502.

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 3.20, and especially for those anticipating graduate study.

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. 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 2.00 or better in these courses.

### **Sociology 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, 501, or 503 and above in spoken language).

The Department of Sociology requires all students declaring the major after August 28, 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.

### **Spanish (SPAN)**

[www.unh.edu/languages/LLC/index.htm](http://www.unh.edu/languages/LLC/index.htm)

*(For course descriptions, see page 241.)*

### **Theatre and Dance (THDA)**

[www.unh.edu/theatre-dance/](http://www.unh.edu/theatre-dance/)

*(For course descriptions, see page 243.)*

**Chairperson:** Deborah A. Kinghorn

**Professors:** David M. Richman, Charles L. Robertson

**Associate Professors:** Joan W. Churchill, David J. Kaye, Deborah A. Kinghorn, H. Gay Nardone, David L. Ramsey

**Assistant Professor:** Raina S. Ames

**Lecturers:** Carol J. Fisher, Sarah Jane Marschner, Daniel J. Raymond

The Department of Theatre and Dance has one of the largest and most varied undergraduate theatre programs in the Northeast, with concentrations in acting, musical theatre, design and technical theatre, dance, secondary education, youth drama, and youth drama for special education. Performance opportunities include six mainstage faculty-directed productions, three touring productions, and over 20 student-directed productions including plays, musical theatre, dance, puppetry, improvisation, comedy, and creative drama.

The award-winning faculty provides theatre majors with superlative training within a broad liberal arts context. Students may take courses in acting, voice and movement, dialects, directing, choreography, design and technical theatre, the history, theory and criticism of drama and theatre, youth drama, secondary school certification, youth drama in special education, playwriting, storytelling, puppetry, ballet, theater dance (jazz and tap), aerial dance, musical theatre, and touring

theatre. Students interested in performance, technical, and historical aspects will be well trained to step into professional careers. The program affords means for independent study and internships, special projects, and for 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 incoming freshman and undergraduates each spring.

### **Requirements for the Major**

In addition to general liberal arts preparation, seven specific course sequences are available within the theatre major:

1. 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 Masters of Arts in Teaching (MAT) program, to prepare students for secondary school certification with an undergraduate specialization in secondary theatre education;
2. 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 of Masters in Education (M.Ed.) program to prepare students for elementary school certification with an undergraduate specialization in youth drama;
3. courses leading to a theatre major that, if so desired, may be combined with requirements of the Department of Education, in conjunction with a fifth year Masters in Education (M.Ed.) program to prepare students for elementary school certification with an undergraduate specialization of youth drama for special education;
4. courses leading to a theatre major with an emphasis in dance (ballet, tap, jazz, and theatre dance);
5. courses leading to a theatre major with an emphasis in musical theatre;
6. courses leading to a theatre major with an emphasis in design and technical theatre;
7. courses leading to a theatre major with an emphasis in acting.

The general theatre major allows students to explore a variety of areas. In the freshman and sophomore years, the student should enroll for at least two theatre courses per semester and two general education courses per semester. Students meet with the chair of the department, until they are assigned advisers appropriate to the individual's area of interest. The minimum grade requirement is C- per course. Any grade lower than a C- will not count toward the major. Under department

policy, students who complete both COMM 533 and 733 satisfy the language competency requirement. All UNH B.A. degrees require a minimum of 128 credit hours. Within those 128 credit hours, the theatre major offers seven specific course sequences:

### **Theatre (B.A.)**

#### **General Theatre**

#### **I. 22 credits required**

THDA 435, Introduction to Theatre; 436 or 438, History of Theatre I or II; 459, Stagecraft; 551, Acting I; 689 A-D, Theatre/Dance Practicum; 798 or 799, Senior Thesis or Capstone Project

#### **II. 4 credits from theory/history**

THDA 436 or 438, History of Theatre I or II; 450, History of Musical Theatre in America; 520, Creative Drama; 541, Arts and Theatre Administration; 632, Interpretation of Shakespeare in the Theatre; 638, American Theatre 1920-1970; 656, Musical Theatre Repertoire and audition; 657, Play Reading; 721, Education Through Dramatization; 727, Methods of Teaching Theatre; 750, Writing for Performance; 762, Women in 20th and 21st Century American Theatre

#### **III. 4 credits from design/technical**

THDA 458, Costume Construction; 475, Stage Make-Up; 532, The London Experience; 546, Costume Design for the Theatre; 547, Stage Properties; 548, Stage Lighting Design and Execution; 583, Introduction to Puppetry; 641, Stage Management; 650, Scene Painting for the Theatre; 651, Rendering for Theatre; 652, Scene Design; 683, Advanced Puppetry

#### **IV. 4 credits from performance**

THDA 470, Movement and Vocal Production; 552, Acting II; 555, Exploring Musical Theatre; 592A, Special Topics; 622, Storytelling, Story Theatre, and Involvement Dramatics; 624A, Theatre for Young Audiences-Acting; 624B, Theatre for Young Audiences-Directing; 655, Musical Theatre Styles; 741, Directing; 755, Advanced Musical Theatre; 756, Producing and Directing the Musical; 758, Acting III

#### **V. 8 credits from any 600-800 level course, including those in sections II, III, IV**

THDA 691, Internship in Theatre and Dance; 781, Theatre Workshop for Teachers; 782, Advanced Theatre Workshop for Teachers; 791, Internship in Theatre and Dance; 795, Independent Study; 798, Senior Thesis; 799, Capstone Project

#### **Total: 42 cr.**

Contact Deborah Kinghorn, Paul Creative Arts, (603) 862-1963, e-mail deb.kinghorn@unh.edu.

### **The Secondary Theatre Education Emphasis**

High school theatre teachers are often responsible for directing plays and musicals (the latter in collaboration with a music teacher). This is an extensive training program for secondary education theatre teachers meant to fully prepare students for the rigorous task of high school teaching.

### **Theatre (B.A.)**

#### **Emphasis in Secondary Theatre Education**

#### **I. 54 credits from theatre area**

THDA 435, Introduction to Theatre; 436 or 438, History of Theatre I or II; 459, Stagecraft; 463 Theatre Dance I; 551, Acting I; 555, Exploring Musical Theatre; 624A, Theatre for Young Audiences-Acting; 624B, Theatre for Young Audiences-Directing; 689, Theatre/Dance Practicum A-D; 721, Education Through Dramatization; 727, Methods of Teaching Theatre (must be taken before student internship); 729, Community-Oriented Drama Programs; 760, History and Play Analysis for Teachers; 799, Capstone Project

#### **II. 4 credits from design/technical theatre**

THDA 458, Costume Construction; 546, Costume Design for the Theatre; 548, Stage Lighting Design and Execution; 782J, Set, Lighting, and Costume Design

#### **III. 20 credits from education\***

EDUC 500/935, Exploring Teaching; EDUC 700/800, Educational Structure and Change; EDUC 701/801, Human Development and Learning: Educational Psychology; EDUC 705/805, Alternative Perspectives on the Nature of Education (must be taken before student teaching internship); EDUC 751/851B, Educating Exceptional Learners: Secondary

#### **Total: 78 cr.**

#### **THDA Electives**

Students should take at least 12 credits from the following courses:

THDA 436 or 438, History of Theatre I or II; 450, History of Musical Theatre in America; 475, Stage Makeup; 520, Creative Drama; 547, Stage Properties; 583, Introduction to Puppetry; 622, Storytelling, Story Theatre, and Involvement Dramatics; 641, Stage Management; 652, Scene Design; 653, Performance Project or 654, Scenic Arts Project; 683, Advanced Puppetry; 727, Methods of Teaching Theatre (Musical Theatre); 750, Writing for Performance; 762, Women in 20th and 21st Century American Theater.

NOTE: It is understood that students will fulfill 20 internship contact hours with theatre students in their emphasis area: elementary, middle, or high school. Projects for 653A and 729 cannot count as internship hours. Students may fulfill this requirement through a variety of teaching opportunities with the TRY 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 the student's theatre adviser.

It is also 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 Masters of Education (M. Ed.) degree program which fulfills state requirements for certification.

Contact Raina Ames, Paul Creative Arts, (603) 862-3044, e-mail raina.ames@unh.edu.

\*May be taken at the undergraduate level or the graduate level



**The Youth Drama Emphasis**

Students considering a career in elementary education may be interested in an undergraduate specialization in youth drama. When coupled with a Master's Degree in Education (M.Ed.), the student is well equipped to succeed in the classroom. Many of the graduates of this particular program in theatre are presently employed as teachers of elementary school-aged children. The theatrical and practical experience they obtained as undergraduates prepared them to secure teaching positions and guaranteed success in the classroom. The energy, concentration, and immediacy of drama produce excellent results. The course sequence for the major option in Youth Drama is included here.

**Theatre (B.A.)****Emphasis in Youth Drama****I. 38 credits required**

THDA 435, Introduction to Theatre; 459, Stagecraft; 520, Creative Drama; 583, Introduction to Puppetry; 622, Storytelling, Story Theatre and Involvement Dramatics; 624A or 624B, Theatre for Young Audiences-Acting or Directing; 689 A-D, Theatre/Dance Practicum; 721, Education Through Dramatization; 729, Community Oriented Drama Programs; 799, Capstone Project

**II. 4 credits from the dance area**

THDA 463, Theatre Dance I

III. 8 credits in practicum (must be taken before internship)  
EDUC 500/935, Exploring Teaching; EDUC 705/805, Alternative Perspectives on the Nature of Education

**IV. 20 credits from education**

EDUC 700/800, Educational Structure and Change; EDUC 701/801, Human Development and Learning; EDUC 703F/803F, Teaching Science; EDUC 703M/803M, Teaching Elementary Science and Social Studies; EDUC 706/806, Introduction to Reading Instruction (must be taken before internship); EDUC 751A/851A, Educating Exceptional Learners: Elementary (must be taken before internship)

**V. 4 credits from math education (must be taken before internship)**

MATH 601 or 602, Exploring Mathematics for Teachers I or II; MATH 621, Number Systems for Teachers; MATH 622, Geometry for Teachers; MATH 623, Topics In Mathematics for Teachers; MATH 703, Teaching of Mathematics, K-6; MATH 910, Teaching Elementary School Mathematics; EDUC 741/841, Exploring Mathematics with Young Children

**Total: 70 cr.**

NOTE: It is understood that students will fulfill 20 internship contact hours with theatre students in their emphasis area: elementary, middle, or high school. Projects for 653A and 729 cannot count as internship hours. Students may fulfill this requirement through a variety of teaching opportunities with the TRY 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 the students theatre adviser.

Contact Raina Ames, Paul Creative Arts, (603) 862-3044, e-mail raina.ames@unh.edu.

**Youth Drama in Special Education**

Students considering a career in special education may be interested in an undergraduate specialization using youth drama as a methodology in their future classrooms. When coupled with a Master's Degree in Special Education, the student is well equipped to succeed in the classroom.

Students who want specific instruction in special/exceptional populations will be provided theoretical and practical training to prepare them to obtain teaching positions and to have classroom successes. The energy, concentration, and immediacy of drama produce excellent results. The course sequence for the education and/or theatre major option in youth drama in special education is included here.

**Theatre (B.A.)****Emphasis in Youth Drama in Special Education****I. 38 credits required from theatre and dance**

THDA 435, Introduction to Theatre; 459, Stagecraft; 463, Theatre Dance I; 520, Creative Drama; 583, Introduction to Puppetry; 622, Storytelling, Story Theatre and Involvement Dramatics; 624A or 624B, Theatre for Young Audiences-Acting or Directing; 689 A-D, Practicum; 721, Education Through Dramatization; 799, Capstone Project

**II. 12 credits from education\***

EDUC 706/806, Introduction to Reading Instruction; EDUC 750/850, Introduction to Exceptionality; EDUC 751/851, Educating Exceptional Learners

**III. 32 credits from math education**

MATH 601 or 602, Exploring Mathematics for Teachers I or II; MATH 621, Number Systems for Teachers; MATH 622, Geometry for Teachers; EDUC 741/841, Exploring Mathematics for Young Children

**IV. 44 credits from special education**

EDUC 939, 940, SPED teaching/assessment classes; EDUC 900, 901C, Teaching Internship; EDUC 949, Supporting Families; EDUC 938, Advanced SPED Seminar; EDUC 981, Research Methods + 3 electives that afford graduate level credit.

**Total 98 cr.**

Additionally, students would be strongly encouraged to fulfill their Foreign Language requirement with American Sign Language.

Students may wish to contact the Department of Education to learn more about teacher certification and Master of Education (M. Ed.) that can be accomplished at UNH in special education. Contact Raina Ames, Paul Creative Arts, (603) 862-3044, e-mail raina.ames@unh.edu.

**The Dance Emphasis**

A diverse program in dance is offered as an emphasis within the Department of Theatre and Dance. This area of emphasis is designed to give the dance teacher, choreographer

\*May be taken at the undergraduate level or the graduate level

and/or performer the skills needed to embark on a successful career. Technique courses in ballet, point, tap, jazz, and the aerial arts, are at the core of this program. Courses in pedagogy, composition, dance history, and choreography allow dancers to explore a variety of directions in the dance field. In addition, dancers are introduced to the technical aspects involved in bringing a performance to fruition. Performance opportunities include yearly faculty-directed dance concerts and student-created dance showcases each semester. Dancers may focus on one or all dance forms.

**Theatre (B.A.)****Emphasis in Dance****I. 16 credits required**

THDA 435, Introduction to Theatre; 459, Stagecraft; 653, Performance Project; 689A, Theatre/Dance Practicum; 689B, Theatre/Dance Practicum; 689C, Theatre/Dance Practicum; 689D, Theatre/Dance Practicum; 799, Capstone Project

**II. 8 credits from theory**

THDA 487, The Dance; 586, Dance Pedagogy; 633, Dance Composition; 732, Choreography

**III. 8 credits from fine arts**

THDA 546, Costume Design for the Theatre; 548, Stage Lighting Design and Execution; 551, Acting I; 555, Exploring Musical Theatre; 655, Musical Theatre Styles; 798, Senior Thesis

ARTS 431, Visual Studies; 572, Art of the Age of Humanism; 573, Art of the Modern World

MUSI 411-412, Fundamentals of Music Theory; 709, Music of the Romantic Period; 711, Music of the 20th Century

PHIL 421, Philosophy of the Arts

**IV. 16 credits from performance**

THDA 461, Modern Dance I (as funding becomes available); 462, Ballet I; 463, Theatre Dance I; 562, Ballet II (may be repeated to 4 credits); 563, Theatre Dance II (may be repeated to 4 credits); 576, Pointe; 597, Dance Theatre Performance (may be repeated); 662, Ballet III (may be repeated); 663, Theatre Dance III (may be repeated); 665, Aerial Dance; 684, Special Topics

**Total 48 cr.**

Contact Larry Robertson, Newman Dance Studio, (603) 862-3032.

**The Musical Theatre Emphasis**

A balanced program in Musical Theatre is offered as an emphasis within the Department of Theatre and Dance. This area of emphasis within the major focuses on dance, music, and theatre. It is assumed that students considering the Musical Theatre Emphasis will have a certain amount of proven ability in at least one of the "triple threat" disciplines. After four years of study it is hoped that the student will have a solid background in vocal techniques, and part singing (usually obtained through choral work). Students in the major are given vocal study awards to offset the cost of private lessons from a teacher of their choice.



**Theatre (B.A.)****Emphasis in Musical Theatre****I. 20 credits required**

THDA 435, Introduction to Theatre; 450, History of Musical Theatre in America; 459, Stagecraft; 653B, Performance Project/Musical Theatre; 689A-D, Practicum; 799, Capstone Project

**II. 12 credits from 400-500 level courses listed below**

THDA 470, Movement and Vocal Production; 551, Acting I; 552, Acting II; 555, Exploring Musical Theatre

**III: 12 credits from 600-700 level courses listed below**

THDA 655, Musical Theatre Styles; 656, Musical Theatre Repertoire & Audition; 755, Advanced Musical Theatre; 756, Producing and Directing the Musical

**IV: 6 credits from dance**

THDA 462, Ballet I; 463, Theatre Dance I; 562, Ballet II; 563, Theatre Dance II (may be repeated); 662, Ballet III; 663, Theatre Dance III (may be repeated)

**V: 10 credits from specialty area**

The student and the adviser will select courses in Music, Theatre and Dance appropriate to the needs of the student.

**Total: 60 cr.**

Contact Carol Lucha-Burns, Paul Creative Arts, (603) 862-3288, luchaburns@comcast.net.

**The Acting Emphasis**

The Acting Emphasis was created for students with an intense interest in acting and/or directing. The emphasis was designed to help develop all aspects of the actor and the director as both an interpretive and creative artist. This program gives students the rigorous training of a B.F.A. styled program while maintaining all the advantages of a fully rounded liberal education. Students in the acting emphasis program are expected to strive for excellence in all areas of the art and craft of acting, through highly challenging coursework, special workshops with guest artists and instructors, productions and performance-based projects.

**Theatre (B.A.)****Emphasis in Acting****I. 38 credits required**

THDA 435, Introduction to Theatre; 436 or 438, History of Theatre I or II; 459, Stagecraft; 470, Movement and Vocal Production; 551, Acting I; 552, Acting II; 689 A-D, Practicum; 758, Acting III; 759, Acting: Period and Style; 799, Capstone Project

**II. 4 credits from theory/history**

THDA 436 or 438, History of Theatre I or II; 450, History of Musical Theatre in America; 632, The Interpretation of Shakespeare in Theatre; 638, American Theatre, 1920-1970; 657, Play Reading; 750, Writing for Performance; 762, Women in 20th and 21st Century American Theatre

**III. 4 credits from design/technical theatre**

THDA 458, Costume Construction; 475, Stage Make-up; 541, Arts and Theatre Administration; 546, Costume Design for the Theatre; 547, Stage Properties; 548, Stage Lighting Design and

Execution; 583, Introduction to Puppetry; 650, Stage Painting for the Theatre; 651, Rendering for the Theatre; 652, Scene Design

**IV. 4 credits from musical theatre/dance**

THDA 463, Theatre Dance I; 555, Exploring Musical Theatre or 655, Musical Theatre Styles

**V. 8 credits from**

THDA 462, Ballet I; 463, Theatre Dance I; 550, The Actor's Voice Through Text; 562, Ballet II; 563, Theatre Dance II; 653, Performance Project; 655, Musical Theatre Styles or 755, Advanced Musical Theatre; 741, Directing I; 742, Directing II

**Total: 58 cr.**

Contact David Kaye, Paul Creative Arts, (603) 862-0667, e-mail djk@unh.edu.

**The Design and Technical Theatre Emphasis**

The Design and Technical Theatre Emphasis prepares students for both practical and aesthetic work in the theatre through class work, production assignments, and the everyday work of problem solving. UNH's Theatre Technicians and Designers are in demand throughout the country, utilizing transferable skills not only in the theatre but in the allied arts and beyond. Our trained students work in theatrical productions across the nation as lighting, scenic and costume designers, technical directors, property masters, head electricians, and scene painters, all stemming from their preparation in the design and technical areas at UNH.

**Theatre (B.A.)****Emphasis in Design and Technical Theatre****I. 22 credits required**

THDA 435, Introduction to Theatre; 436 or 438, History of Theatre I or II; 459, Stagecraft; 551, Acting I; 654, Design/Tech Project; 689 A-D Practicum; 799, Capstone Project

**II. 4 credits from**

THDA 546, Costume Design for the Theatre; 548, Stage Lighting Design and Execution; 652, Scene Design; 654, Scenic Arts Project

**III. 16 credits from**

THDA 458, Costume Construction; 475, Stage Make-up; 541, Arts and Theatre Administration; 546, Costume Design for the Theatre; 547, Stage Properties; 548, Stage Lighting Design and Execution; 641, Stage Management; 650, Scene Painting for the Theatre; 651, Rendering for the Theatre; 652, Scene Design

**IV. 8 credits from**

THDA 462, Ballet I or 463, Theatre Dance I; 532, The London Experience; 583, Introduction to Puppetry; 624, Theatre for Young Audiences-Acting; 624B, Theatre for Young Audiences-Directing; 632, The Interpretation of Shakespeare in Theatre; 657, Play Reading; 691, Internship in Theatre; 741, Directing; 750, Writing for Performance; 798, Senior Thesis  
ARTS 455, Introduction to Architecture; 480, 580/518, Art History; 532, Introduction to Drawing; 546, Introduction to Painting

CS 780, Special Topics in Computer Science (1) AutoCad, (2) 3-D Studio

ENGL 631, 657, 746, 758, 780, 781, 782

FREN 522

GERM 640

SPAN 752, 757, 771

**Total: 50 cr.**

Contact Joan Churchill, Paul Creative Arts, (603) 862-4445; e-mail joan@cisunix.unh.edu.

**Minors in Theatre and Dance**

The general theatre minor consists of 20 credits in theatre. Listed below are a variety of specialized minors that have mandatory requirements.

**Musical Theatre Minor****10 credits required**

THDA 450, History of Musical Theatre in America; 555 or 655, Exploring Musical Theatre or Musical Theatre Styles; 653B, Performance Project/Musical Theatre

**6 credits from dance**

THDA 463, Theatre Dance I; 563, Theatre Dance II; 663, Theatre Dance III

**4 credits from upper level musical theatre**

THDA 655, Musical Theatre Styles; 656, Musical Theatre Repertoire & Audition; 755, Advanced Musical Theatre; 756, Producing and Directing the Musical

**Total: 20 cr.**

Contact Carol Lucha-Burns, Paul Creative Arts, (603) 862-3288, luchaburns@comcast.net.

**Dance Minor****Up to 16 credits from**

THDA 461, Modern Dance I; 462, Ballet I; 463, Theatre Dance I; 562, Ballet II; 563, Theatre Dance II; 576, Pointe; 597, Dance Theatre Performance; 662, Ballet III; 663, Theatre Dance III; 665, Aerial Dance

**At least 4 credits from**

THDA 487, The Dance; 586, Dance Pedagogy; 632, Choreography; 633, Dance Composition; 684, Special Topics

**Total: 20 cr.**

Contact Gay Nardone, Paul Creative Arts, (603) 862-1728, hgn@cisunix.unh.edu.

**Youth Drama Minor****16 credits required from**

THDA 520, Creative Drama; 583, Introduction to Puppetry; 622, Storytelling, Story Theatre, and Involvement Dramatics; 624A or 624B, Theatre for Young Audiences—Acting or Directing; 683, Advanced Puppetry

**4 credits required from**

THDA 621, Education through Dramatization; 653A, Performance Project; 653B, Performance Project/Musical Theatre; 795, Independent Study

**Total 20 credits**

Contact Raina Ames, Paul Creative Arts, (603) 862-3044, e-mail raina.ames@unh.edu.



## Women's Studies (WS)

[www.unh.edu/womens-studies/](http://www.unh.edu/womens-studies/)

(For course descriptions, see page 246.)

### Coordinator, Women's Studies Program:

Linda M. Blum

**Associate Professors:** Linda M. Blum, Marla A. Brettschneider, Julia Rodriguez

**Research Associate Professor:** Mary M. Moynihan

**Research Instructor:** Jane Stapleton

**Assistant Professors:** Carol B. Conaway, Julia E. Rodriguez

**Adjunct Professor:** Mary M. Moynihan

**Core Faculty:** Kristine M. Baber, Family Studies; Victoria L. Banyard, Psychology; Linda M. Blum, Sociology; Marla A. Brettschneider, Political Science; Carol B. Conaway, Communication; Melissa D. Deem, Communication; Diane P. Freedman, English; Robin Hackett, English; Marc W. Herold, Economics; Lori Hopkins, Languages, Literatures, & Cultures; Nancy Lukens, Languages, Literatures, & Cultures; Kathy Miriam, Philosophy; Janet L. Polasky, History; Mary E. Rhiel, Languages, Literatures, & Cultures; Juliette M. Rogers, Languages, Literatures, & Cultures; Jennifer D. Selwyn, History; Raelene Shippee-Rice, Nursing; Mara R. Witzling, Art and Art History

Women's studies provides students with an understanding of the status of women in various cultures and historical eras. 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.

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 communications, education, affirmative action, and personnel.

## Women's Studies Major

For the women's studies major, students must complete 40 credits of women's studies courses (or 32 in the case of a second major) with grades of C- (1.67) or better and an overall grade-point average of 2.00 or better. These courses must include the following three: 1) WS 401, Introduction to Women's Studies, normally taken at the beginning of the course sequence; 2) WS 632, Feminist Thought; and 3) a 700-level WS-designated course (for instance, WS 795, 796, 797, 798, or 799). Electives are chosen in consultation with a faculty adviser principally from other women's studies courses including WS 595 (Special Topics in Women's Studies) and cross-listed departmental offerings.

Departmental offerings include the following regularly repeated cross-listed courses:

ARTS 487, Themes and Images in Art: Major Mythic Images of Women  
 ARTS 690, Women Artists of the Nineteenth and Twentieth Centuries  
 CMN 567, Images of Gender in the Media  
 CMN 583, Gender and Expression  
 ECON 698, Topics in Economics: Women in Economic Development  
 EDUC 507, Mentoring Adolescents  
 ENGL 585, Introduction to Women in Literature  
 ENGL 685, Women's Literary Traditions  
 ENGL 785, Major Women Writers  
 FS 545, Family Relations  
 FS 757, Race, Class, Gender, and Families  
 GERM 520, Women in German Literature and Society  
 GERM 524, Topics in German Film  
 HIST 565, Women in Modern Europe  
 HIST 566, Women in American History  
 NURS 595, Women's Health  
 PHIL 510, Philosophy and Women  
 PSYC 711, Psychology in 20th Century Thought and Society  
 SOC/ANTH 625, Female, Male, and Society  
 SOC 630, Sociology of Gender

Students may also select from other courses that are offered as special topics by the departments. In the past, such offerings have included the following: ANTH 697, Women in the Middle East; CMN 616, Women and Film; FREN 525, French Women: Subject and Object.

Electives must show a balance between arts and humanities/social sciences and be distributed between upper (600 and 700) and lower (400 and 500) level courses; no more than four electives may be from the same department. No fewer than five courses should be taken at the upper level. Strongly recommended are a practicum or internship course and a course that focuses on women of color or cross-cultural perspectives.

## Women's Studies Minor

The minor consists of 20 credits of women's studies courses. These must include WS 401, Introduction to Women's Studies, and WS 798, Colloquium in Women's Studies, normally taken at the beginning and end of the course sequence, respectively. It may be possible to substitute WS 797, (Internship) for WS 798, (colloquium), but please discuss with a WS adviser. In between, students should select other women's studies courses or cross-listed courses from departmental offerings. (For a more complete description of the women's studies minor, see Interdisciplinary Programs, page 110.)

Students who wish to major or minor in women's studies should consult with the coordinator, 203 Huddleston Hall, (603) 862-2194.

# COLLEGE OF ENGINEERING AND PHYSICAL SCIENCES

www.ceps.unh.edu

Joseph C. Klewicki, Dean  
Robert M. Henry, Associate Dean

Department of Chemical Engineering  
Department of Chemistry  
Department of Civil Engineering  
Department of Computer Science  
Department of Earth Sciences  
Department of Electrical and Computer Engineering  
Department of Mathematics and Statistics  
Department of Mechanical Engineering  
Department of Physics

## Bachelor of Science

Chemical Engineering\*  
    Bioengineering  
    Energy  
    Environmental Engineering  
Chemistry\*  
Civil Engineering\*  
Computer Engineering\*  
Computer Science\*  
    Bioinformatics  
Electrical and Computer Engineering\*  
Environmental Engineering\*†  
    Industrial Process  
    Municipal Process  
Environmental Sciences\*  
    Ecosystems  
    Hydrology  
    Soil and Watershed Management  
Geology\*  
International Affairs (dual major)  
Mathematics\*  
Mathematics Education\*  
    Elementary  
    Middle/Junior High  
    Secondary  
Mathematics, Interdisciplinary  
    Computer Science  
    Economics  
    Electrical Science  
    Physics  
    Statistics  
Mechanical Engineering\*  
Physics\*  
    Chemical  
    Materials Science

## Bachelor of Arts

Chemistry  
Chemistry and Physics Teaching  
Earth Science Teaching  
Earth Sciences  
    Oceanography  
Mathematics  
Physics

\*Designated degree (the name of the specialization is on the diploma, e.g., B.S. in chemistry).

†Multidisciplinary; i.e., offered in collaboration with two departments.

**T**he College of Engineering and Physical Sciences provides an opportunity for students to achieve educational objectives appropriate to their interests in engineering, computer science, 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 is available. Special programs can be developed to meet the specific interests of individual students.

## Degree Requirement

MATH 425 and 426 (Calculus I and 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 prerequisites for calculus are three years of college-preparatory mathematics, including a half-year of trigonometry. Before students can register for MATH 425, they are required to take the Mathematics Placement Test.

## Mathematics Placement

First-year students arrive with a wide range of mathematical skills based on high school preparation. The college wants you to have a solid mathematics foundation, so that you will enjoy an enriched first-semester experience. We will assess your mathematics development during June Orientation and enroll you in the class that will allow you to continue that development. The initial entry course is Analysis and Applications of Functions (MATH 418). However, a placement evaluation will be given to allow a student to place out of MATH 418 into MATH 425 (Calculus I). If you have received AP credit for Calculus I and/or Calculus II, you 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 is accredited by the Computing Accreditation Commission of ABET, Inc. ABET contact information: 111 Market Place, Suite 1050, Baltimore, MD 21202-4012, telephone (410) 347-7700. The

Department of Chemistry's undergraduate bachelor of science program is approved by the American Chemical Society.

## Tech Courses

The following courses are designed for students of the college and for other majors within the University. These courses are offered through and administered by the Dean's Office.

TECH 400	Introduction to CEPS Programs	1 cr.
TECH 444	Symmetry in Nature, The Arts, and Daily Life	4 cr.
TECH 564	Fundamentals of CAD	3 cr.
TECH 583	Technology: Cultural Aspects	4 cr.
TECH 583H	Honors/Technology: Cultural Aspects	4 cr.
TECH 601	Fundamentals Examination Review Course	1 cr.
TECH 685	Budapest Program	20 cr.
TECH 696	Independent Study	1 to 4 cr.
TECH 797	Undergraduate Ocean Research Project	2 cr.

## Degrees

### 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 general education requirements (page 16) and the specific departmental requirements for graduation. A minimum grade-point average of 2.00 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.

### 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. See page 18 for requirements for the bachelor of arts degree.



---

## Interdisciplinary Programs

### Majors

#### *Bachelor of Science in Environmental Engineering*

The environmental engineering program consists of two emphases: industrial processes (IP) and municipal processes (MP). See page 64.

#### *Bachelor of Science in Environmental Sciences*

The environmental sciences program is offered jointly with the College of Life Sciences and Agriculture and consists of three options: hydrology, soil and watershed management, and ecosystems. See page 61.

### Minors

Interdisciplinary minors enable students to obtain experience in a specialized area and to retain identification with their major professional area. The college's interdisciplinary minors are:

Environmental engineering, see page 66.

Materials science, see page 69.

Ocean engineering, see page 112.

Oceanography, see page 113.

For requirements regarding minors, see page 19.

---

## Other Programs

### Independent Study and Projects

All departments within the college offer independent study and/or projects. The content of these courses varies based upon current scientific and technological needs and student and faculty interest.

Permission of the instructor and/or department chairperson is required. (See the course descriptions for the independent study and project courses and for specific requirements.) Students interested in working with a faculty member on a project or independent study should discuss this with their academic adviser.

### *Special Provisions*

The requirement of a given course in any prescribed curriculum may be waived by the faculty of a student's college. The student's petition must be approved by his/her major adviser and the dean of the college. This power will usually be delegated by the faculty to the dean or to a committee. (Senate Rule

05.21(s): Waiver of Requirements in a Prescribed Curriculum.)

This rule offers students the opportunity to develop a somewhat individualized plan of study with intellectual incentives and opportunities in addition to those in a regular 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.

### *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 discover and foster their creative talents. In funded research projects, students may have an opportunity to receive pay while learning.

A multiplicity of research programs is reflected in special facilities: Bioelectronics Laboratory, Fluid Mechanics Laboratory, Solid State Laboratory, Space Science Center, Wind Tunnel and Water Tunnel Facilities, Structural Biology Laboratory, X-ray Diffraction Laboratory, Data Visualization Laboratory, Nano-Manufacturing Laboratory, Chaos and Dynamic Systems Laboratory, Structural Engineering High Bay, Xeon Magnetic Resonance Imaging Laboratory, Jere A. Chase Ocean Engineering Laboratory, Water Treatment Technology Center, Recycled Materials Research Center, and Center for Contaminated Sediment Research.

Students have the opportunity to acquire applied experience by working with faculty members who undertake client-sponsored professional projects in technical and managerial areas for business and industry and for federal, state, and local governments.

### Study Abroad Programs

#### *Hungary*

The College of Engineering and Physical Sciences provides its students with the opportunity to spend the fall semester of their junior year at the Budapest University of Technology and Economics (BME) in Budapest, Hungary. Courses at BME are taught in English and receive prior approval for degree credit. Students studying in Budapest, there-

fore, can graduate on schedule at UNH. A general education course on the language, geography, and culture of Hungary, taken at BME, is strongly suggested. The foreign student office at BME will appoint a Hungarian adviser for each student and will assist students in obtaining housing either in dormitories or apartments. For more information, visit the program's Web site at [www.ceps.unh.edu/academics/budapest/](http://www.ceps.unh.edu/academics/budapest/).

#### *Puerto Rico*

Students may spend one or two semesters at the University of Puerto Rico (UPR) at Mayaguez, the second largest of the three major campuses in the UPR system. While having the opportunity to learn in a Latin American 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 and faculty members from all UNH majors. Since eighty percent of all courses at UPR are taught in Spanish, participants must be proficient in Spanish. Interested CEPS students should contact the National Student Exchange Office, Hood House.

#### *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.

### Preparing for Teaching

Students interested in mathematics education (elementary, middle/junior high, or secondary), chemistry and physics teaching, earth science teaching, or general 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, page 16; see also Degrees and Major Programs of Study and Departmental Programs of Study, in this section.

*Second Majors:* See University Academic Requirements, page 19.

**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, page 18.

**Student-Designed Majors:** See Special University Programs, page 114.

**Other combined and interdisciplinary opportunities:** See Special University Programs, page 109.

## Programs of Study

In addition to the following departmental majors and options, departmental minors are offered in chemical engineering, chemistry, electrical engineering, geology, hydrology, mathematics, applied mathematics, mechanical engineering, physics, and statistics.

### Chemical Engineering (CHE)

[www.chemengunh.com](http://www.chemengunh.com)

(For course descriptions, see page 158.)

**Chairperson:** Stephen S.T. Fan

**Professors:** Dale P. Barkey, Russell T. Carr, Stephen S.T. Fan, Ihab H. Farag, Virendra K. Mathur, Palligarnai T. Vasudevan

**Assistant Professor:** Nivedita R. Gupta

The Department of Chemical Engineering currently offers the undergraduate degree program in chemical engineering with options in bioengineering, energy and environmental engineering. In addition, the College of Engineering and Physical Sciences offers an interdisciplinary B.S. program in environmental engineering with the participation of the chemical engineering and civil engineering departments. See page 64.

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, telephone (410) 347-7700.

### Bachelor of Science in Chemical Engineering

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 our students for productive careers in industry or government and provides a foundation for graduate studies. Our 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 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.

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 130 credits is required for graduation with the degree of bachelor of science in chemical engineering. There are nine electives in the chemical engineering curriculum. Five of these are for the general education requirements. The remaining four electives should consist of three chemical engineering electives and one additional technical elective.

Students are required to obtain a minimum 2.00 grade-point average in CHE 501-502 and in overall standing at the end of the sophomore year in order to continue in the major.

Freshman Year	Fall	Spring
ENGL 401, Freshman English	-	4
Math 425-426, Calculus I and II	4	4
PHYS 407, General Physics I	-	4
CHEM 405, General Chemistry	4	-
CHE 410, Energy and Environment	-	4
Electives (2)	8	-
<b>Total</b>	<b>16</b>	<b>16</b>

### Sophomore Year

CHEM 683-684, Physical Chemistry I and II	3	3
CHEM 685-686, Physical Chemistry Laboratory	2	2
MATH 527, Differential Equations with Linear Algebra	4	-
CS 410, Introduction to Scientific Programming	-	4
PHYS 408, General Physics II	4	-
CHE 501-502, Introduction to Chemical Engineering I and II	3	3
Elective	-	4
<b>Total</b>	<b>16</b>	<b>16</b>

### Junior Year

CHEM 651-652, Organic Chemistry	3	3
CHEM 653, Organic Chemistry Laboratory	2	-
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	-	4
CHE 612, Chemical Engineering Laboratory I	-	3
Electives (2)	4	4
<b>Total</b>	<b>16</b>	<b>17</b>

### Senior Year

CHE 605, Mass Transfer and Stagewise Operations	3	-
CHE 606, Chemical Engineering Kinetics	3	-
CHE 608, Chemical Engineering Design	-	4
CHE 613, Chemical Engineering Laboratory II	3	-
CHE 752, Process Dynamics and Control	-	4
Electives (4)	8	8
<b>Total</b>	<b>17</b>	<b>16</b>

### Bioengineering Option

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 products, food and beverage, pharmaceutical, biomedical, genetic engineering products, 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 3 credits each should be selected from the electives list. Students interested in the bioengineering option should declare their intention during the sophomore year to the department faculty.



<b>Required Courses</b>	<b>Credits</b>
CHE 761, Biochemical Engineering	4
CHE 762, Biomedical Engineering	4
BTEC 220, Biotech Experience: Manufacturing* (NHBET, Pease)	4
<b>Total</b>	<b>12</b>

\*BTEC 220 is cross-listed as MICR 651.

<b>Elective Courses</b>	
CHE 695, Chemical Engineering Project	3-4
CHE 696, Independent Study	3-4
BIOL 404, Biotechnology and Society	4
BCHM 751, Principles in Biochemistry	4
BCHM 752, Principles in Biochemistry	4
BCHM 750, Physical Biochemistry	3
BTEC 210, Biotech Experience: Research* (NHBET, Pease)4	4
<b>Total</b>	<b>6-8</b>

\*BTEC 210 is cross-listed as MICR 655.

### Energy Option

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 during the sophomore year to the department faculty. They may consult with Stephen S. T. Fan.

<b>Required Courses</b>	
CHE 705, Natural and Synthetic Fossil Fuels	4
CHE 712, Introduction to Nuclear Engineering	4
ME 705, Thermal System Analysis and Design	4
<b>Total</b>	<b>12</b>

<b>Elective Courses</b>	
CHE 695, Chemical Engineering Project	3-4
CHE 696, Independent Study	3-4
ENE 772, Physicochemical Processes for Water/Air Quality	4
<b>Total</b>	<b>6-8</b>

### Environmental Engineering Option

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 3 credits. Students interested in the environmental engineering option should declare their intention during the sophomore year to the department faculty. They may consult with Stephen S. T. Fan.

<b>Required Courses</b>	
ENE 709, Fundamentals of Air Pollution and Its Control	4
ENE 772, Physicochemical Processes for Water/Air	4
ENE 742, Solid and Hazardous Waste Engineering	3
<b>Total</b>	<b>11</b>

<b>Elective Courses</b>	
CHE 695, Chemical Engineering Project	3-4
CHE 696, Independent Study	3-4
CHE 744, Corrosion	4
ENE 746, Bioenvironmental Engineering Design	3
ENE 749, Water Chemistry	4
<b>Total</b>	<b>6-8</b>

### Chemistry (CHEM)

[www.unh.edu/chemistry/](http://www.unh.edu/chemistry/)

(For course descriptions, see page 159.)

**Professors:** Christopher F. Bauer, N. Dennis Chasteen, Arthur Greenberg, Richard P. Johnson, Howard R. Mayne, Glen P. Miller, W. Rudolf Seitz, Sterling A. Tomellini, Gary R. Weisman, Edward H. Wong, Charles K. Zercher

**Associate Professors:** Steven B. Levery, Roy P. Planalp

**Assistant Professor:** Margaret E. Greenslade

"Chemistry is everywhere. From agriculture to health care, chemistry extends life and improves its quality. From disposable diapers to space suits, chemistry provides new materials—for clothing, shelter, and recreation. From computer chips to fiber optics, chemistry is the foundation of today's high technology." (American Chemical Society)

A study in chemistry is the pathway to multiple options. These options range from a career in education, law, forensics, medicine, biotechnology, environmental protection, technical sales, pharmaceutical research, semiconductors, and industrial chemical production. The potential is limitless. Students interested in pursuing chemistry as an undergraduate degree have three options available to them, which are based on their career plans. These are the bachelor of science degree; a bachelor of arts degree; and a bachelor of arts, chemistry and physics teaching degree. Since the required chemistry courses in each degree program are the same the first year, it is easy to change from one program to another.

In general, a first year student should register for the following courses, and this applies to all three programs: First Semester: Freshman Seminar, Chemistry 400; General Chemistry with lab, Chemistry 403; Calculus I, Mathematics 425; Second Semester: Freshman Seminar, Chemistry 400; General Chemistry with lab, Chemistry 404; Calculus II, Mathematics 426; Freshman English, English 401W.

### Requirements

1. Satisfy general education requirements.
2. For specific course requirements, see the accompanying chart.

### Bachelor of Arts in Chemistry

This curriculum offers students the opportunity to combine the chemistry major with other interests, for example, preprofessional programs, education, and business.

### Requirements

1. Satisfy general education requirements.
2. Satisfy the bachelor of arts degree requirements (see page 18).
3. For specific course requirements, see the following chart.

<b>Baccalaureate Degree Requirements</b>	<b>B.S.</b>	<b>B.A.</b>
<i>Chemistry Courses</i>		
400, Freshman Seminar	x	x
403, 404, General Chemistry	x	x
517, 518, Quantitative Analysis	x	x
547 & 549, Organic Chemistry I	x	x
548 & 550, Organic Chemistry II	x	x
574, Introduction to Inorganic Chemistry	x	x
683 & 685, Physical Chemistry I	x	x
684 & 686, Physical Chemistry II	x	x
762 & 763, Instrumental Methods of Chemical Analysis	x	x
698, Seminar	x	x
699, Thesis	x	
755 & 756, Advanced Organic Chemistry	x	
774 & 755, Advanced Inorganic Chemistry	x	
776, Physical Chemistry III	x	
708, Spectroscopic Investigations of Organic Molecules		

### Other Requirements

All majors: MATH 425 and 426, Calculus I and II.

B.A.s are required to take 698, Seminar; it also meets writing intensive requirements

B.S. degree: PHYS 407-408, General Physics I and II; BCHM 658 or 751, Biochemistry; one chemistry-related courses.†

B.A. degree, chemistry major: PHYS 407, General Physics I, or PHYS 401-402, Introduction to Physics I and II; two other CHEM courses, except 698, or two approved chemistry-related courses.†

† Suggested courses: MATH 527, 528; PHYS 505; EE 620; BCHM 658, 751.

### ***Bachelor of Arts, Chemistry and Physics Teaching***

This major is designed for students who wish to teach chemistry and physics in secondary schools. The number of positions available for teaching chemistry or physics alone is limited, but many opportunities exist to teach both subjects on the secondary-school level. Chemistry and physics teaching majors will have good preparation for teaching these subjects and will have the necessary mathematics and education background.

#### **Requirements**

1. Satisfy general education requirements.
2. Satisfy the bachelor of arts degree requirements (see page 18).
3. Chemistry requirements: 400, Freshmen Seminar; 403-404, General Chemistry; 517, 518, Quantitative Analysis; 545, 546 or 547-548 and 549-550, Organic Chemistry; 683-684 and 685-686, Physical Chemistry I and II.
4. Physics requirements: 407, General Physics I; 408, General Physics II; 505, General Physics III; 605, Experimental Physics I. PHYS 406, Introduction to Modern Astronomy, is strongly recommended.
5. Math requirements: 425, Calculus I, and 426, Calculus II.
6. All education courses in the teacher preparation program (see page 32).

### ***General Science Certification***

Students majoring in animal sciences, biochemistry, biology, 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 and see page 32.

### **Civil Engineering (CIE)**

[www.unh.edu/civil-engineering/](http://www.unh.edu/civil-engineering/)

(For course descriptions, see page 160.)

**Chairperson:** Jean Benoit

**Professors:** Jean Benoit, Michael R. Collins, Pedro A. De Alba, David L. Gress, Nancy E. Kinner, James P. Malley

**Research Professor:** T. Taylor Eighmy

**Associate Professors:** Thomas L. Attard, Thomas P. Ballestero, Raymond A. Cook, Charles H. Goodspeed, Robert M. Henry, Jennifer M. Jacobs

**Research Associate Professor:** Kevin H. Gardner

**Assistant Professors:** Erin S. Bell, Jo S. Daniel

**Research Assistant Professors:** Jenna R. Jambeck, Jeffrey S. Melton

Civil engineering involves the planning, design, and construction of public works: buildings, bridges, roads, dams, water transmission systems, water treatment systems, tunnels, and more. These facilities must provide efficient service, be cost-effective, and be compatible with the environment. Moreover, civil 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 and environmentally responsible public works.

Civil engineers work as private consultants 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 (e.g., bridges, buildings, roads, water transmission lines, water treatment plants, and power plants).

As civil engineering is such a broad field, it is traditionally divided into several sub-disciplines. At the University of New Hampshire, five are offered: civil engineering materials, environmental engineering, geotechnical engineering, structural engineering, and water resources engineering. Civil engineering majors may choose the sub-discipline in which to focus their studies during their senior year. Additionally, the College of Engineering and Physical Sciences, through the Departments of Civil Engineering and Chemical engineering, offers a B.S. in environmental engineering (ENE) which is a major for students who choose to specifically focus their attention solely in that area. (Students who are interested in environmental engineering but who also want a broader or more traditional civil engineering focus should pursue the civil engineering major and elect environmental engineering courses in their senior year.) Students may readily transfer between the civil engineering (CIE) and ENE programs within the first two semesters. Both the B.S. in civil engineering and the B.S. in environmental engineering provide a firm base in mathematics, science, 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, law, and medicine.

### ***Mission***

The mission of the Department of Civil Engineering is to pursue and disseminate knowledge through teaching, research, and public service. As part of its teaching mission,

the department provides rigorous, yet flexible, undergraduate and graduate education for both traditional and nontraditional students through classical and creative instruction in the classroom, laboratory, and field. While preparing students for the profession, the department offers an education in civil engineering that includes working in multidisciplinary teams that critically analyze and formulate solutions to civil engineering problems and apply engineering principles that provide social, economic, and environmental benefits to the public. The department encourages in its students a lifelong desire to keep abreast of new developments in the field and teaches them the skills necessary to continue learning. As part of its research mission, the department maintains a rigorous multidisciplinary program of scholarship advancing the state of the art in civil engineering. As part of its mission in public service, the department enhances the quality of life for people, especially in New England and specifically New Hampshire, by providing expert services; advancing and transferring knowledge and technology; and serving as a resource for information.

### ***Educational Objectives***

In accordance with its University, college, and department missions, the faculty of the Department of Civil Engineering has established clear objectives for students to help them become successful professionals after graduation. To assist graduates to become practicing civil engineers, the program helps students achieve a basic competence in math, science, and engineering principles; learn how to apply this knowledge to solve engineering problems; achieve a working knowledge in the basic civil engineering areas of structural engineering, geotechnical engineering, civil engineering materials, water resources, environmental engineering, and project engineering; and extend their knowledge in one or more of these areas. As part of this process, students learn how to critically analyze and design equipment, structures, systems, or processes to meet desired needs; to use current, and be able to independently learn new, engineering software. Engineers also need to be effective communicators. Engineering students learn how to communicate and defend ideas in technical reports and correspondence; how to speak before a group and convey information to technical and non-technical audiences; and how to create and effectively use graphics in support of a presentation or report. Students also learn how to work effectively as good team players who are also capable of being members of multidisciplinary teams.



As part of finding engineering solutions, students learn to locate, compile, and use existing information; design and perform experiments to gather new information; critically analyze information; and draw conclusions. Due to the nature of civil engineering efforts which involve the public, public safety, and significant financing, it is imperative that graduates become good engineering citizens. Students develop an awareness of the interaction between engineering practice and social, economic, and environmental issues; the importance of the ASCE Code of Ethics; an awareness of contemporary issues in their interaction with civil engineering practice; and the importance of broadening their education by being familiar with topics outside of the math, science, and engineering areas. Civil engineers are also professionals who are often licensed practitioners. Students are prepared to take the Fundamentals of Engineering examination (which is required for professional licensure), understand the need for lifelong learning and actively participate in organizations such as ASCE, SWE, SWB, Tau Beta Pi, and the Order of the Engineer.

**Bachelor of Science in Civil Engineering**

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 which conforms to the guidelines of, and is accredited by, the Engineering Accreditation Commission of ABET, 111 Market Place, Suite 1050, Baltimore, MD 21202-4012, telephone (410) 347-7700.

The first two years of the program provide the necessary technical knowledge in mathematics, chemistry, and physics, while introducing and developing civil engineering problem solving techniques. 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 thirty 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 page 16.)

**Electives**

Approximately one third of the major's total credits and more than half of the senior-level courses are elected by the student. Of these, there are general education electives

required by the University and other electives required by the department in order to satisfy departmental objectives and accreditation requirements.

1. The General Education Program is described in University Academic Requirements. Courses required by the civil engineering major fulfill the Group 1 through Group 3 general education requirements. Therefore, students select electives to satisfy the Group 4 through Group 8 courses—one elective per group.
2. The civil engineering major also requires students to select one math and basic sciences elective. A list of courses that fulfill this elective is available from the department.
3. Civil engineering majors wishing to participate in exchange programs must achieve a cumulative grade point average of 3.00 or better in all MATH, PHYS, CHEM, CIE, and ENE courses taken to date at the end of each of the second and third semesters prior to their exchange semester.
4. In the senior year, students take four courses specific to civil engineering sub-disciplines, and a senior science elective. Students can use these electives to focus on a particular civil engineering area or can acquire a broader perspective by taking courses in a variety of areas. At least one of these four elective courses must also qualify as a civil engineering design elective, and no more than three courses may be taken in one sub-discipline. Lists of courses that fulfill these electives are available from the department.

*Additional program policies and requirements*

1. CIE and ENE 600- and 700-level courses are intended for CIE and ENE majors only. All others may enroll in these courses only with the permission of the instructor and may take no more than 20 credits of these courses.
2. To enter the required 600-level courses in the junior year, students:
  - a. must have completed CIE 525, CIE 526, MATH 425, PHYS 407, and CHEM 405 or CHEM 403,
  - b. must have achieved an overall grade point average of 2.00 or greater for these courses, and
  - c. must attain a grade of C or better in each of CIE 525 and CIE 526.
3. To transfer into the civil engineering major, a student must:
  - a. have an overall grade point average of 2.30 or greater;
  - b. have completed 16 credits or more of MATH, PHYS, CHEM, CIE, and ENE courses;
  - c. have an overall grade point average of 2.00 or greater for all MATH, PHYS, CHEM, CIE, and ENE courses taken to date; and
  - d. have an overall grade point average of 2.50 or greater for 16 credits of the MATH, PHYS, CHEM, CIE, and ENE courses taken to date.
4. Students who are transferring into the civil engineering major may receive:
  - a. a maximum of 20 credits for CIE and ENE 600- and 700-level coursework taken prior to the transfer, and
  - b. credit only for CIE and ENE 600- and 700-level courses taken prior to the transfer in which the student has received a grade of C- or better.
5. To continue as a civil engineering major, a student may not:
  - a. repeat more than two CIE or ENE courses,
  - b. achieve a semester grade point average lower than 2.00 for each of three consecutive semesters, and
  - c. achieve a cumulative grade point average of less than 2.00 for CIE and ENE courses in any three semesters.
6. To graduate with a bachelor of science in civil engineering, a student must:
  - a. earn 129 or more credits,
  - b. achieve credit for the civil engineering program's major and elective courses,
  - c. satisfy the University's general education requirements,
  - d. satisfy the University's writing intensive course requirements,
  - e. earn a cumulative grade point average of 2.00 or better for all courses, and
  - f. earn a cumulative grade point average of 2.00 or better for all CIE and ENE courses.

First Year	Fall	Spring
CIE 402, Intro. to Civil Engineering	3	-
ENGL 401, First-Year Writing	4	-
TECH 564, Fundamentals of CAD	3	-
Elective (2), general education requirement*	4	4
CIE 505, Surveying and Mapping	-	4
MATH 425, Calculus I	-	4
PHYS 407, General Physics I	-	4
<b>Total</b>	<b>14</b>	<b>16</b>

Sophomore Year	Fall	Spring
CIE 525, Statics	3	-
ENE 520, Environmental Pollution and Protection	4	-
ENGL 502, Technical Writing	4	-
MATH 426, Calculus II	4	-
PHYS 408, General Physics II	4	-
CHEM 405, General Chemistry	-	4
CIE 526, Strength of Materials	-	3
CIE 533, Project Engineering	-	3
MATH 527, Differential Equations with Linear Algebra	-	4
Elective (1), general education requirement*	-	4
<b>Total</b>	<b>19</b>	<b>18</b>

Junior Year	Fall	Spring
CIE 622, Engineering Materials	4	-
CIE 642, Fluid Mechanics	4	-
MATH 644, Statistics for Engineers and Scientists	4	-
Elective (1), math and basic sciences**	4	-
CIE 665, Soil Mechanics	-	4
CIE 681, Classical Structural Analysis	-	3
ENE 645, Fundamental Aspects of Environmental Engineering	-	4
Elective (1), general education requirement*	-	4
<b>Total</b>	<b>16</b>	<b>15</b>

Senior Year	Fall	Spring
CIE 760, Foundation Design I	4	-
CIE 774, Reinforced Concrete Design	4	-
CIE 784, Intro. to Project Planning and Design	1	-

Elective (1), senior science**	3	-
CIE or ENE 788, Project Planning and Design	-	3
Elective (3), civil engineering**	3	9
Elective (1), general education requirement*	-	4
<b>Total</b>	<b>15</b>	<b>16</b>

## Computer Science (CS)

[www.cs.unh.edu](http://www.cs.unh.edu)

(For course descriptions, see page 166.)

**Chairperson:** Philip J. Hatcher

**Professors:** R. Daniel Bergeron, Pilar de la Torre, Philip J. Hatcher, Ted M. Sparr, Colin Ware

**Associate Professors:** Radim Bartos, Michel Charpentier, Robert D. Russell, Elizabeth Varki, James L. Weiner

**Affiliate Associate Professors:** Jason H. Moore, Sylvia Weber Russell

**Instructors:** Michael Gildersleeve, Brian L. Johnson, Israel J. Yost

**Lecturers:** Mark L. Bochert, Ellen M. Hepp, Karen Hodge, Linda Kenney, Karl Shump

Computer scientists are concerned with all aspects of the design and implementation of computer software. They are concerned with problem solving in general, with particular emphasis on the design of computer-efficient solutions. This involves detailed understanding of the nature of algorithms (a set of rules for solving a problem), the software implementation techniques necessary to utilize algorithms on computers, and a knowledge of how algorithms can be combined in a structured manner to form highly complex software systems. The broad objectives for the B.S. in computer science are to produce graduates who:

1. are competent in formulating and solving computer science problems including the development of non-trivial software systems;
2. understand computer science fundamentals along with supporting mathematics and science sufficiently well to be prepared for a wide range of jobs and to pursue advanced degrees;
3. are able to function in the workplace with the necessary technical skills and with appropriate oral and written communication skills; and
4. have a broad education that promotes professional advancement, lifelong personal development, and social responsibility.

\*See page 16 for general education requirements.

\*\* Approved list available in the CIE office.

Computer science majors must obtain an overall grade-point average of 2.00 or better in all required computer science, mathematics, and electrical engineering courses in order to graduate. If at the end of any semester, including the first, a student's cumulative average in these courses falls below 2.00, the student may not be allowed to continue as a CS major.

If a student wishing to transfer into the computer science major has taken any other coursework that is applicable to the major, the grades in those courses must satisfy the minimum requirements for the B.S. degree in computer science. The student must have an overall grade-point average of 2.00 or better in all courses taken at UNH.

### *Bachelor of Science in Computer Science*

The standard program leads to a B.S. in computer science and is designed to prepare students for both employment and graduate study in the field. The program emphasizes the application of computer science theory and principles but also includes a broad background in basic mathematics and an introduction to computer hardware. Most courses require heavy use of the computer, and the laboratories stress hands-on experience with building software systems.

#### **Requirements**

1. Satisfy general education requirements. The following courses are required and may be used to fulfill requirements in the appropriate general education group: PHYS 407-408, General Physics I and II; MATH 425, Calculus I; and PHIL 424, Science, Technology and Society.
2. Two additional technology or science courses, one of which may satisfy a general education requirement, chosen from the following list:

#### *Biology*

BIOL 411, Principles of Biology I  
 BIOL 412, Principles of Biology II  
 BIOL 413, Principles of Biology I (a UNHM course)  
 BIOL 414, Principles of Biology II (a UNHM course)  
 HMP 501, Epidemiology and Community Medicine  
 MICR 501, Public Health Microbiology  
 PBIO 412, Introductory Botany  
 PBIO 421, Concepts of Plant Growth  
 ZOO 412, Principles of Zoology

#### *Physical Science*

CHEM 401-402, Introduction to Chemistry  
 CHEM 403-404, General Chemistry  
 CHEM 405, General Chemistry  
 ESCI 405, Global Environmental Change  
 ESCI 409, Environmental Geology  
 ESCI 501, Introduction to Oceanography  
 NR 504, Freshwater Resources

#### *Technology*

PHIL 447, Computer Power and Human Reason

3. Two additional approved courses chosen from the humanities, social sciences, and arts. These courses are in addition to any courses used to satisfy general education requirements.
4. One core course, CS 415, Introduction to Computer Science I, which must be passed with a grade of B- or better.
5. Ten additional core courses, which must be passed with a grade of C- or better. Before taking a course having any of these ten courses as a prerequisite, the prerequisite course(s) must be passed with a grade of C- or better: CS 416, Introduction to Computer Science II; CS 515, Data Structures; CS 516, Introduction to Software Design and Development; CS 520, Assembly Language Programming and Machine Organization; CS 620, Operating System Fundamentals; CS 671, Programming Language Concepts and Features; MATH 425 and MATH 426, Calculus I and II; MATH 531, Mathematical Proof; MATH 532, Discrete Mathematics.
6. CS 595, Computer Science Seminar (two credits).
7. One computer science theory course chosen from: CS 645, Introduction to Formal Specification and Verification; CS 658, Analysis of Algorithms; or CS 659, Introduction to the Theory of Computation.
8. CS 719, Object-oriented Methodology.
9. Two approved computer science courses chosen from CS courses numbered above 640 or ECE 777, Collaboration Engineering, or ECE 649, Embedded Microcomputer Based Design.
10. One approved writing intensive course chosen from CS courses numbered above 640.
11. One course in probability and statistics: MATH 644, Probability and Statistics for Applications or MATH 539, Introduction to Statistical Analysis.
12. Two electrical and computer engineering courses: ECE 543, Introduction to Digital Systems, and ECE 562, Computer Organization.

### *Bachelor of Science in Computer Science, Bioinformatics Option*

The aim of the bioinformatics option is to provide a tailored program for undergraduate students who wish to apply computer science expertise in the life sciences. The bioinformatics field is an increasingly important subdiscipline in computer science. The demand for computer science graduates who can apply their knowledge in the life sciences is large, and is expected to continue to grow.

The bioinformatics option has the same core as the B.S. program but requires the appropriate coursework in chemistry, biology, biochemistry and statistics. The bioinformatics option of the baccalaureate-level program in computer science is not yet accredited because it has not yet been through the entire review process.



**The option requirements are:**

1. Satisfy general education requirements. The following courses are required and may be used to fulfill requirements in the appropriate general education group: CHEM 403-404, General Chemistry; BIOL 411, Principles of Biology I; MATH 425, Calculus I; and PHIL 424, Science, Technology and Society.
2. Three science courses: BIOL 412, Principles of Biology II; BIOL 604, Genetics; and BCHEM 711, Genomics and Bioinformatics.
3. Two approved courses chosen from the humanities, social sciences, and arts. These courses are in addition to any courses used to satisfy general education requirements.
4. One core course, CS 415, Introduction to Computer Science I, which must be passed with a grade of B- or better.
5. Ten additional core courses, which must all be passed with a grade of C- or better. Before taking a course having any of these ten courses as a prerequisite, the prerequisite course(s) must be passed with a grade of C- or better: CS 416, Introduction to Computer Science II; CS 515, Data Structures; CS 516, Introduction to Software Design and Development; CS 520, Assembly Language Programming and Machine Organization; CS 620, Operating System Fundamentals; CS 671, Programming Language Concepts and Features; MATH 425 and MATH 426, Calculus I and II; MATH 531, Mathematical Proof; MATH 532, Discrete Mathematics.
6. CS 595, Computer Science Seminar (two credits).
7. One computer science theory course chosen from: CS 645, Introduction to Formal Specification and Verification; CS 658, Analysis of Algorithms; or CS 659, Introduction to the Theory of Computation.
8. Two required senior-level courses: CS 719, Object-Oriented Methodology, and CS 775, Database Systems.
9. One additional senior-level course chosen from CS 730, Introduction to Artificial Intelligence; CS 767, Interactive Data Visualization; CS 770, Computer Graphics; or CS 696, Independent Study. The chosen course must include a project that addresses bioinformatics issues.
10. At least one of the three senior-level computer science courses must be writing intensive.
11. Two courses in probability and statistics: MATH 539, Introduction to Statistical Analysis or MATH 644, Probability and Statistics for Applications, and a follow-up course chosen from MATH 739, Applied Regression Analysis; MATH 742, Multivariate Statistical Methods; or MATH 755, Probability and Stochastic Processes with Applications.
12. One course in electrical and computer engineering: ECE 543, Introduction to Digital Systems.

**Earth Sciences (ESCI)**

[www.unh.edu/esci/](http://www.unh.edu/esci/)

(For course descriptions, see page 168.)

**Chairperson:** J. Matthew Davis

**Professors:** Francis S. Birch, Wallace A. Bothner, Larry A. Mayer, Karen L. Von Damm

**Research Professors:** Janet W. Campbell, Robert W. Talbot, Charles J. Vörösmarty

**Affiliate Professors:** P. Thompson Davis, Dork L. Sahagian, Peter J. Thompson, David R. Wunsch, James V. Gardner

**Associate Professors:** William C. Clyde, J. Matthew Davis, Jo Laird

**Research Associate Professors:** Jack E. Dibb, Stephen E. Frolking, Cameron P. Wake, Larry G. Ward

**Affiliate Associate Professors:** Michael L. Prentice, Dougl's C. Vandemark

**Assistant Professors:** Julia G. Bryce, Robert J. Griffin, Joel E. Johnson, Joseph M. Licciardi, James M. Pringle

**Research Assistant Professor:** Jeffrey B. Johnson

**Affiliate Assistant Professors:** David P. Brown, John R. Morrison, Ruth K. Varner

The courses offered in the Department of Earth Sciences cover the broad spectrum of earth sciences, with emphases on geology, hydrology, geochemistry, and oceanography. The curriculum encompasses a group of related studies concerned with an understanding of the Earth and its environment. Study 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 is 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 society's growing concern with sound environmental and resource management, including the disposal of waste on land and in the atmosphere and oceans; the management of water resources; the development of energy and mineral resources; and the assessment of environmental hazards. In addition, the demand for well-trained secondary school teachers of earth sciences has been steadily increasing.

The Department of Earth Sciences offers five majors: B.S. geology, B.S. environmental sciences (interdisciplinary with the College of Life Sciences and Agriculture), B.A. earth sciences, B.A. earth sciences/oceanography, and B.A. earth science 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 geology, as well as interdisciplinary minors in hydrology and oceanography.

Descriptions and requirements for the majors and minors are arranged alphabetically.

**Bachelor of Arts in Earth Sciences**

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. By careful choice of electives, students can prepare for graduate school, business, or industry.

**Requirements**

1. Satisfy the general education requirements.
2. Satisfy the bachelor of arts degree requirements (page 18).
3. Complete a minimum of eight courses in the department (with a C- or better), including ESCI 401, Principles of Geology, or ESCI 409, Environmental Geology; ESCI 402, Earth History; ESCI 512, Principles of Mineralogy; and five upper-level courses, two of which must be 700 or above.
4. Math requirements: 425, Calculus I, and 426, Calculus II.

It is strongly advised that students complete, as early as possible, a year each of college chemistry and physics.

**Bachelor of Arts in Earth Sciences, Oceanography Option**

The bachelor of arts in earth sciences, oceanography option, is offered by the Department of Earth Sciences. This program provides students an opportunity to obtain a broad education and a general background in the earth sciences, as well as the flexibility to choose electives in the area of oceanography. A clear, comprehensive understanding of the ocean environment will prepare students for graduate school or for employment opportunities available on our coasts in ocean-related fields such as aquaculture, fishing, tourism, environmental protection, shipping, construction, government regulation, and education.

**Requirements**

1. Satisfy the general education requirements.
2. Satisfy the bachelor of arts degree requirements (page 18).
3. Complete a minimum of eight courses in the department (with a C- or better) including ESCI 401, Principles of Geology, or ESCI 409, Environmental Geology; ESCI 402, Earth History or ZOOL 503, Introduction to Marine Biology; ESCI 501, Introduction to Oceanography; ESCI 512, Principles of Mineralogy; and four upper-level ocean related courses, two of which must be 700 or above. Typically these would be chosen from ESCI 658, Earth, Ocean, and Atmosphere Dynamics; ESCI 750, Biological Oceanography; ESCI 752, Chemical Oceanography; ESCI 758, Physical Oceanography; and ESCI 759, Geological Oceanography.
4. Math requirements: 425, Calculus I, and 426, Calculus II.

It is strongly advised that students complete, as early as possible, a year each of college chemistry and physics.

### ***Oceanography Minor***

See page 113.

### ***Bachelor of Arts in Earth Science Teaching***

The bachelor of arts in earth science 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. Upon graduation from this program, students are prepared to complete a Masters degree in Education with an additional year of graduate study, which includes a year long internship (EDUC 900/901). After completing this typically five-year program, students receive full teacher certification, which is recognized in most states.

#### **Requirements**

1. Satisfy the general education requirements.
2. Satisfy the bachelor of arts degree requirements (page 18).
3. Complete the following: ESCI 401, Principles of Geology, or ESCI 409, Environmental Geology; ESCI 402, Earth History; ESCI 501, Introduction to Oceanography; GEOG 473, The Weather; CHEM 403-404, General Chemistry; PHYS 401-402, Introduction to Physics I and II, PHYS 406, Introduction to Modern Astronomy; plus 12 approved elective credits from intermediate and/or advanced earth sciences courses.
4. Math requirements: 425, Calculus I, and 426, Calculus II.
5. Satisfy the secondary-school teacher education program (see page 32).

### ***General Science Certification***

Students majoring in animal sciences, biochemistry, biology, 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.

### ***Bachelor of Science in Geology***

The bachelor of science in geology 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 is sufficient flexibility in course selection so that students may, in consultation with their

academic advisers, orient the program toward a particular facet of the earth sciences (e.g., mineralogy-petrology, oceanography, hydrogeology, geophysics-structural geology, geomorphology-glacial geology, geochemistry, paleontology-stratigraphy). Students are encouraged to attend an off-campus field camp, for which scholarship funds may be available.

#### **Requirements**

1. Satisfy the general education requirements and the bachelor of science degree requirements (page 18).
2. Satisfactorily complete MATH 425 and 426, CHEM 403-404 (or CHEM 405), PHYS 407-408 and, PHYS 505 or ESCI 658. Some of these courses may also satisfy Group 2 and part of Group 3 of the general education requirements.
3. Complete a minimum of twelve courses in earth sciences, which should include ESCI 401, Principles of Geology, or ESCI 409, Environmental Geology; ESCI 402, Earth History; ESCI 501, Introduction to Oceanography; ESCI 512, Principles of Mineralogy; ESCI 614, Optical Mineralogy and Petrography; ESCI 530, Field Methods; ESCI 631, Structural Geology; ESCI 561, Surficial Processes; ESCI 652, Paleontology; and three approved earth sciences 700-level electives.
4. Complete four approved science/math electives. The following should be considered: one additional 700-level course in the earth sciences; additional courses in mathematics, chemistry, and physics; as well as courses in computer science, engineering, and the biological sciences; and an off-campus field camp.

### ***Geology Minor***

Any University student who is interested in earth sciences may minor in geology. The minor consists of at least 18 semester hours, typically from five ESCI courses, each with a grade of C- or better, while maintaining a cumulative grade-point average of 2.0. A maximum of 8 credits may be used for both major and minor credit. Courses include both introductory and more advanced courses. Specific course requirements are flexible to accommodate the student's interest in different facets of the geosciences. Interested students should see the earth sciences' undergraduate coordinator to complete an Intent to Minor form no later than their junior year.

### **Environmental Sciences**

[www.unh.edu/envsci/](http://www.unh.edu/envsci/)

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 is an interdisciplinary field concerned with 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 effectively communicate 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.

#### **Requirements**

In addition to general education requirements, two introductory environmental science courses are required, including Environmental Pollution and Protection (ENE 520). Foundation courses include two semesters of chemistry (CHEM 403, 404) and calculus (MATH 425, 426), one semester of geology (ESCI 401, 402, or 409), one semester of statistics (MATH 644 or BIOL 528), and either two semesters of physics (PHYS 407, 408), and one semester of approved biology or one semester of physics (PHYS 407) and two semesters of approved biology. Core courses include Techniques in Environmental Sciences (ESCI 534); Introduction to GIS (NR 658); Fate and Transport in the Environment (ESCI 654); Natural Resource and Environmental Policy (NR 602); and a capstone course (e.g., Senior Thesis).

Students must complete an additional seven courses in one of the following options:

#### **Hydrology**

ESCI 561, Surficial Processes  
NR 501, Introduction to Soil Sciences or ESCI 512, Principles of Mineralogy  
NR 604, Watershed Hydrology  
ESCI 705, Principles of Hydrology  
ESCI 710, Groundwater Hydrology  
Two approved electives

#### **Soil and Watershed Management**

NR 501, Introduction to Soil Sciences  
NR 604, Watershed Hydrology  
NR 703, Watershed Water Quality Management  
NR 706, Soil Ecology  
Three approved electives

#### **Ecosystems**

NR 527, Forest Ecology or BIOL 541, General Ecology  
NR 730, Terrestrial Ecosystems  
NR 765, Community Ecology  
One approved course in taxonomy (e.g., NR 425)  
Three approved electives

For a list of approved elective courses and for further information about the major, contact the program coordinator, Serita Frey, Department of Natural Resources, 215 James Hall, (603) 862-3880; e-mail [serita.frey@unh.edu](mailto:serita.frey@unh.edu).



**Electrical and Computer Engineering (ECE)**

[www.ece.unh.edu/](http://www.ece.unh.edu/)

(For course descriptions, see page 174.)

**Chairperson:** John R. LaCourse

**Professors:** Kent A. Chamberlin, Christian P. De Moustier, L. Gordon Kraft, John R. LaCourse, W. Thomas Miller III, Andrzej Rucinski, Kondagunta U. Sivaprasad

**Affiliate Professors:** Thaddeus Kochanski, Robert M. O'Donnell, Stuart M. Selikowitz, Henk Spaanenburg

**Associate Professors:** Michael J. Carter, Allen D. Drake, Andrew L. Kun, Richard A. Messner

**Research Associate Professor:** William H. Lenharth

**Affiliate Associate Professors:** Charles H. Bianchi, Raymond J. Garbos, Paul W. Latham II, Jeremy Muldavin

**Assistant Professors:** Jianqiu Zhang, Kuan Zhou

**Research Assistant Professor:** Brian P. Calder

**Instructor:** Francis C. Hludik Jr.

**Senior Lecturer:** Barbara Dziurla Rucinska

**Lecturer:** Neda M. Pekaric-Nad

The Department of Electrical and Computer Engineering offers a B.S. in electrical engineering and a B.S. in computer engineering, degree programs that are accredited by the Engineering Accreditation Commission of ABET, 111 Market Place, Suite 1050, Baltimore, MD 21202-4012, telephone (401) 347-7700.

**ECE Department Mission**

The mission of the Department of Electrical and Computer Engineering (ECE) is fourfold:

- to provide educational programs in electrical engineering and computer engineering and related fields at the bachelor's, master's, and doctoral levels of high quality and sufficient breadth and depth to serve industry, government and academic institutions of our state and nation;
- to conduct research and pursue scholarship to advance knowledge and apply that knowledge in areas relevant to our state and nation in order to meet the demands of the coming information age and global competition;
- to serve the state and nation by making available the accumulated expertise, knowledge and experience of the faculty to industry and government;
- to continually assess our programs to ensure satisfaction of market needs and to develop strategies to optimize student retention.

The EE and CompE programs endeavor to provide a firm foundation in fundamentals, while also giving students exposure to current technologies for design and implementation. They strive for a balance between theory, laboratory and design experience. Furthermore, the programs foster teamwork and project management skills.

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.

Our mission was approved by the ECE faculty in March 2001, approved by the ECE Student Advisory Board in October 2001, and ratified by the ECE Industrial Advisory Board in April 2002.

**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:

- graduates will function at a technically outstanding level in formulating and solving problems in their respective program area;
- graduates will produce competent written and oral reports, and provide project management and leadership;
- through a thorough grounding in engineering fundamentals, graduates will be prepared for a successful engineering career amid future technological changes;
- through a well-rounded education, graduates are able respond to changing career paths as well as maintain an interest in life-long learning together with the ability to advance professionally;
- graduates will be creative when dealing with contemporary issues facing society in the local, global, historical, social, economic, and political contexts as they relate to electrical and computer engineering;
- graduates will be able to design, prototype, and test electrical and computer engineering designs using state of the art test equipment in the laboratory environment.

The electrical and computer engineering educational program objectives were approved by the ECE faculty in March 2001, approved by the ECE Student Advisory Board in November 2001, and ratified by the ECE Industrial Advisory Board in March 2002.

**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 are 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, life-long 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 approved by the ECE faculty in March 2001, approved by the ECE Student Advisory Board in October 2001, and ratified by the ECE Industrial Advisory Board in March 2002.

Students contemplating a decision between the Electrical Engineering and Computer Engineering degree programs should consider both the similarities and differences of the two programs. Both 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. The University's general education requirements are identical for both degree programs.

**Electrical Engineering Program**

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 cell phones and BlackBerries®; 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.

In addition to general University requirements, the department has a number of grade-point average and credit requirements.

1. For an electrical engineering major to enter the junior year and take any of the first-term junior courses (ECE 603, ECE 617, ECE 633, or ECE 651), he or she must have taken, and achieved a cumulative grade point average of 2.10 in, all of the following freshman and sophomore courses: MATH 425, 426, 527; PHYS 407, 408; and ECE 541, 543, 544, 548, and 562.

2. Any electrical engineering major whose cumulative grade-point average in ECE courses is less than 2.00 during any three semesters will not be allowed to continue as an electrical engineering major.

3. Electrical engineering majors must achieve a 2.00 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 advisers' assistance, should plan their programs based on the distribution of courses in the following chart for a total of at least 132 credits.

**Curriculum for B.S. in Electrical Engineering**

Freshman Year	Fall	Spring
MATH 425, Calculus I	4	-
CS 410, Introduction to Scientific Programming**	4	-
ECE 401, Perspectives in Electrical and Computer Engineering	4	-
CHEM 405, General Chemistry	4	-
MATH 426, Calculus II	-	4
General Education Elective**	-	4
PHYS 407, Physics I	-	4
ENGL 401, First-Year Writing	-	4
<b>Total</b>	<b>16</b>	<b>16</b>

Sophomore Year	Fall	Spring
PHYS 408, Physics II	4	-
MATH 527, Differential Equations with Linear Algebra	4	-
ECE 541, Electrical Circuits	4	-
ECE 543, Introduction to Digital Systems	4	-
ME 523, Introduction to Statics and Dynamics	-	3
ECE 548, Electronic Design I	-	4
ECE 562, Computer Organization	-	4
General Education Elective	-	4
<b>Total</b>	<b>16</b>	<b>15</b>

Junior Year	Fall	Spring
EE 617, Junior Lab I	4	-
EE 651, Electronic Design II	4	-
EE 633, Signals and Systems I	3	-
ECE 544, Engineering Analysis	4	-
General Education Elective	4	-
ECE 618, Junior Laboratory II	-	4
ECE 634, Signals and Systems II	-	3
ECE 603, Electromagnetic Fields and Waves	-	4
ECE 647, Random Processes and Signals in Engineering	-	3
EE 668 Fundamentals of Computer Engineering	-	4
<b>Total</b>	<b>19</b>	<b>18</b>

Senior Year	Fall	Spring
Professional Elective*	4	-
Professional Elective*	4	-
General Education Elective	4	-
General Education Elective	4	-
ECE 791 Senior Project I	2	-
Professional Elective*	-	4
Professional Elective*	-	4
General Education Elective	-	4
ECE 792, Senior Project II	-	2
<b>Total</b>	<b>18</b>	<b>14</b>

\*Professional electives normally consist of 700-level ECE courses. Each course must carry at least three credits, and no more than one can be an independent study, special topics, or project course. An alternative is a student-designed plan approved by the ECE undergraduate curriculum committee.

\*\*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 advisers 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.

**Computer Engineering Program**

Computers have become embedded in virtually every engineering system. 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 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.

In addition to general University requirements, the department has a number of grade-point average and credit requirements.

1. For a computer engineering major to enter the junior year and take any of the first-term junior courses, he or she must have taken, and achieved a cumulative grade point average of 2.10 in all of the following freshman and sophomore courses: MATH 425, 426, 527; PHYS 407, 408; CS 415, 416, 515; and ECE 543, ECE 544, ECE 562, and ECE 583.
2. Any computer engineering major whose cumulative grade-point average in ECE and CS courses is less than 2.0 during any three semesters will not be allowed to continue as a computer engineering major.
3. Computer engineering majors must achieve a 2.00 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 advisers' assistance, should plan their programs based on the distribution of courses in the chart below for a total of at least 130 credits.

**Curriculum for B.S. in Computer Engineering**

Freshman Year	Fall	Spring
MATH 425, Calculus I	4	-
CS 415, Intro to Computer Science I	4	-
ECE 401, Perspectives in Electrical and Computer Engineering	4	-
General Education Elective	4	-
MATH 426, Calculus II	-	4
CS 416, Intro to Computer Science II	-	4
ECE 543, Intro to Digital Systems	-	4
ENGL 401, First-Year Writing	-	4
<b>Total</b>	<b>16</b>	<b>16</b>

Sophomore Year	Fall	Spring
PHYS 407, Physics I	4	-
MATH 527, Differential Equations with Linear Algebra	4	-
CS 515, Data Structures	4	-
ECE 562, Computer Organization	4	-
PHYS 408, Physics II	-	4
CS 516, Software Design and Development	-	4
ECE 583, Design with Programmable Logic	-	4
General Education Elective	-	4
<b>Total</b>	<b>16</b>	<b>16</b>



**Junior Year**

ECE 541, Electrical Circuits	4	-
ECE 633, Signals and Systems I	3	-
ECE 544, Engineering Analysis	4	-
General Education Elective	4	-
ECE 548, Electronic Design I	-	4
ECE 649, Embedded Microcomputer Based Design	-	4
ECE 603, Electromagnetic Fields and Waves	-	4
ECE 647, Random Processes and Signals in Engineering	-	3
<b>Total</b>	<b>15</b>	<b>15</b>

**Senior Year**

Professional Elective*	4	-
ECE 734, Network Data Communications	4	-
ECE 714, Intro to Digital Signal Processing	4	-
General Education Elective	4	-
ECE 791 Senior Project I	2	-
Professional Elective*	-	4
Professional Elective*	-	4
General Education Elective	-	4
ECE 792, Senior Project II	-	2
<b>Total</b>	<b>18</b>	<b>18</b>

\* Three professional electives must be selected from the following categories of courses:

At least one from: ECE 711, ECE 715, ECE 717

No more than one from: DS 630, ADMIN 640, DS 798C, DS 781, DS 765, ECE 634, ECE 651, ECE 7XX, CS 620, CS 658, CS 659, CS 671, CS 7XX

**Environmental Engineering (ENE)**

[www.unh.edu/environmental-engineering/](http://www.unh.edu/environmental-engineering/)

(For course descriptions, see page 180.)

**Professors:** Dale P. Barkey, Michael R. Collins, Ihab H. Farag, Nancy E. Kinner, James P. Malley, Virendra K. Mathur, Palligarnai T. Vasudevan

**Research Professor:** T. Taylor Eighmy

**Associate Professor:** Thomas P. Ballestero, Jennifer M. Jacobs

**Research Associate Professor:** Kevin H. Gardner

**Assistant Professor:** Nivedita R. Gupta

**Research Assistant Professors:** Jenna R. Jambeck, Jeffrey S. Melton

The College of Engineering and Physical Sciences offers a bachelor of science degree in environmental engineering (ENE) and an interdisciplinary minor in environmental engineering.

The bachelor of science degree in environmental engineering is accredited by the engineering accreditation commission of ABET, 111 Market Place, Suite 1050, Baltimore, MD 21202-4012, telephone (410) 347-7700.

**Mission**

The environmental engineering program offers an undergraduate degree in environmental engineering that prepares students for productive careers in the public and private sectors and graduate studies. The program emphasizes fundamental principles in environmental engineering and design, built upon a strong base of chemistry, physics, mathematics, and engineering science. The program prepares students to work in multidisciplinary teams that analyze, formulate and communicate sustainable solutions to complex environmental problems. The importance of developing sustainable solutions that provide economic, social, and environmental benefits to society is emphasized. The program instills in its students an appreciation of the responsibilities of engineers to society and teaches them the skills necessary to continue learning and improving their professional expertise throughout their careers.

The ENE degree program provides an opportunity for students to specialize in industrial or municipal processes. The curricula prepares students to plan and design systems to minimize the impact of human activity on the environment and protect human health.

**Educational Objectives**

ENE program graduates will have the skills, experience, and knowledge to pursue successful careers as environmental engineers. They will also have demonstrated the ability to identify information needs; locate information resources, and/or design laboratory or field experiments to attain required information; and evaluate and synthesize data with sound engineering principles, methodologies, and the latest technology into creative, sustainable, safe, and economical engineering solutions to environmental engineering problems. The solutions they develop will minimize the impact of human activities on the environment and protect human health. Program graduates will have a foundation for advanced studies in environmental engineering and oral and written communication skills that will enable them to clearly explain engineering options and recommend solutions to stakeholders. ENE program graduates will have demonstrated in-depth knowledge within environmental engineering and an awareness of potential social, economic, political, and environmental impacts of engineering practices. They will have an appreciation of the contribution of environmental engineers to the benefit of society and the responsibilities of a professional

environmental engineer. They will work as part of multidisciplinary teams to arrive at solutions to environmental engineering problems. ENE program graduates will be prepared to obtain professional engineering licensure; have the capacity to continue learning and improving their professional expertise and skills by participating in professional associations, conferences, workshops and courses; and understand the importance of continued professional development.

At the end of the sophomore year, students are required to have a minimum overall grade-point average of 2.00 and a grade-point average of 2.00 in all mathematics, physics, chemistry, and engineering courses to be permitted to enroll in junior-level courses. To qualify for graduation, an ENE major must: have satisfied the previously specified course requirements, have satisfied the University's general education requirements, have a minimum cumulative grade-point average of 2.00, and have a minimum grade-point average of 2.00 in engineering courses.

**Bachelor of Science in Environmental Engineering-Industrial Processes (IP) Emphasis**

The industrial processes (IP) emphasis of environmental engineering is a process-based program that draws on the principles of chemistry, physics, mathematics, and engineering sciences. Due to the complex nature of many aspects of environmental pollution, a broad understanding of the fundamentals of engineering and sciences forms the most desirable preparation for a career in the environmental field. The program is designed to provide training not only for end-of-pipe pollution control technologies, but also for expertise in process engineering and process design, essential for achieving the objectives of pollution curtailment and prevention. Such training is especially valuable in resolving industrial pollution problems. Career opportunities for environmental engineers with this background are found in industry, research institutes, government agencies, teaching, and consulting practice. Students may also enter graduate study at the M.S. or Ph.D. levels.

Engineering design is a critical aspect of the IP curriculum. In order to meet the objective of producing creative, problem-solving engineers, design concepts are introduced early in the curriculum and design experience is integrated into every engineering course. Students learn to seek optimal solutions to open-ended problems and function in design-based team projects.

Design ability is finally demonstrated at the end of the capstone course (ENE 608), when self-directed teams develop a comprehensive design report for a full-scale engineering process based on a national process design competition problem.

Since 1993, the program faculty has administered a pollution prevention internship program with industries in New Hampshire, Maine, and Massachusetts, initially funded by US EPA and NHDES. In the past twelve years, the program has served more than forty facilities. Each year about 12 students have enrolled in the pollution prevention internship program which provides hands-on industrial employment for ten weeks during the summer assisting industry with projects in process modification, material substitution, chemical re-use, risk assessment, safety and economic analysis. The program faculty also assisted NHDES in setting up instrumentation in the Seacoast region of New Hampshire to monitor the precursor of ozone formation.

The B.S. program requires a minimum of 136 credits for graduation and can be completed in four years. There are nine electives in the curriculum: six for the fulfillment of the University's general education requirements and the remaining three for technical electives to be chosen from the specified elective course list. Due to the substantial overlap in course requirements for the environmental engineering IP and chemical engineering majors, students will be able to transfer between these two programs during the first three semesters without losing any course credits towards graduation.

First Year	Fall	Spring
CHEM 405, General Chemistry	4	-
MATH 425-426, Calculus I & II	4	4
PHYS 407, General Physics I	-	4
ENGL 401, First-Year Writing	4	-
ENE 400, Environmental Engineering Lectures I	1	-
ENE 401, Environmental Engineering Lectures II	-	1
General Education Electives	4	8
<b>Total</b>	<b>17</b>	<b>17</b>
<b>Second Year</b>		
CHE 501-502, Introduction to Chemical Engineering I & II	3	3
CHEM 683-684, Physical Chemistry I & II	3	3
CHEM 685, Physical Chemistry Lab I	2	-
MATH 527, Differential Equations	4	-
PHYS 408, General Physics II	4	-
CS 410, Introduction to Scientific Programming	-	4
General Education Electives	-	8
<b>Total</b>	<b>16</b>	<b>18</b>

**Third Year**

CHE 601, Fluid Mechanics and Unit Operations	3	-
CHE 603, Chemical Engineering Thermodynamics	-	4
ENE 612, Unit Operations Lab I	-	3
CHEM 651-652, Organic Chemistry I & II	3	3
CHEM 653, Organic Chemistry Lab I	2	-
ENE 742, Solid and Hazardous Waste Engineering	-	3
MATH 644, Statistics for Engineers & Scientists	4	-
General Education and Technical Electives	4	3-4
<b>Total</b>	<b>16</b>	<b>16-17</b>

**Fourth Year**

CHE 605, Mass Transfer and Stagewise Operations	3	-
ENE 608, Industrial Process Design	-	4
ENE 613, Unit Operations Lab II	3	-
ENE 709, Fundamentals of Air Pollution and Control	4	-
ENE 752, Process Dynamics and Control	-	4
ENE 772, Physicochemical Processes for Water/Air Quality	-	4
ESCI 710, Groundwater Hydrology	-	4
MICR 501, Microbes in Human Disease	4	-
Technical Electives	3-4	3-4
<b>Total</b>	<b>17-18</b>	<b>19-20</b>

**Suggested Technical Electives**

	Credits
CHE 602, Heat Transfer and Unit Operations	3
CHE 606, Chemical Engineering Kinetics	3
CHE 744, Corrosion	4
ENE 739, Industrial Wastewater Treatment	3
ENE 746, Bioenvironmental Engineering Design	4
ENE 747, Introduction to Marine Pollution	3
CIE 766, Introduction to Geo-Environmental Engineering	3
ESCI 409, Environmental Geology	4
ESCI 561, Surficial Processes	4
ESCI 705, Principles of Hydrology	4
ESCI 708, Hydrology	3
ESCI 715, Global Atmospheric Chemistry	3
MICRO 503, General Microbiology	5

**Bachelor of Science in Environmental Engineering-Municipal Processes (MP) Emphasis**

Environmental engineers graduating from the municipal processes (MP) emphasis 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 with a municipal processes perspective 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.

In ENE 400 and 401, students are introduced to the full spectrum of environmental engineering projects that they will subsequently explore in design teams during their degree program. As part of these experiences, students visit and tour field sites, and interact with engineers who have been involved in the design and/or construction of the projects. Design is integrated throughout the curriculum, and particularly emphasized in junior- and senior-level courses. As part of these projects, students analyze treatment alternatives, recommend a system that meets regulatory operational needs, and prepare an implementation schedule and project budget. Detailed design projects are performed in ENE 744 and 746. ENE 788 serves as a capstone design experience where students work on a multi-interdisciplinary environmental engineering project as part of the U.S. Department of Energy's international WERC competition held in New Mexico every April, and apply skills learned in other courses while working with real world clients.

The following schedule is a sample of a planned program for environmental engineering students completing the major within the municipal processes emphasis.

First Year	Fall	Spring
ENE 400, 401, Environmental Engineering Lectures I, II	1	1
ENGL 401, First-Year Writing	4	-
MATH 425, 426, Calculus I, II	4	4
General Education Electives*	4	4
CHEM 405, General Chemistry	4	4
PHYS 407, General Physics I	-	4
<b>Total</b>	<b>17</b>	<b>17</b>
<b>Second Year</b>		
ENE 520, Environmental Pollution and Protection	4	-
ENE 521, Environmental Engineering Seminar	-	1
CIE 525, Statics	3	-
MATH 527, Differential Equations with Linear Algebra	4	-
MATH 644, Probability and Statistics	-	4
CHEM 545, Organic Chemistry Lecture	3	-
CHEM 546, Organic Chemistry Laboratory	2	-
CIE 533, Project Engineering	-	3
TECH 564, Fundamentals of CAD	-	3
General Education Elective*	-	4
<b>Total</b>	<b>16</b>	<b>16</b>
<b>Third Year</b>		
CIE 642, Fluid Mechanics Technical Elective**	4	-
ENE 645, Fundamental Aspects of Environmental Engineering	-	4
ENE 749, Water Chemistry	4	-
ENE 756, Environmental Engineering and Microbiology	-	4
ENE 742, Solid and Hazardous Waste Engineering	3	-



Engineering Lab Elective**	-	4
Hydraulics Elective**	-	3-4
General Education Elective*	4	-
<b>Total</b>	<b>18</b>	<b>15/16</b>

**Summer**

Environ Engineering Experience† (ENE 696 or 697)	1-2	
--	-----	--

**Fourth Year**

ENE 746, Bioenvironmental Engineering Design	4	-
General Education Elective*	4	-
Environmental Engineering Elective**	6	4
ENE 744, Physicochemical Treatment Design	-	4
ENE 788, Project Planning and Design	-	4
ESCI 710, Groundwater Hydrology	-	4
<b>Total</b>	<b>14</b>	<b>16</b>

\*See page 16 for general education requirements.

\*\*Approved lists of technical, hydraulics, engineering laboratory, and ENE design and non-design electives are available from the ENE undergraduate coordinator. Must take a minimum of three 700-level ENE electives totaling at least 10 credits. One ENE elective course must be from the design category.

†During one summer, majors who have a job at an approved level in the environmental engineering field perform an approved internship in environmental engineering or conduct a research project under the supervision of a faculty member are able to register for ENE 696 or 697. A student may receive a one credit field experience or up to two credits for an environmental engineering internship. The internship could be used as an environmental engineering elective, but this would require approval of the faculty.

The municipal processes emphasis of the ENE program requires a minimum of 129 total credits for graduation.

**Environmental Engineering Minor**

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, namely air pollution and water pollution, 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.

The minor requires a minimum of five courses as follows: 1) three required courses: ENE 645, Fundamental Aspects of Environmental Engineering; ENE 709, Fundamentals of Air Pollution and Its Control; ENE 772, Physicochemical Processes for Water and Air Quality Control, or ENE 743, Environmental Sampling and Analysis; 2) a minimum of two elective ENE courses.

Choice of elective courses should be made in consultation with the minor area adviser, James P. Malley, civil engineering, or Dale P. Barkey, chemical engineering. 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.

**International Affairs (dual major)**

(For program description, see page 111.)

**Mathematics & Statistics (MATH)**

[www.math.unh.edu](http://www.math.unh.edu)

(For course descriptions, see page 207.)

**Chairperson:** Eric L. Grinberg

**Professors:** Albert B. Bennett, Jr., Liming Ge, Karen J. Graham, Eric L. Grinberg, Donald W. Hadwin, Rita A. Hibscheiler, A. Robb Jacoby, Ernst Linder, Eric A. Nordgren, Samuel D. Shore, Kevin M. Short, Marianna A. Shubov

**Associate Professors:** David V. Feldman, William E. Geeslin, Edward K. Hinson, Berrien Moore III, Dmitri A. Nikshych

**Assistant Professors:** Maria Basterra, Linyuan Li

**Instructor:** Philip J. Ramsey

**Lecturers:** Mehmet Orhon, Neil Portnoy, Junhae Shen, Yitang Zhang

The Department of Mathematics & Statistics offers a variety of programs. 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 can usually be accommodated.

The first two years of all programs are similar. In the first year, students are expected to take Calculus I (MATH 425) and Calculus II (MATH 426) as well as an introductory computer programming course (CS 410, or CS 415). A sophomore typically takes follow-up calculus courses in differential equations (MATH 527) and multidimensional calculus (MATH 528), an introductory statistics course (MATH 639) and a course in mathematical proof (MATH 531, or MATH 545).

In addition to its degree programs, the department has an active interest in the actuarial profession and is an examination center for the Society of Actuaries. Those interested in actuarial science should seek the advice of the coordinator of the actuarial program in the department.

For more information about the department's undergraduate programs, visit [www.math.unh.edu](http://www.math.unh.edu).

**Standards for Graduation**

To be certified for graduation with a degree from the Department of Mathematics and Statistics, a student must complete all courses used to satisfy the requirements for the major program with a grade of C- or better and have an overall grade-point average of at least 2.00 in these courses.

**Bachelor of Arts, Mathematics Major**

This program 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.

**Required MATH courses**

MATH 425, Calculus I  
MATH 426, Calculus II  
MATH 527\*, Differential Equations with Linear Algebra  
MATH 528\*, Multidimensional Calculus  
MATH 531, Mathematical Proof; or  
MATH 545, Introduction to Linear Algebra and Mathematical Proof  
MATH 539, Introduction to Statistical Analysis  
MATH 761, Abstract Algebra  
MATH 762, Linear Algebra  
MATH 767, One-Dimensional Real Analysis

**Other required courses**

Two approved MATH electives chosen in consultation with your academic adviser

CS 410, Introduction to Scientific Programming or CS 415, Introduction to Computer Science I

Foreign language requirement as defined by the University for the B.A. degree.

**Bachelor of Science in Mathematics**

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.

**Required MATH courses**

MATH 425, Calculus I  
MATH 426, Calculus II  
MATH 527\*, Differential Equations with Linear Algebra  
MATH 528\*, Multidimensional Calculus  
MATH 531, Mathematical Proof; or  
MATH 545 Introduction to Linear Algebra and Mathematical Proof  
MATH 539, Introduction to Statistical Analysis  
MATH 761, Abstract Algebra  
MATH 762, Linear Algebra

MATH 767, One-Dimensional Real Analysis  
 MATH 784, Topology  
 MATH 788, Complex Analysis

#### Other required courses

Two approved MATH electives chosen in consultation with your academic adviser.

CS 410, Introduction to Scientific Programming; *or*  
 CS 415, Introduction to Computer Science I  
 PHYS 407-408, General Physics I and II, which may be used to satisfy general education requirements in Group 3

#### *Bachelor of Science: Interdisciplinary Programs in Mathematics and Its Applications*

The programs in interdisciplinary mathematics prepare students for employment in areas of applied mathematics and statistics. Some of them can lead to graduate work in appropriate fields (e.g., physics, computer science, or economics). The major may consist of mathematics combined with Computer Science, Economics, Statistics, Electrical Science, or Physics.

Each program requires ten mathematics courses along with at least six courses in the discipline of the option.

#### Requirements

*Required courses in all options:*

MATH 425, Calculus  
 MATH 426, Calculus II  
 MATH 527\*, Differential Equations with Linear Algebra  
 MATH 528\*, Multidimensional Calculus  
 MATH 531, Mathematical Proof; *or*  
 MATH 545, Introduction to Linear Algebra and Mathematical Proof  
 MATH 539, Introduction to Statistical Analysis  
 MATH 645\*, Linear Algebra for Applications  
 CS 410, Introduction to Scientific Programming; *or*  
 CS 415, Introduction to Computer Science I

Note: If MATH 545 is taken, credit may not be earned for MATH 645 so that students must choose a MATH elective in consultation with their academic adviser.

#### Other required courses by option

*Computer Science Option*

MATH 532, Discrete Mathematics  
 MATH 753, Introduction to Numerical Methods I  
 One approved MATH elective chosen in consultation with your academic adviser.  
 CS 415, Introduction to Computer Science I  
 CS 416, Introduction to Computer Science II  
 CS 515, Data Structures  
 CS 516, Introduction to Software Design and Development  
 CS 520, Assembly Language Programming and Machine Organization  
 CS 620, Operating System Fundamentals  
 CS 659, Introduction to the Theory of Computation; *or*  
 CS 658, Analysis of Algorithms  
 One approved CS elective chosen in consultation with your academic adviser.

*Economics Option*

MATH 739, Applied Regression Analysis  
 One MATH course chosen in consultation with your academic adviser from the following courses:

MATH 740, Design of Experiments I  
 MATH 741, Biostatistics and Life Testing  
 MATH 742, Multivariate Statistics Methods  
 MATH 755, Probability and Stochastic Processes with Applications

One approved MATH elective chosen in consultation with your academic adviser.

ECON 401, Principles of Economics (Macro)  
 ECON 402, Principles of Economics (Micro)  
 ECON 605, Intermediate Microeconomic Analysis  
 ECON 611, Intermediate Macroeconomic Analysis  
 EREC 715, Linear Programming and Quantitative Models  
 One approved ECON or DS course chosen in consultation with your academic adviser.

*Electrical Science Option*

MATH 646, Introduction to Partial Differential Equations  
 MATH 647, Complex Analysis for Applications  
 MATH 753, Introduction to Numerical Methods I  
 EE 541, Electrical Circuits  
 EE 548, Electronics Design I  
 EE 603, Electromagnetic Fields and Waves I  
 EE 633, Signals and Systems I  
 EE 634, Signals and Systems II  
 EE 757, Fundamentals of Communication Systems

*Physics Option*

MATH 646, Introduction to Partial Differential Equations  
 MATH 647, Complex Analysis for Applications  
 MATH 753, Introduction to Numerical Methods I  
 PHYS 407, Physics I  
 PHYS 408, Physics II  
 PHYS 505-506, Physics III

Three PHYS courses, chosen in consultation with your academic adviser, from the following courses:

PHYS 508, Thermodynamics and Statistical Mechanics  
 PHYS 616, Physical Mechanics  
 PHYS 701, Introduction to Quantum Mechanics I  
 PHYS 702, Introduction to Quantum Mechanics II  
 PHYS 703, Electricity and Magnetism I  
 PHYS 704, Electricity and Magnetism II  
 PHYS 708, Optics

*Statistics Option*

MATH 739, Applied Regression Analysis  
 MATH 755, Probability and Stochastic Processes with Applications  
 MATH 756, Principles of Statistical Inference  
 Two MATH courses, chosen in consultation with your academic adviser, from the following courses:

MATH 740, Design of Experiments I  
 MATH 741, Biostatistics and Life Testing  
 MATH 742, Multivariate Statistics Methods  
 Three approved MATH courses chosen in consultation with your academic adviser.

#### *Bachelor of Science in Mathematics Education*

This professional degree program prepares students for mathematics teaching at the elementary, middle/junior high, or secondary 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/junior high or secondary option with full teacher certification in either four or five years. Students electing the four-year option must plan for one semester of student teaching (EDUC 694) in their senior year and must consult with the departmental adviser in order to accommodate the scheduling of required MATH courses. The five-year program requires a year-long teaching internship in the fifth year that can be coupled with other graduate work leading to a master's degree. See Education, College of Liberal Arts, page 32.

#### Elementary School Option

*Required MATH courses:*

MATH 425, Calculus I  
 MATH 426, Calculus II  
 MATH 539, Introduction to Statistical Analysis  
 MATH 545, Introduction to Linear Algebra and Mathematical Proof  
 MATH 619, Historical Foundations of Mathematics  
 MATH 621, Number Systems for Teachers  
 MATH 622, Geometry for Teachers  
 MATH 623, Topics in Mathematics for Teachers  
 MATH 657, Geometry  
 MATH 700, Introduction to Mathematics Education  
 MATH 703, The Teaching of Mathematics, K-6

*Other required courses:*

Two approved MATH electives chosen in consultation with your academic adviser:

CS 410, Introduction to Scientific Programming; *or*  
 CS 415, Introduction to Computer Science I  
 PHYS 406, Introduction to Modern Astronomy, which may be used to satisfy general education requirements in Group 3  
 EDUC 500, Exploring Teaching  
 EDUC 700, Educational Structure and Change  
 EDUC 701, Human Development and Learning: Educational Psychology  
 EDUC 705, Alternative Perspectives on the Nature of Education  
 EDUC 706, Introduction to Reading Instruction in the Elementary Schools

Note: EDUC 703F, EDUC 703M, and EDUC 751 are requirements for certification that may be taken as an undergraduate.

\*These requirements can be satisfied by MATH 525-526, Linearity I-II



**Middle/Junior High School Option***Required MATH courses*

MATH 425, Calculus I  
 MATH 426, Calculus II  
 MATH 539, Introduction to Statistical Analysis  
 MATH 545, Introduction to Linear Algebra and Mathematical Proof  
 MATH 619, Historical Foundations of Mathematics  
 MATH 621, Number Systems for Teachers  
 MATH 622, Geometry for Teachers  
 MATH 623, Topics in Mathematics for Teachers  
 MATH 657, Geometry  
 MATH 698, Senior Seminar  
 MATH 700, Introduction to Mathematics Education  
 MATH 780, Teaching of Mathematics, 5-8

*Other required courses*

Two approved MATH electives chosen in consultation with your academic adviser.  
 CS 410, Introduction to Scientific Programming; or  
 CS 415, Introduction to Computer Science I  
 EDUC 500, Exploring Teaching  
 EDUC 700, Educational Structure and Change  
 EDUC 701, Human Development and Learning: Educational Psychology  
 EDUC 705, Alternative Perspectives on the Nature of Education

Note: EDUC 751 is a requirement for certification that may be taken as an undergraduate.

**Secondary School Option***Required MATH courses*

MATH 425, Calculus I  
 MATH 426, Calculus II  
 MATH 527, Differential Equations with Linear Algebra  
 MATH 528, Multidimensional Calculus  
 MATH 539, Introduction to Statistical Analysis  
 MATH 545, Introduction to Linear Algebra and Mathematical Proof  
 MATH 619, Historical Foundations of Mathematics  
 MATH 624, Analysis for Secondary School Teachers  
 MATH 657, Geometry  
 MATH 698, Senior Seminar  
 MATH 761, Abstract Algebra  
 MATH 700, Introduction to Mathematics Education  
 MATH 791, Teaching of Mathematics, 7-12

*Other required courses*

One approved MATH elective chosen in consultation with your academic adviser.  
 CS 410, Introduction to Scientific Programming; or  
 CS 415, Introduction to Computer Science I  
 EDUC 500, Exploring Teaching  
 EDUC 700, Educational Structure and Change  
 EDUC 701, Human Development and Learning: Educational Psychology  
 EDUC 705, Alternative Perspectives on the Nature of Education

Note: EDUC 751 is a requirement for certification that may be taken as an undergraduate.

**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 for the minor.

**Mathematics Minor**

Required (3): MATH 528, MATH 531 (or 545), and MATH 761 (or 767)

Electives (2): Two courses chosen from among MATH 527\*, 656, 657, 658, 761, 762, 764, 767, 776, 783, 784, 788

**Applied Mathematics Minor**

Required (4): MATH 527, 528, 645 (or 545), and 753

Electives (1): One course chosen from among MATH 539 (or 644), 646, 647, 745, 746, 747, or 754

**Statistics Minor**

Required (2): MATH 539 (or 644) and MATH 645 (or 545)

Electives (3): Three courses chosen from among MATH 737, 739, 740, 741, 742, 744, 755, 756

**Mechanical Engineering (ME)**

[www.unh.edu/mechanicalengineering/](http://www.unh.edu/mechanicalengineering/)

(For course descriptions, see page 210.)

**Chairperson:** Todd S. Gross

**Professors:** Kenneth C. Baldwin, Barbaros Celikkol, Barry K. Fussell, Todd S. Gross, Robert Jerard, Joseph C. Klewicki, James E. Krzanowski, M. Robinson Swift, David W. Watt

**Associate Professors:** Gregory P. Chini, John Philip McHugh, May-Win L. Thein, Igor I. Tsukrov

**Affiliate Associate Professors:** Donald M. Esterling, Vladimir Riabov

**Assistant Professors:** Brad Lee Kinsey, Christopher White

**Affiliate Assistant Professor:** Timothy Upton

The Mechanical Engineering Program at UNH is accredited by the Engineering Accreditation Commission of ABET, 111 Market Place, Suite 1050, Baltimore, MD 21202-4012, telephone (410) 347-7700.

**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. Our graduates will be prepared to creatively solve engineering problems through the use of analysis, computation, and experimentation. The students complet-

ing our 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 our intent to maintain a general and flexible curriculum that prepares students for both industrial practice and graduate education.

**Educational Objectives**

The goal of the UNH mechanical engineering program is to produce graduates that are good professionals and good citizens who 1) skillfully apply the fundamental principles of mathematics, science, and engineering; 2) solve engineering problems by integrating strong design, analysis, and experimental abilities with excellent communication skills; 3) successfully contribute to their respective corporate, government, or academic organizations; 4) demonstrate continuous growth by assuming positions of leadership in their profession, or by becoming successful entrepreneurs; by successfully completing advanced degrees and professional education; 5) are broadly educated citizens of society with an understanding of the impact of engineering solutions in a global/societal context; and 6) demonstrate a high level of personal and social integrity through their ethical behavior and service to their peers, employers, communities, the nation, and the world.

Mechanical engineering is a challenging profession encompassing research, design, development, and production of aerospace vehicles, underwater vessels, instrumentation and control systems, nuclear and conventional power plants, and consumer and industrial products in general. The profession also makes contributions through more fundamental studies of material behavior, the mechanics of solids and fluids, and energy transformation. Additional information can be found at the mechanical engineering Web site.

**The Program**

The program begins with courses in physics, mathematics, chemistry, and computer aided design. The department has a four-semester mechanics thread, a four-semester thread in the thermal/fluid sciences, and a three-semester thread in systems and controls. Modern experimental methods are taught in a two-semester course starting in the junior year. The two-semester senior design project requires students to utilize the skills they have learned in their courses and to learn how to function in an engineering team. The five technical electives offered in the program give the students the opportunity to focus on advanced technical areas of their choice.

\*MATH 525 and MATH 526 (Linearity I and II) may be substituted for MATH 527 and MATH 528 and a MATH technical elective.

With their advisers' assistance, students should plan a program based on the following distribution of courses that totals not less than 128 credits. The outline that follows 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. Some mechanical engineering elective courses may not be offered every year.

The curriculum has eleven elective courses. These should be selected in consultation with a departmental adviser to lead to a balanced program that addresses chosen areas of interest. Five of the elective courses are selected from groups four through eight of the University's general education requirements, with the Group 7 general education course being either ECON 402 or EREC 411. One of the elective courses must be selected from the biological science listing of Group 3 of the general education requirements.

Five technical elective courses of at least three credits each are required. They may be selected from 600-700 level courses in the College of Engineering and Physical Sciences, except for one course that may be selected from one of the following 400-500 level courses: ME 442, ME 542, ENE 520, ESCI 501, and ECE 543. Two technical electives can be used for studying a focused area such as a foreign language, professional program, or minor, with mechanical engineering department approval.

Some programs may require additional elective courses to reach the minimum of 128 credits required for graduation. Other programs may exceed 128 credits to include all the required courses.

To enter the junior-year courses in the mechanical engineering major, students must have at least a 2.00 combined grade-point average for the following group of courses: PHYS 407-408, ME 503, ME 525, and ME 526.

In order to graduate in the mechanical engineering major, students must have at least a 2.00 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. The option of repeating required engineering, science, and technical elective courses normally taken after the start of the junior year may be exercised in only one of the following: 1) one course may be repeated twice; and 2) a maximum of two courses may be repeated once.

	Fall	Spring
<b>Freshman Year</b>		
MATH 425, Calculus I	4	-
CHEM 405, General Chemistry	4	-
ME 441, Engineering Graphics	4	-
General Education Elective	4	-
MATH 426, Calculus II	-	4
PHYS 407, General Physics I	-	4
General Education Elective	-	4
General Education Elective	-	4
English 401	-	4
<b>Total</b>	<b>16</b>	<b>20</b>

	Fall	Spring
<b>Sophomore Year</b>		
General Education Elective	4	-
*MATH 528,		
Multidimensional Calculus	4	-
PHYS 408, General Physics II	4	-
ME 525, Mechanics I	3	-
Technical Elective	3-4	-
*MATH 527, Differential		
Equations	-	4
ME 503, Thermodynamics	-	3
ME 526, Mechanics II	-	3
ME 561, Introduction to Materials		
Science	-	4
<b>Total</b>	<b>18-19</b>	<b>14</b>

	Fall	Spring
<b>Junior Year</b>		
General Education Elective	4	-
ME 627, Mechanics III	3	-
ME 608, Fluid Dynamics	3	-
ME 643, Elements of Design	3	-
ECE 537, Introduction to Electrical		
Engineering	4	-
ME 603, Heat Transfer	-	3
ME 646, Experimental Measurement and		
Data Analysis	-	4
ME 670, Systems Modeling, Simulation,		
and Control	-	4
CS 410, Intro to Scientific Programming	-	4
<b>Total</b>	<b>17</b>	<b>15</b>

	Fall	Spring
<b>Senior Year</b>		
ME 705, Thermal System Analysis and		
Design	4	-
**ME 755, Senior Design Project I	2	-
ME 747, Experimental Measurement and		
Modeling	4	-
Technical Elective	3-4	-
Technical Elective	3-4	-
ME 756, Senior Design Project II	-	2
Technical Elective	-	3-4
Technical Elective	-	3-4
General Education Elective	-	4
<b>Total</b>	<b>16-18</b>	<b>12-14</b>

### **Mechanical Engineering Minor**

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.

Students must complete a minimum of six courses as follows: ME 441, ME 525, ME 526, ME 627, ME 503, and ME 608. Electrical and Computer Engineering majors

should take the following courses: ME 441, ME 523, ME 526, ME 503, ME 608, and ME 561.

By midsemester of their junior year, interested students should consult the chair of the mechanical engineering department.

### **Materials Science Minor**

The minor, administered by the Department of Mechanical Engineering, is open to all students of the University and offers a broad introduction to materials science.

Students must complete at least 18 credits and a minimum of five courses as follows: ME 561 (required); ME 760 (required); and ME 730 (required); and two additional courses from the following: 731, 744, 761, 762, 763, and 795 (materials).

By midsemester of their junior year, interested students should consult the minor supervisor, James E. Krzanowski, Department of Mechanical Engineering.

### **Physics (PHYS)**

[www.physics.unh.edu/](http://www.physics.unh.edu/)

(For course descriptions, see page 226.)

**Chairperson:** Dawn C. Meredith

**Professors:** L. Christian Balling, Amitava Bhattacharjee, John R. Calarco, Olof E. Echt, James M.E. Harper, F. William Hersman, Richard L. Kaufmann, Martin A. Lee, Eberhard Möbius, James M. Ryan, Roy B. Torbert

**Research Professors:** Terry Forbes, Philip A. Isenberg, Nelson Maynard, R. Bruce McKibben, Charles W. Smith III

**Associate Professors:** Benjamin D. Chandran, James Connell, Lynn M. Kistler, Mark L. McConnell, Dawn C. Meredith, Karsten Pohl, Joachim Raeder

**Research Associate Professors:** Charles J. Farrugia, Antoinette B. Galvin, Vania K. Jordanova, Harold Kucharek, Mark R. Lessard, Clifford Lopate, Edward F. Tedesco, Bernard J. Vasquez

**Assistant Professors:** Silas Robert Beane III, Per Berglund, Maurik Holtrop

**Research Assistant Professors:** John C. Dorelli, Yuri E. Litvinenko, Chung-Sang Ng

\*MATH 525 and 526, Linearity may be substituted for MATH 527 and 528, and a technical elective course.

\*\*TECH 797 Undergraduate Ocean Research Project may be substituted for ME 755 and ME 756.



Physics is concerned with the properties of matter and the laws that describe its behavior. It is an exact science based on precise measurement, and its objective is the kind of understanding that leads to the formulation of mathematical relationships between measured quantities. 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 have participated 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 has its own library, which provides a comfortable, inviting atmosphere for study and relaxed reading.

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 allow for 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 (see page 67). For those interested in a career as a middle or high school educator in both physics and chemistry, the Department of Chemistry offers a B.A. in chemistry and physics teaching.

Interested students are encouraged to contact the department for further information. More detailed information is also on the physics department Web page at [www.physics.unh.edu](http://www.physics.unh.edu).

### Minor in Physics

The minor in physics consists of five courses in physics. All students must take PHYS 407, 408, and 505, including labs. Two other physics courses at the 500 level or above must be chosen in consultation with the student's physics minor adviser.

### Bachelor of Arts, Chemistry and Physics Teaching

(For information, see page 57.)

### Physics Major, Bachelor of Arts

This degree provides an opportunity for a broad and liberal arts education, which in some cases may be sufficient for graduate work. A judicious choice of electives may also prepare students for interdisciplinary programs that require proficiency in a restricted area of physics.

#### Requirements

1. Satisfy general education and writing requirements.
2. Satisfy bachelor of arts degree requirements.
3. PHYS 400, 407-408, 505, 506, 508, 605, 615, 616, 701, 703, 705. Note that MATH 425, 426, and MATH 525, 526 or MATH 527, 528 are prerequisites for some of the courses.

In the following table, "Electives" include general education courses, writing intensive courses, language courses required for the B.A., and free choice electives.

#### Suggested Curriculum for B.A. in Physics

Freshman Year	Fall	Spring
PHYS 400, Freshman Seminar	1	-
PHYS 407-408, General Physics I and II	4	4
MATH 425, 426, Calculus I and II (Group 2)	4	4
ENGL 401, First-Year Writing	-	4
Elective	8	4
<b>Total</b>	<b>17</b>	<b>16</b>

#### Sophomore Year

PHYS 505-506, General Physics III and Lab	4	-
PHYS 615, Classical Mechanics and Mathematical Physics I	-	4
MATH 525, Linearity I; or MATH 527, Differential Equations	6 or 4	-
MATH 526, Linearity II; or MATH 528, Multidimensional Calculus	-	6 or 4
Elective	8	8
<b>Total</b>	<b>16 or 18</b>	<b>16 or 18</b>

#### Junior Year

PHYS 605, Experimental Physics I	5	-
PHYS 508, Thermodynamics and Statistical Mechanics	-	4
PHYS 616, Classical Mechanics and Mathematical Physics II	4	-
PHYS 701, Introduction to Quantum Mechanics I	-	4
Electives	8	8
<b>Total</b>	<b>17</b>	<b>16</b>

#### Senior Year

PHYS 705, Experimental Physics II	-	4
PHYS 703, Electricity and Magnetism I	-	4
Elective	16	8
<b>Total</b>	<b>16</b>	<b>16</b>

### Bachelor of Science in Physics

The bachelor of science degree in physics prepares students for professional work as physicists. 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

1. Satisfy general education and writing requirements.
2. Satisfy bachelor of science university requirements.
3. Minimum physics requirements: 400, 407-408, 505, 506, 508, 605, 615-616, 701, 702, 703, 704, 705; two physics electives selected from the 700-level physics courses.
4. Chemistry: 403-404 or 405
5. Math: 425-426, and 525-526 or 527-528
6. Computer Science: CS 410
7. 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 general education 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.

Phys 708, Modern Astrophysics
Phys 710, Optics
Phys 712, Space Plasma Physics
Phys 718, Solid State Physics
Phys 720, Nuclear and Particle Physics
Math 747, Nonlinear Dynamics and Chaos
Math 753, Numerical Methods I
Math 754, Numerical Methods II
Phys 764, General Relativity and Cosmology
Phys 795, Independent Study

#### Suggested Curriculum for B.S. in Physics

Freshman Year	Fall	Spring
PHYS 400, Freshman Seminar	1	-
PHYS 407-408, General Physics I and II	4	4
MATH 425, 426, Calculus I and II (Group 2)	4	4
CHEM 403-404, General Chemistry (Group 3)	4	4
ENGL 401, Freshman English	-	4
Elective	4	-
<b>Total</b>	<b>17</b>	<b>16</b>

**Sophomore Year**

PHYS 505-506, General Physics III and Lab	4	-
PHYS 508, Thermodynamics and Statistical Mechanics	-	4
PHYS 615, Classical Mechanics and Mathematical Physics I	-	4
MATH 525, Linearity I		
<i>or</i>		
MATH 527, Differential Equations	6 or 4	-
MATH 526, Linearity II		
<i>or</i>		
MATH 528, Multidimensional Calculus	-	6 or 4
CS 410, Introduction to Scientific Programming	4	-
Elective	4	4
<b>Total</b>	<b>16 or 18</b>	<b>16 or 18</b>

**Junior Year**

PHYS 605, Experimental Physics I	5	-
PHYS 616, Classical Mechanics and Mathematical Physics II	4	-
PHYS 701, Introduction to Quantum Mechanics I	-	4
PHYS 703, Electricity and Magnetism I	-	4
Electives	8	8
<b>Total</b>	<b>17</b>	<b>16</b>

**Senior Year**

PHYS 702, Quantum Mechanics II	4	-
PHYS 704, Electricity and Magnetism II	4	-
PHYS 705, Experimental Physics II	-	4
Electives	8	12
<b>Total</b>	<b>16</b>	<b>16</b>

**Chemical Physics Option, Bachelor of Science in Physics**

1. Satisfy general education and writing requirements.
2. Satisfy bachelor of science University requirements.
3. Physics requirements: PHYS 400, 407-408, 505-506, 508, 605, 615, 616, 701, 702, 703, 705.
4. Chemistry: CHEM 403, 404, 683-686, 762, 763, 776
5. Mathematics: MATH 425-426, 525-526 or 527-528
6. Computer Science: CS 410
7. Electives in Option: Two courses selected from CHEM 547/9, MATH 646, PHYS 718, PHYS 795

**Materials Science Option, Bachelor of Science in Physics**

1. Satisfy general education and writing requirements.
2. Satisfy bachelor of science University requirements.
3. Physics requirements: PHYS 400, 407-408, 505-506, 508, 605, 615-616, 701, 703, 705, 795 (4 credit hours), 799 (4 credit hours).
4. Mechanical Engineering: 561, 730, 760
5. Math: 425-426, 525-526, or 527-528
6. Computer Science: CS 410
7. Electives in Option: Three courses selected from MATH 646, ME 731, 761, 762, 763, 795, PHYS 718
8. Chemistry: 403-404 or 405

**Astronomy Option, Bachelor of Science in Physics**

1. Satisfy general education and writing requirements.
2. Satisfy bachelor of science University requirements.
3. Physics requirements: PHYS 400, 406, 407-408, 505, 506, 508, 605, 615-616, 701, 702, 703, 704, 705, 710, 795 (4 credit hours), 799 (4 credit hours).
4. Chemistry: CHEM 403-404 or CHEM 405
5. Math: MATH 425-426 and 525-526 or 527-528
6. Computer Science: CS 410
7. Elective in option: Choose one course from PHYS 708, PHYS 712, PHYS 720, PHYS 764, PHYS 791



# SCHOOL OF HEALTH AND HUMAN SERVICES

[www.shhs.unh.edu/](http://www.shhs.unh.edu/)

James F. McCarthy, Dean  
Neil B. Vroman, Associate Dean  
Carole A. Pierce, Advising Coordinator

Department of Communication Sciences and Disorders  
Department of Family Studies  
Department of Health Management and Policy  
Department of Kinesiology  
Department of Nursing  
Department of Occupational Therapy  
Department of Recreation Management and Policy  
Department of Social Work

## Bachelor of Science

Communication Sciences and Disorders

Family Studies

Child Advocacy and Family Policy  
Young Child/Nursery-Kindergarten  
Family Support/Family Life Education  
Individual and Family Development

Health Management and Policy

International Affairs (dual major)

Kinesiology

Athletic Training  
Exercise Science  
Outdoor Education  
Sports Studies  
Physical Education Pedagogy

Nursing

Occupational Therapy

Recreation Management and Policy

Program Administration  
Therapeutic Recreation

Social Work

**T**he School of Health and Human Services, established in 1968, was created in response to the growing need for programs in higher education that prepare young men and women for health-related careers. The school offers undergraduate instruction leading to the bachelor of science degree in communication sciences and disorders, family studies, health management and policy, kinesiology, nursing, occupational therapy, recreation management and policy, and social work. Each program enables students to acquire the basic knowledge and skills needed to practice their chosen professions and to obtain a broad cultural background in the humanities and social sciences.

## Degree Requirements

Candidates for the B.S. and B.A. degree must satisfy all general education requirements for graduation (page 16), earn at least 128 credits, successfully complete the courses required in one of the curricula described in this section, and achieve the required minimum grade-point average in the chosen curriculum.

*Minors:* See University Academic Requirements page 16; also see Degrees and Major Programs of Study, page 21.

*Dual-Degree Programs:* See page 18.

*Student-Designed Majors:* See page 114.

*Second Majors:* See page 19.

## Undeclared Major

A limited number of well-qualified freshmen who have expressed an interest in a health-related career, but who are undecided about a specific major may enter the School of Health and Human Services as undeclared students. Undeclared students should explore possible majors by selecting courses from the following:

### Required Courses

ENGL 401, Freshman English  
PSYC 401, Introduction to Psychology  
Z00L 507-508, Human Anatomy and Physiology

### Exploration Courses

COMM 520, Survey of Communication Disorders  
FS 525, Human Development  
HMP 401, U.S. Health Care Systems  
KIN 500, Historical and Contemporary Issues in Physical Education  
KIN 585, Emergency First Responder  
NUTR 400, Nutrition Health and Well Being  
RMP 490, Recreation and Leisure in Society  
SW 424, Introduction to Social Work

All SHHS undeclared students are advised by a professional academic counselor. Upon declaration of a specific major, each student is assigned to a faculty adviser within the major department.

## Student Liability Insurance

All students whose programs require participation in clinical leaning internships must purchase and maintain liability insurance for the entire clinical experience. The University has arranged for appropriate insurance coverage at a modest cost to students. Further information may be obtained at major department offices.

## Programs of Study

### Communication Sciences and Disorders (COMM)

[www.shhs.unh.edu/csd/](http://www.shhs.unh.edu/csd/)

(For course descriptions, see page 165.)

**Chairperson:** Stephen N. Calculator

**Professor:** Stephen N. Calculator

**Associate Professors:** Steven P. Bornstein, Frederick C. Lewis, Penelope E. Webster

**Clinical Associate Professors:** Jeanne H. O'Sullivan, Ruth E. Peaper, Amy S. Plante

**Assistant Professors:** Michael Fraas, Sheryl Gottwald

**Research Assistant Professor:** Rae M. Sonnenmeier

**Clinical Assistant Professor:** Mary Jane Sullivan

**Lecturer:** Pamela E. Broido

**Instructor:** Timothy Bryant

Communication sciences and disorders is the profession devoted to helping people overcome disabilities of speech, language, or 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. Students are encouraged to take elective courses in linguistics, human development, learning theory, early childhood, health administration, special education, and various aspects of rehabilitation.

Students are advised to continue their professional education at colleges or universities offering graduate programs leading to a master's degree and to subsequent certification by the American Speech-Language-Hearing Association. Certified clinicians find employment opportunities in hospitals, schools, community speech and hearing clinics, and private practice.

The required courses in communication sciences and disorders which all students in the program must successfully complete are COMM 520, Survey of Communication Disorders; COMM 521, Anatomy and Physiology of the Speech and Hearing Mechanism; COMM 522, The Acquisition of Language; COMM 524, Clinical Phonetics; COMM 630, Organic Pathologies; COMM 631, Articulation and Language Disorders in Children; COMM 635, Professional Issues in Speech-Language Pathology; COMM 704, Basic Audiology; COMM 705, Introduction to Auditory Perception and Aural Rehabilitation; and COMM 777, Speech and Hearing Science. Students must also complete KIN 706, Neurology, and a course in statistics. Other elective courses are available.

Students must have a grade-point average of 2.75 at the end of their sophomore year to continue in the major. A 2.75 grade-point average is also required to transfer into the major. Students interested in this program should consult with the chairperson, Stephen N. Calculator.

### ***Minor in Deaf and Hard of Hearing Studies***

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 part of the field study. (Individuals whose native

language is American Sign Language (ASL) receive instruction in English as a second language.) Finally, it will be a good 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.

### **Curriculum and Requirements**

The minor in Deaf and Hard of Hearing Studies will require the following for a minimum of 20 credits:

1. COMM 533 American Sign Language I
2. COMM 733 American Sign Language II
3. COMM 536 Introduction to Deaf Studies
4. Two electives from the following list:

COMM 537 Deaf Culture  
 COMM 734 American Sign Language III  
 COMM 735 American Sign Language IV  
 COMM 704 Audiology\*  
 COMM 705 Auditory Perception and Aural Rehabilitation\*  
 COMM 779 Internship in Deaf/Hard of Hearing Studies  
 COMM 522 Acquisition of Language\*

\* required of CSD majors

Communication Sciences and Disorders majors may not use a course required of their major to fulfill both major and minor requirements.

Students in the minor must earn a grade of C- in each course in order to receive credit for the course in the minor. A maximum of 8 credits will be accepted in transfer.

### **Family Studies (FS)**

[www.shhs.unh.edu/fs/](http://www.shhs.unh.edu/fs/)

(For course descriptions, see page 183.)

**Chairperson:** Elizabeth M. Dolan

**Associate Professors:** Kristine M. Baber, Elizabeth M. Dolan, Barbara R. Frankel, Michael F. Kalinowski, Kerry Kazura, John W. Nimmo, Corinna Jenkins Tucker

**Assistant Professors:** Dora Wu Chen, Mark D. Moses

**Extension Educators:** Charlotte W. Cross, Suzann E. Knight

**Adjunct Faculty:** Molly Connelly, Helen Fitzgerald, Valerie Hurst, Charles Putnam, Chuck Rhoades, Jane Stapleton

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 lifespan development, the social and economic roles of families, child advocacy, teacher and parent education, and intervention programs that support families. The department is committed to acknowledging and support-

ing diversity, to providing an educational environment that stresses excellence and innovation, and to developing exemplary programs to serve both students and the larger community.

Students learn about families through integration of developmental, theoretical, and empirical information. The department offers a B.S. degree in family studies. Each student selects from one of the four specializations, each offering unique opportunities. Students prepare for positions in family service organizations, educational settings and programs, corporations, and government agencies. Each specialization has entry-level criteria and specific course requirements. All require close consultation with a faculty adviser. Any changes or updates are posted on our Web site.

The nursery/kindergarten teaching certification and the Certified Family Life Educator programs are highly structured and may have limited enrollment. Acceptance to these programs and to internships and practica is restricted to students demonstrating exceptional potential for working with children and families.

### ***Major Requirements***

Core courses required of each family studies major are: FS 525, Human Development and FS 545, Family Relations. A minimum of nine family studies courses is required, at least two of which must be at the 700 level. Twenty credits of supporting coursework are selected in consultation with the adviser. These courses must be 500 level or above and must include at least 12 credits in courses outside the department. Each specialization has required or recommended supporting courses. Some departmental specializations may specify general education courses because they enhance the plan of study. Family studies majors are required to complete an undergraduate statistics course.

### ***Child Advocacy and Family Policy Specialization***

This specialization focuses on analyzing and solving problems related to children and their families with a primary emphasis on unmet needs. The goal is for students to complete their degree with a detailed understanding of human development, family relations, educational and government initiatives and regulations, cultural differences, statistics, politics, and effective communication strategies. The specialization is designed to prepare students for entry-level positions as advocates or policy generalists, or to pursue a graduate degree.



**Department Requirements**

FS 525, Human Development  
FS 545, Family Relations

FS 553, Personal and Family Finance for Family Life Educators, *or*  
FS 653, Family Economics

FS 623, Development Perspectives on Infancy and Early Childhood, *or*  
FS 624, Developmental Perspectives on Adolescence and Early Adulthood

FS 641, Parenting Across the Lifespan, *or*  
FS 743, Families, Schools and Community, *or*  
FS 760, Family Programs and Policies

FS 746, Human Sexuality, *or*  
FS 750, Contemporary Issues in Adolescent Development, *or*  
FS 757, Race, Class, Gender and Families

FS 772, Child Advocacy  
FS 773, International Perspectives on Families and Young Children  
FS 794, Families and the Law  
FS 710 Child Advocacy and Family Policy  
FS 712, Child Advocacy and Family Policy Internship  
FS 714, Seminar for Child Advocacy and Family Policy Interns

**Supporting Courses**

ENGL 503 or ENGL 621, ANTH 516 or ANTH 517, SW 705 *or* PSYC 581, EDUC 500 or FS 635 or FS 776

**Young Child Specialization/Nursery-Kindergarten Teaching Certification**

This concentration is for those who have a broad interest in working with young children ranging in age from birth to age eight. This specialization has four major foci that include child development, teaching methodology and curriculum development, developmentally appropriate learning environments for young children, and home-school-community relations.

The nursery-kindergarten certification (N/K) is a highly competitive program within the young child specialization. Students who qualify and who are accepted into the program will participate in student teaching in their senior year. Applications to the N/K program are completed by students during the fall of the junior year.

**Department Requirements**

FS 525, Human Development\*  
FS 545, Family Relations\*  
FS 623, Developmental Perspectives on Infancy and Early Childhood\*  
FS 635, Teaching and Learning in Early Childhood Settings\*  
FS 708-709, Advanced Child Development Internship\*  
FS 733, Supervising Programs for Young Children\*  
FS 734, Curriculum for Young Children\*

FS 743, Families, Schools and Community\*  
FS 771, Observation and Assessment\*

Students accepted into the certification program must also enroll in the following courses during their senior year:  
FS 785, Seminar for Student Teachers\*  
FS 786, Seminar for Student Teachers\*  
FS 788, Student Teaching of Young Children\*

**Supporting Courses**

EDUC 500\* (may substitute FS 708 or FS 709); THDA 583\* or 621; PSYC 581; KIN 600\* or 675; MATH 601\* or EDUC 741; FS 760, 772, 773, 794, 797 (Families in Poverty); EDUC 706\*, 733, 734, 750, 751, 760\*.

\*These courses are required for nursery/kindergarten certification.

**Family Support/Provisional Certification Family Life Education**

This specialization is for students interested in working with children, adolescents, and adults either as individuals or as families. Students develop knowledge and skills to prepare them to provide family support, direct services, and family life education. This specialization prepares students to work in human service settings. Students may choose a plan of study leading to a provisional certification as a family life educator.

The National Council on Family Relations has approved the Department of Family Studies undergraduate program as meeting the standards and criteria required for the Provisional Certified Family Life Educator (CFLE) designation. Certified 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 designation recognizes expertise in a broad range of issues that constitute family life education and increases credibility by validating the individual's education and experience.

**Department Courses**

FS 525, Human Development\*  
FS 545, Family Relations\*  
FS 641, Parenting Across the Life Span\*  
FS 746, Human Sexuality\*  
FS 757, Race, Class and Gender\*  
FS 760, Family Programs and Policies\*  
FS 794, Families and the Law\*

FS 553, Personal and Family Finance for Family Life Professionals\*, *or*  
FS 653, Family Economics\*

FS 623, Developmental Perspectives on Infancy and Early Childhood, *or*  
FS 624, Developmental Perspectives on Adolescence and Early Adulthood

FS 772, International Approaches to Child Advocacy, *or*  
FS 773, International Perspectives on Children and Families

Students accepted into the CFLE Program must also take:  
FS 782, Family Internship\*  
FS 792, Seminar for Family Interns\*

**Supporting Courses**

Gerontology Minor  
FS 750, Contemporary Issues in Adolescent Development Research Methods course (e.g., PSYC 502)  
FS 776, Children, Adolescents, and the Law  
NURS 535; PSYC 552, 582; SOC 525, 540, 675; SW 524, 525, 697A, 697B, 697C; CMN 530 or PSYC 762.

\*These courses are required for the Certified Family Life Educator designation.

**Individual and Family Development Specialization**

This specialization is for students with a broad interest in working with families. This specialization 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.

**Department Requirements**

FS 525, Human Development  
FS 545, Family Relations  
FS 623, Developmental Perspectives on Infancy and Early Childhood  
FS 624, Developmental Perspectives on Adolescence and Early Adulthood  
FS 641, Parenting Across the Lifespan  
FS 653, Family Economics  
FS 746, Human Sexuality  
FS 757, Race, Class and Gender  
FS 794, Families and the Law

**Supporting Courses**

FS 750, Contemporary Issues in Adolescent Development  
FS 760, Family Programs and Policies  
FS 782, Family Internship  
FS 792, Family Internship Seminar  
Research Methods course (e.g., PSYC 502, Research Methods in Psychology)  
PSYC 552, 581, 582  
NURS 535  
SOC 540  
A foreign language  
Work with the Institute on Disability

**Family Internships**

Internship students will apply knowledge gained from their academic studies in a supervised environment. The internship involves a commitment of fifteen hours per week for two semesters, plus a three-hour

seminar every other week. 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 with a minimum overall grade-point average of 3.00 and a departmental grade-point average of 3.20 or higher. Internship requirements vary depending on specialization. Internship courses will count toward the 20 credits required in supporting courses.

### ***Family Studies Minor***

The department offers a minor to interested students in related majors. Minor requirements include FS 525, FS 545, and three additional courses chosen in consultation with a departmental adviser. Individual course grades must be C or above and the overall grade-point average for the 20 credits must be at least 2.00. Students desiring a minor in family studies are advised to consult with the departmental administrative manager as early as possible.

### ***Child Life Minor***

The interdisciplinary minor is offered by the Department of Family Studies and the Therapeutic Recreation Option in the Department of Recreation Management and Policy. Upon completion of course requirements, students will be able to sit for the Child Life Specialist exam. Family studies majors are required to take three core courses: RMP 502, FS 525, and FS 623. FS students will select two courses from the following: RMP 501, RMP 503, RMP 504, RMP 603, RMP 604. Students will complete an Internship which will entail a minimum of 480 hours of experience and be supervised by a certified Child Life Specialist. Family studies majors will be assigned a minor adviser from therapeutic recreation.

### ***Adolescence Minor***

The UNH Center on Adolescence, in conjunction with the Departments of Family Studies and Recreation Management and Policy, offers a minor in Adolescent and Youth Development. The minor is designed to provide students an opportunity to develop knowledge and skills regarding adolescence and youth development. Required courses offer a foundation in theory, research, and practice for all minors. Students select three additional courses from a wide array of more specialized offerings from collaborating departments. In order that students may be assisted in developing a cohesive plan of study for their minor, a simple application process will be used.

Only students who have submitted an application, been accepted into the minor, and have completed the required coursework will be identified as having achieved a minor in Adolescent and Youth Development. Students will select two courses from: FS 624, Developmental Perspectives on Adolescence and Early Adulthood; FS 750, Contemporary Issues in Adolescent Development; RMP 668, Youth Culture and Programs. Students will select three electives from: EDUC 710c, Youth Organizations; EDUC 797, Seminar in Early Adolescent Development; EDUC 717, Growing Up Male in America; EDUC 735, Young Adult Literature; FS 797, Adolescent Males and Violence; KIN 565, Principles of Coaching; RMP 558, Program Supervision and Leadership; RMP 560, Recreational Sport Management; RMP 730, Camp Administration and Leadership; RMP 760, Community Sport Organizations: Administration and Development; SOC 525, Juvenile Crime and Delinquency; SOC 773, Sociology of Childhood; RMP 563 or FS 707, Practicum; EDUC 507, Mentoring Adolescents.

### **Health Management and Policy (HMP)**

[www.shhs.unh.edu/hmp/](http://www.shhs.unh.edu/hmp/)

(For course descriptions, see page 189.)

**Chairperson:** James B. Lewis

**Professors:** Cynthia M. Duncan, James F. McCarthy, Jeffrey Colman Salloway, John W. Seavey, Lee F. Seidel, Robert S. Woodward

**Clinical Professors:** Edgar J. Helms, Jr., Leslie N.H. MacLeod

**Associate Professors:** Rosemary M. Caron, Marc D. Hiller, James B. Lewis

**Assistant Professor:** Robert J. McGrath

**Research Assistant Professor:** David J. LaFlamme

**Clinical Assistant Professor:** Susan W. Fox

Undergraduates majoring in the health management and policy program are prepared to embark upon management careers in a wide range of health care delivery and financing organizations, public health, and health policy. Graduates work in many settings, including health care delivery systems, hospitals, nursing homes, health maintenance and other managed care organizations, public health departments, community-based and home-health agencies, mental health facilities, regulatory bodies, consulting companies, and insurance companies.

The academic program is interdisciplinary, with undergraduates taking courses in many academic units of the University. Stu-

dents gain a broad view of health and health care while developing analytical skills in health care management and policy. The department uses a computer laboratory that is integrated throughout the curriculum.

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 and the American College of Health Care Administrators, both of which are represented by student chapters at the University. There is also an organization for students interested in public health issues. The department curriculum is approved under the New England Regional Student Program.

### ***Academic Program***

#### **Competencies are achieved through three components of the curriculum:**

University general education requirements, HMP collateral courses, and the HMP core courses including a field practicum. Students work closely with their assigned faculty advisers to develop a plan of study to achieve completion of each of these components. Upper division HMP courses are sequenced in a two-year progression as described in departmental handouts to all majors. Students are expected to follow this sequence; any exceptions are made by petition. Late transfers may have to plan for an extra year. Several upper-division HMP elective courses are available.

#### **University General Education Requirements:**

Advisers assist students in selecting courses that satisfy certain program expectations and simultaneously meet University general education requirements.

#### **HMP-Required Collateral Courses:**

A basic understanding is expected in each of the following areas related to health management and policy: 1) microeconomics, 2) organizational behavior, and 3) statistics. HMP faculty advisers work with students to select the appropriate courses to fulfill these requirements. Students are advised to complete their collateral coursework prior to their junior year in the major. Program-approved courses in organizational behavior, statistics, microeconomics, Epidemiology (HMP 501), Health Management and Policy Critical Issues (HMP 402), and U.S. Health Care Systems (HMP 401) must have been completed successfully before a student may begin junior-level studies in the major.

#### **HMP Core Courses:**

In general, each of the following courses must be completed by HMP majors prior to graduation.

Introductory courses include HMP 400, Introduction to Health Management and Policy; HMP 401, U.S. Health Care Systems; HMP 402, Health Management and Policy Critical Issues; HMP 501, Epidemiology and Community Medicine.

Upper-division courses include HMP 642, Health Economics; HMP 711, Health Systems Research I; HMP 712, Health Systems Research II; HMP 721, Managing Health Care Organizations; HMP 723, Health Planning; HMP 740, Health Care



Financial Management; HMP 742, Strategic Management for Health Care Organizations or HMP 748, Health Policy Analysis; HMP 744, Ethical Issues in Health Management and Medicine; and HMP 746, Health Policy. Upper-division courses are not offered every semester and students progress through these courses in a sequential order.

#### **Field Practicum:**

A full-time practicum (or administrative internship) that integrates class work with a supervised managerial work experience constitutes an essential part of the academic program. It allows students to explore an area of special interest in depth. Courses comprising this component of the major include: HMP 621, Prepracticum Seminar; HMP 622, Field Practicum; and HMP 624, Post Practicum Seminar. The practicum is divided into three concurrent components: A. Field Practicum Organizational Analysis; B. Field Practicum Management Skills Development; and C. Field Practicum Project Analysis. Field practicum sites are selected by faculty with student involvement and are concentrated in central and northern New England. Given sufficient timing of student requests, efforts will be made to arrange practica at distant sites based on special needs.

HMP field practica currently occur during the summer between the junior and senior year within the curriculum. They begin in late May and end in late August and require a full-time commitment.

#### **HMP Elective Courses:**

Elective courses within the program may include: HMP 430, Alternative Medicine and Health; HMP 505, Public Health: History and Practice; HMP 569, Human Behavior and the Public Health; HMP 570, Social Marketing; HMP 730, Managed Care; HMP 734, Health Law; HMP 750, Comparative Health Care Systems; and HMP 755, Long Term Care Management and Policy. In addition, seniors may have the opportunity to elect independent studies (HMP 796) through individual arrangements with HMP faculty. Majors are encouraged to enroll in one or more of these courses before graduation.

#### **Academic Requirements:**

HMP majors must obtain a minimum of a C- in all HMP core courses and must pass all HMP-required collateral courses. Majors must have an overall grade-point average of 2.50 by the end of the semester preceding their practicum. Students not maintaining an overall grade-point average of 2.50 are reevaluated by the faculty and may be counseled into another major at the University.

The faculty reviews student performances during the semester before the practicum to determine each student's readiness. Students who do not successfully complete prerequisite courses may not be permitted to advance through subsequent courses in the major.

#### **Applications for Major**

Students interested in additional information or in applying for admission to the health management and policy major should contact the department's director of undergraduate studies. Students seeking internal transfer into the major must complete an internal transfer application form. Efforts should be made to complete this process during the freshman year or early in the sophomore year to ensure sufficient time to complete all of the required collateral courses as well as those in the major in a timely manner.

#### **Honors in Major**

The department offers an honors in major program. To qualify, students must meet the department's requirement of having an overall 3.20 grade-point average at UNH and a 3.30 grade-point average for required HMP courses taken by the end of the junior year. Honors in major students take honors courses during the last half of junior year and senior year as well as complete an honors project. Students work with a faculty member in the department in the development of the honors project. Students should contact the department's honors in major adviser for further information.

#### **Health Management Minor**

The department offers an integrated minor in health management designed for students majoring in clinically oriented professional programs offered through other departments in the School of Health and Human Services. Students not enrolled in the school who wish to minor in health management may inquire about doing so by contacting the department's director of undergraduate studies. Students accepted into the minor must complete: 1) three required courses (HMP 401, U.S. Health Care Systems; HMP 721, Managing Health Care Organizations; and HMP 710, Financial Management for Clinicians); 2) one HMP elective course (HMP 501, Epidemiology and Community Medicine; HMP 430, Alternative Medicine and Health; HMP 505, Public Health History and Practice; HMP 569, Human Behavior and the Public Health; HMP 642 Health Economics; HMP 744, Ethical Issues in Health Management and Medicine; or HMP 755, Long Term Care Management and Policy; HMP 746, Health Policy; and 3) one additional elective course from a list approved by the department. Students seeking to minor in health management must complete the application available in

the department office and meet with the department's director of undergraduate studies before commencing the minor.

#### **Public Health Minor**

The Department of Health Management and Policy also 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. Public health is interdisciplinary in nature and, therefore, the minor is composed of courses in the Department of Health Management and Policy as well as courses in other schools and colleges in the University.

The interdisciplinary public health minor is comprised of 20 credits. The minor will provide students with an introduction to many of the foundation areas of public health. It will provide students with a 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 core courses are biostatistics, epidemiology, environmental health sciences, health services administration, and social and behavioral sciences. All students will be required to complete four courses: HMP 401, US Health Care Systems; HMP 501, Epidemiology; HMP 505, Public Health: History & Practice; and HMP 569, Behavior and Public Health. The elective courses available to students include offerings from a variety of schools and departments at UNH.

The minor is open to any baccalaureate student at UNH. Students majoring in Health Management and Policy will not be able to receive credit toward the minor for courses taken to fulfill a requirement of the major.

#### **Public Health Option**

This option was approved in 2005 and provides students with the knowledge and skills for entry-level positions within the public health agencies/workforce. The public health field is emerging as a key area for the protection of population health. It provides students with an introduction to many of the foundation areas of public health and gives 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 core courses are biostatistics, epidemiology, environmental health sciences, health services administration, and social and behavioral sciences.

In addition to the core courses, students will be required to take course work in two additional elective areas; one course from offerings in Public and Environmental Health and an additional elective from the offerings in either nutrition and public health or mechanisms of infectious and chronic disease in public health. The list of elective courses available is substantial and includes offerings from a variety of schools and departments at UNH. There are multiple traditional areas of public health practice: public health and the environment, nutrition and public health, behavior modification and infectious and chronic diseases.

The Public Health option at UNH is one of the few programs at the undergraduate level available nationally.

#### Required Courses

ECON 401 or 402, Micro or Macro economics  
 HMP 401, US Health Care Systems  
 HHS 540 or equivalent in Statistics  
 HMP 402, HMP Critical Issues  
 HMP 501, Epidemiology  
 HMP 702, Quantitative and Research Methods in Epidemiology  
 HMP 505, History of Public Health  
 HMP 569, Public Health and Human Behavior  
 HMP 740, Health Care Financial Management  
 HMP 621, Pre-Practicum  
 HMP 712, Health Systems Research  
 HMP 642, Health Economics  
 HMP 723, Health Planning  
 HMP 622, Field Practicum (Summer session junior year)  
 HMP 624, Post Practicum 2 cr.  
 HMP 744, Ethical Issues  
 HMP 746, Health Policy  
 HMP 748, Health Policy Analysis

#### International Affairs (dual major)

(For program description, see page 111.)

#### Kinesiology (KIN)

[www.unh.edu/kinesiology/](http://www.unh.edu/kinesiology/)

(For course descriptions, see page 200.)

**Chairperson:** Michael A. Gass

**Professors:** Ronald V. Croce, Michael A. Gass, Stephen H. Hardy

**Associate Professors:** Heather Barber, Robert W. Kenefick, John P. Miller, Timothy J. Quinn, Erik E. Swartz, Neil B. Vroman, Steven C. Wright

**Clinical Associate Professor:** Daniel R. Sedory

**Assistant Professors:** Brent Bell, Karen E. Collins, Michelle A. Grenier, Jayson O. Seaman

**Clinical Assistant Professors:** Laurie Gullion, Kenneth T. Hult, Pam McPhee, Allison Sigler, Virginia Logan Westmoreland

**Instructors:** Karen N. Henny

**Lecturer:** Thomas W. Ashwell

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 five options. While options 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 option makes extensive use of field experiences and internships that blend theory with practice.

The department offers five areas of study for majors: 1) athletic training, 2) exercise science, 3) outdoor education, 4) sport studies, and 5) physical education pedagogy. Students who wish to minor in kinesiology must complete 20 credits of coursework that have been approved by a *department minor adviser*. No more than 6 of the 20 credits may be earned through activity or coaching courses.

Students interested in majoring or minoring in kinesiology should consult with the specific option coordinator.

#### Athletic Training Option

An athletic trainer implements injury prevention programs and immediate treatment and rehabilitation procedures for injured individuals as directed by physicians. The Commission on Accreditation of Athletic Training Education (CAATE)-accredited athletic training option prepares professionals qualified to attend the athlete, the fitness-conscious jogger, the skilled professional athlete, or anyone engaged in physical activity.

Students take coursework in prevention, evaluation, management, care, and rehabilitation of injuries as well as administration, education, and counseling. Students must earn a grade of C (2.00) or better in all KIN required courses and ZOOL 507-508.

Students gain clinical experience in University athletic training rooms and at off-campus clinical sites. Successful completion

of the entire program, including 1,000 hours of supervised clinical experience, qualifies students to take the BOC certification exam. Students who wish to pursue both BOC certification and public school teacher certification should also see the pedagogy option. This double course of study will require between five and six years.

Students are admitted to the University in the athletic training option with conditional status. Specific criteria must be met during the student's first year before he/she may apply for full-time status in the option, which is awarded to those students demonstrating exemplary performance in classes and clinical observations. Additionally, option 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, with reasonable accommodations, they can meet the standards. It is very important that interested students consult with option coordinator, Dan Sedory, regarding entry criteria and the technical standards.

#### Required Courses

#### Credits

KIN 506, Concepts of Athletic Training	4
KIN 507, Concepts of Athletic Training Lab	1
KIN 585, Emergency First Responder	4
KIN 620, Physiology of Exercise	4
KIN 652, Clinical Kinesiology	3
KIN 653A, Musculoskeletal Assessment	2
KIN 658, Evaluation & Care of Athletic Training Injury I	4
KIN 658L, Evaluation & Care of Athletic Training Injury I Lab	1
KIN 659, Evaluation & Care of Athletic Training Injury II	4
KIN 659L, Evaluation & Care of Athletic Training Injury II Lab	1
KIN 660, Therapeutic Exercise in Athletic Training	4
KIN 661, Therapeutic Exercise Lab	1
KIN 662, Therapeutic Modalities in Athletic Training	4
KIN 663, Therapeutic Modalities Lab	1
KIN 665, Laboratory Practicum in Athletic Training	
655A, Level I	2
665B, Level II	2
665C, Level III	2
665D, Level IV	2
655E, Level V	2
KIN 667, Pharmacology in Athletic Training	2
KIN 670, General Medical Conditions in Athletics	4
KIN 710, Organization/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

#### University Required Courses

NUTR 400, Nutrition in Health and Well Being	4
PSYC 401, Introduction to Psychology	4
Statistics Course	4
ZOOL 507-508, Human Anatomy and Physiology	8



**Exercise Science Option**

This curriculum prepares individuals for career opportunities in fitness and health promotion programs in hospitals, industry, and communities. Exercise scientists work in physical activity programs of prevention, intervention, and rehabilitation. Students must earn a grade of C (2.00) or better in every required course. All required courses must be completed before enrolling in KIN 650. Interested students should consult with the option coordinator, Timothy J. Quinn.

Required Courses	Credits
KIN 585, Emergency First Responder	4
KIN 620, Physiology of Exercise	4
KIN 621, Exercise Laboratory Techniques	4
KIN 650 Exercise Science Internship	8
KIN 652, Clinical Kinesiology	4
KIN 653A, Musculoskeletal Assessment	2
KIN 704, Electrocardiography	4
KIN 705, Topics in Applied Physiology	4
KIN 720, Science and Practice of Strength Training	4
KIN 724, Metabolic Adaptations to Exercise	4
KIN 736, Fitness and Graded Exercise Testing	4
KIN 737, Exercise Prescription and Leadership	4
KIN 794, Cardiopulmonary Pathologies	4
KIN 795, Practicum in Cardiac Rehabilitation	2

**University Required Courses**

NUTR 400, Nutrition in Health and Well Being	4
PSYC 401, Introduction to Psychology	4
ZOOL 507-508, Human Anatomy and Physiology	8

One course chosen from

SOC 502, PSYC 402, or HHS 540	4
CHEM 403-404, General Chemistry	8
CS 403, Online Network Applications	4

**Outdoor Education Option**

The outdoor education option is an award-winning, internationally recognized program preparing individuals for careers in the educational, managerial, and/or therapeutic aspects of physical activity in natural and challenging environments. The option is interdisciplinary in scope, uses the various natural resources in seacoast and mountain areas, and provides students ample opportunity for practical application and field experience. Students must earn a grade of C (2.00) or better in every required course. In addition they must complete 100 days of documented leadership experience prior to beginning an internship. Interested undergraduate students should consult with the undergraduate curriculum coordinator, Laurie Gullion, e-mail lgullion@unh.edu.

**Required Courses**

KIN 540, Top Rope Rock Climbing	3
KIN 541, Management of Challenge Course	4
KIN 543, Winter Backpacking Skills	2
KIN 550, Outdoor Education Philosophy and Methods	4
KIN 551, Adventure Programming: Backcountry Based Experiences	3
KIN 552, Adventure Programming: Water-Based Experiences	3
KIN 681, Theory of Adventure Education	4
KIN 682, Outdoor Leadership	4
KIN 684, Emergency Medical Care: Principles/Practices	3
KIN 685, Emergency Medical Care: Principles/Practices Lab	2
KIN 686, Wilderness Emergency Medical Care	4
KIN 687, Leadership Practicum	4
KIN 786, Organization/Administration of Outdoor Education	4
KIN 650, Internship*	(2-4) Cr/F

\*Note: Proof of 100 days of leadership experience is required prior to taking this course.

**Elective Courses (must successfully complete at least one)**

KIN 545, High Angle Rescue	2
KIN 546, Whitewater Canoeing	3
KIN 547, Lead Rock Climbing	3
KIN 548, High Altitude Mountaineering	4
KIN 549, Wilderness Programming Skills	4-8
KIN 782, Therapeutic Applications of Adventure Programming	4
KIN 693C, Teaching Assistantship	(2) Cr/F

**University Required Courses**

ENGL 501, Introduction to Prose Writing	4
---	---

Other: Core of courses emphasizing the particular area or population in outdoor education of interest to student, e.g., business, education, psychology-selected with assistance of an adviser.

**Sport Studies Option**

Sport studies is an interdisciplinary option in the Department of Kinesiology that provides a foundation for a variety of career paths in school and college athletics, including coaching, administration, marketing, and sports information. The major also prepares students for further graduate study in areas such as sport psychology. Some sport studies courses are appropriate for students with career interests in other industry segments (e.g., pro-sports, broadcasting), but those students must choose other majors (e.g., business or journalism). Students take a core of foundation courses (e.g., The Sport Industry) as well as electives in applied areas such as sport marketing, athletic administration, and sport psychology. Majors must earn a grade of B- (2.67) or better in KIN 565 and KIN 580 and a grade of C (2.0) or

**Credits**

better in each required University and KIN course. Cognate courses are required in supporting areas such as business, psychology, or in any other approved areas. 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 option coordinator, Stephen Hardy.

**Required Courses**

Required Courses	Credits
KIN 560, Sport Psychology	4
KIN 562, Introduction to Sports Information	4
KIN 565, Principles of Coaching	4
KIN 580, The Sport Industry	4
KIN 741, Social Issues in Contemporary Sports	4
KIN 761, Senior Seminar in Sport Studies	4

**Electives**

Sixteen credits of approved sport studies electives to include KIN 650 or KIN 696.

**University Required Courses**

CS 401, Computer Applications	4
PSYC 401, Introduction to Psychology	4
One approved statistics course	4

**Cognate Requirement (outside of Department of Kinesiology)**

Students must complete a package of cognate courses approved by the faculty (minimum 20 credits).

**Physical Education Pedagogy Option**

Pedagogy is the art and science of teaching. This option integrates a general education background with the theoretical and process knowledge involved in teaching movement-based elementary and secondary physical education programs. Extensive practicum experiences prepare students to teach preschool children, school-aged youth, and young adults, including students with developmental disabilities.

The physical education pedagogy option provides the foundation for public school teacher certification through either our four-year certification program, or, if a student chooses to pursue a master's degree with certification, the Department of Education's Fifth-Year Program. All fifth-year candidates must meet the requirements for admission to graduate school (e.g., grade-point average of 2.67 or above and 800 or above on the Graduate Record Examination). Internal transfer candidates must have a minimum GPA of 2.67 and pass the Praxis I, state licensure exam before admission to the option. All physical education pedagogy option students must receive a "C" grade (2.0) or better in all KIN required courses, including: KIN 655, Middle School

and Secondary PE Pedagogy; KIN 666, Middle School and Secondary PE Practicum; KIN 610, Elementary PE Pedagogy; KIN 781, Inclusion in PE; and KIN 570, Elementary PE Practicum. Pedagogy majors are admitted with conditional status. In order to obtain full-time status in the option, majors must pass the Praxis I state licensure exam before classes begin in Fall of their sophomore year and maintain at least a 2.67 overall GPA at the start of their junior year. For questions about this program, contact the option coordinator, Steven Wright, at (603) 862-4408, or e-mail Steven.Wright@unh.edu.

Required Courses	Credits
KIN 500, Historical/Contemporary Issues Physical Education	4
KIN 501, First Aid: Responding to Emergencies	2
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 Health	4
KIN 652, Clinical Kinesiology	3
KIN 653B, Biomechanical Analysis of Movement	2
KIN 655, Middle School/Secondary Physical Education	4
KIN 666, Middle/Secondary Physical Education Practicum	4
KIN 675, Motor Development and Learning	4
KIN 676, Adventure Activities	3
KIN 780, Psychological Factors in Sport	4
KIN 781, Inclusion in Physical Education	4

Required Education Courses	Credits
EDUC 700/800, Educational Structure and Change	2-4
EDUC 705/805, Alternative Perspectives/Nature of Education	2-4
KIN/EDUC 694, Courses in Supervised Student Teaching or	4
EDUC 900/901, Internship and Seminar in Teaching	3-6

## Nursing (NURS)

[www.shhs.unh.edu/nursing/](http://www.shhs.unh.edu/nursing/)

(For course descriptions, see page 221.)

**Chairperson:** Lynette A. Ament

**Associate Professors:** Lynette A. Ament, Pamela P. DiNapoli, Susan J. Fetzer, Gene E. Harkless, Raelene Shippee-Rice, Carol L. Williams-Barnard

**Assistant Professors:** Catherine Bernosky de Flores, Joyce Dolphin Cappiello, Christine W. Saltzberg, Gerard A. Tobin, Susanne M. Tracy

**Associate Clinical Professor:** Jeffrey A. Eaton

**Clinical Assistant Professor:** Denise A. Cole, Elizabeth J. Evans, Donna D. Davis, Martha Leighton, Pamela J. Levesque, Susan M. McHugh, Paula L. McWilliam, Donna M. Pelletier

**Lecturer:** Karen S. Niland

The nursing program is nationally accredited by the Commission on Collegiate Nursing Education, One Dupont Circle NW, Suite 530, Washington, DC 20036-1120. It reflects the mission and goals of the University and focuses on the uniqueness of each individual. The mission of the Department of Nursing 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. Its goals are to help nursing students develop knowledge and skills essential to the present and future practice of nursing. Graduates of the program 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.

The curriculum is divided into biological, social sciences, and humanities as a foundation for courses in the major; and nursing courses, which emphasize caring, critical thinking, problem solving, decision making, and developing clinical skills. Clinical experiences are offered in area hospitals and in community health agencies. The senior year culminates in a practicum in which students apply curriculum concepts to an interest area of their choice.

The faculty of the nursing program 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 3.20 minimum cumulative grade-point average and 3.5 in the nursing major.

The following prerequisite courses must be completed successfully prior to nursing major course work: ENGL 401; ZOO 507-508; NUTR 400; and PSYC 401. MICR 501 must be taken prior to or concurrent with NURS 501. A course in statistics must be completed prior to, or taken concurrent with, NURS 645, Nursing Research. Prerequisite courses require grades of C or better and only one prerequisite course may be repeated one time in order to progress in the major.

Most of the prerequisite courses also meet general education requirements. A cumulative grade-point average of 2.50 must be maintained throughout the program. Major courses require a minimum grade of C.

Students are responsible for their own transportation to clinical agencies, uniforms, professional equipment, liability and health insurance coverage, criminal background checks, and identified required immunizations. Additional costs associated with the program include laboratory fees each semester beginning in sophomore year and fees associated with attendance at professional meetings. Students must be certified in cardiopulmonary resuscitation by departmental deadlines. Students will be dropped from the major if documentation is not received by the first day of class.

Freshman Year	Fall	Spring
ZOOL 507-508, Human Anatomy and Physiology	4	4
NUTR 400, Nutrition Health and Well Being	4	-
ENGL 401, First-Year Writing	4	-
PSYC 401, Introduction to Psychology Electives (3)	-	4
<b>Total</b>	<b>16</b>	<b>16</b>

Sophomore Year	Fall	Spring
MICR 501, Microbes in Human Disease	4	-
NURS 501, Introduction to Nursing	4	-
One course in statistics*	4	-
NURS 502, Concepts of Pathophysiology/ Pharmacology	-	4
NURS 508, Foundations of Nursing Judgment-	-	4
NURS 514, Techniques of Clinical Nursing	-	4
Electives (2)	4	4
<b>Total</b>	<b>16</b>	<b>16</b>

Junior Year	Fall	Spring
NURS 615, Care of the Adult	4	-
NURS 615C, Care of the Adult Clinical	4	-
NURS 619, Clinical Decision Making I	4	-
NURS 620, Caring for the Childbearing- Rearing Family	-	4
NURS 620C, Caring for Childbearing- Rearing Family Clinical	-	4
or		
NURS 618, Caring for People w/ Alterations in Mental Health	-	2
NURS 618C, Caring for People w/ Alterations in Health Clinical	-	2
and		
NURS 624, Nursing in the Community	-	2
NURS 624C, Nursing in the Community Clinical	-	2
NURS 622, Clinical Decision Making II	-	4
NURS 645 Nursing Research	4	-
Elective	-	4
<b>Total</b>	<b>16</b>	<b>16</b>

Senior Year	Fall	Spring
NURS 703, Nursing Leadership/Management and the Org. Context	4	-
NURS 618, Caring for People w/Alterations in Mental Health	2	-
NURS 618C, Caring for People w/ Alterations in Health Clinical	2	-
and		
NURS 624, Nursing in the Community	2	-



NURS 624C, Nursing in the Community Clinical	2	-
<i>or</i>		
NURS 620, Caring for the Childbearing- Rearing Family	4	-
NURS 620C, Caring for Childbearing- Rearing Family Clinical	4	-
NURS 720, Clinical Decision-Making III	-	6
NURS 720C, Clinical Decision-Making III	-	6
HHS 698, Medication Safety and Admin Electives (2)	1	-
	3	4
<b>Total</b>	<b>16</b>	<b>16</b>

\*HHS 540, PSYC 402, SOC 502, etc.

**R.N. Baccalaureate Program**

Registered nurses with a valid registered nurse license who meet University admission criteria may pursue, on a full- or part-time basis, a bachelor of science degree with a major in nursing at UNH-Durham, Keene, or at UNH Manchester.

Curriculum requirements may be met through transfer credits, course enrollments, and challenge examinations. An R.N. license and one year of practice experience is preferred for nursing major courses.

The nursing component is based on the belief that R.N. students enter the program with knowledge and competence gained through previous educational and work experiences. This knowledge and competence can be demonstrated through completion of required baccalaureate-level nursing courses. Individualized plans of study are developed to enable completion of nursing content.

The R.N. student must earn a minimum of 128 credits and have a 2.50 cumulative grade-point average in order to enroll in clinical nursing courses and maintain that grade-point average throughout their coursework. A minimum grade of C is required in each nursing course.

Interested R.N.s should consult with the R.N. program coordinator.

**Occupational Therapy (OT)**

[www.shhs.unh.edu/ot/](http://www.shhs.unh.edu/ot/)

(For course descriptions, see page 223.)

**Chairperson:** Elizabeth L. Crepeau

**Professor:** Elizabeth L. Crepeau

**Associate Professors:** Lou Ann Griswold, Shelley E. Mulligan, Barbara Prudhomme White

**Assistant Professors:** Susan C. Merrill, Douglas C. Simmons, Kerryellen Vroman,

**Clinical Assistant Professor:** Elizabeth A. Stewart, Kelly E. Thompson, Therese Willkomm

Occupational therapy enables people to participate in daily life activities including leisure, work, self-care, and home management. Occupational therapists work with people of all ages to gain or regain skills and abilities or adapt tasks within their natural environment. Occupational therapy education includes studies in liberal arts, biological, behavioral, and health sciences, and occupational science and occupational therapy.

The occupational therapy program is accredited by the Accreditation Council for Occupational Therapy Education (ACOTE). ACOTE is located at the American Occupational Therapy Association, 4720 Montgomery Lane, P. O. Box 31220, Bethesda, MD 20824-1220. ACOTE's phone number is (301) 652-2682. 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.

**Combined Bachelor of Science/Master of Science Program**

Graduates of professional programs must complete a professional master's degree in occupational therapy in order to enter the field. The University of New Hampshire Department of Occupational Therapy offers a combined bachelor's degree/master's degree program. Students may enter as freshmen or transfer into the B.S./M.S. program at the end of 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.

**Pre-Professional Curriculum**

Students begin the B.S./M.S. curriculum with three years of pre-professional courses, which include courses in biological and social sciences as well as occupational therapy. In addition to University general education courses, students take the following core courses during their first three years:

- ENGL 401, First-Year Writing
- PSYC 401, Introduction to Psychology
- ZOOL 507 and 508, Human Anatomy and Physiology
- Social Sciences: three courses in the social sciences,

- such as history, sociology, psychology, economics, anthropology
- OT 500, The Behavior and Development of Children
- OT 501, Development Tasks of Adulthood
- OT 510, Exploring Occupational Therapy and Occupation
- OT 685, Psychosocial Disorders and Everyday Life
- KIN 706 and 707, Neurology and Neurology Lab Statistics

**Additional requirements include:**

- an experiential learning course for four credits;
- a health or social policy course;
- a minor or self-designed concentration area that relates to health and human services for a total of 20 credits;

**Professional Curriculum**

Students in the B.S./M.S. curriculum begin the professional program in the senior year and complete the following courses:

- OT 741, Human Occupation
- OT 746, Transitions: Student to Professional
- OT 751, Mind Body Systems Neurologically-based Function and Dysfunction
- OT 752, Human Movement and Environmental Effects on Everyday Occupations
- OT 762, Evaluation Principles and Methods
- OT 763, OT Intervention
- OT 764, OT Intervention Lab
- OT 771, Enabling Participation in Community Groups
- OT 772, Occupation, Health and Community Programming
- OT 792, Level I Fieldwork

At the end of this 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 and a minimum of 3.0 G.P.A. in prerequisite courses is required for admission to the master's degree program.

Please refer to the Graduate Catalog for additional information about the master's program and the fifth year of the occupational therapy curriculum including fieldwork requirements.

Students have four academic years to complete the professional curriculum including level II field work. They will then be eligible to sit for the certification examination administered by the National Board of Certification of Occupational Therapists (NBCOT). Consistent with NBCOT, students must sit for the certification examination within two years of completion of coursework and fieldwork. A felony conviction may affect a graduate's ability to sit for the NBCOT certification examination and/or obtain state licensure.

Students are responsible for transportation to off-campus practicum and fieldwork locations and must purchase personal liability

ity insurance for coverage for the practical components of the curriculum.

Curriculum review and revision is undertaken annually. The Department of Occupational Therapy works closely with students during academic advising sessions and shares information about policy and requirement changes during registration periods as well as throughout the academic year. Students are also 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 on Blackboard.

### **Disabilities Minor**

This interdisciplinary minor is offered by several of the Departments in the School of Health and Human Services. The minor will prepare undergraduate students to apply their unique disciplinary skills in an interdisciplinary service delivery environment to work with and support individuals with disabilities and their families to become fully engaged in their communities, achieving independence, and increasing quality of life. The 18 credit curriculum consists of 2 required courses (EDUC 750, HHS 798), 2 elective courses, and a 2 credit independent study.

### **Recreation Management and Policy (RMP)**

[www.unh.edu/rmp/index.shtml](http://www.unh.edu/rmp/index.shtml)

(For course descriptions, see page 235.)

**Chairperson:** Janet R. Sable

**Professors:** Lou G. Powell, Janet R. Sable

**Associate Professors:** Robert J. Barcelona, Ann L. Morgan

**Assistant Professor:** Joshua Carroll

**Affiliate Assistant Professor:** James Hilton

**Clinical Assistant Professors:** Patricia J. Craig, Jill Gravink

**Clinical Instructors:** Tom Carr, David Lee

**Senior Instructor:** Heather Bowen

**Adjunct Faculty:** Maryellen Burke, Dennis M. Byrne, Heather Kiley, Cari A. Moorhead, Donna Marie Sorrentino

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 the public health, 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. Graduates are employed by community recreation agencies, resorts, conference centers, youth services agencies, hospitals, rehabilitation centers and long-term care facilities. 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 is nationally accredited by the National Recreation and Parks Association/American Association of Leisure and Recreation. The department's curriculum supports a broad-based liberal education and an opportunity to acquire specialized professional knowledge and skills.

### **Curriculum Structure**

Students entering the major may choose either: 1) program administration, which includes the professional core and required courses related to program administration, or 2) therapeutic recreation, which includes the professional core and required courses in therapeutic recreation.

### **International Study in Recreation and Leisure**

A semester abroad sponsored by the American Universities International Program is available to students pursuing a degree in recreation management and policy. Programs in Scotland, Australia, New Zealand, South Africa, or Belize provide discipline-related exchange opportunities. Approval by the curriculum director is required approximately one year before departure. Eleven transfer credits can be granted. Other destinations can be negotiated through the Center for International Education on campus.

### **Core Courses**

All majors must complete a core curriculum of eight courses: RMP 490, Recreation and Leisure in Society; RMP 501, Recreation Services for Individuals with Disabilities; RMP 557, Recreation Services Program Design and Planning; RMP 563, Recreation Management and Policy Practicum; RMP 654, Professional Development and Ethics; RMP 663, Management and Policy in Leisure Services; RMP 664 (A or B), Professional Internship; RMP 724, Grantsmanship, Evaluation, and Research; and RMP 772, Law and Public Policy in Leisure Services.

A supervised internship (RMP 664) is required of all majors. 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 complete a minimum of 560 hours of supervised field study within fourteen weeks. Specific requirements are identified in the Internship Manual available from the Department of Recreation Management and Policy.

### **Program Administration Option**

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 14-16 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 meeting planning, municipal park and recreation services, recreational sports, commercial/entrepreneurial recreation businesses, youth serving agencies, resorts, and natural resource management positions in state and federal agencies.

In addition to the required core courses, students who pursue the program administration option must complete the following departmental requirements: RMP 558, Program Supervision and Leadership; RMP 665, Applied Marketing and Communication in Recreation Services; RMP 770, Management and Design of Recreation and Park Facilities; two RMP course electives; CS 401, Computer Applications, or an approved equivalent; HHS 540 or other descriptive statistics; PSYC 401, Introduction to Psychology; FS 525, Human Development; or SW 550. Program administration students must complete a minor or emphasis area of 18-20 credits to support their specific career goals.

### **Therapeutic Recreation Option**

Therapeutic recreation utilizes recreation to help 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- to 16-week full-time clinical internship under the supervision of a Certified Therapeutic Recreation Specialist (CTRS). Students must purchase personal liability insurance for coverage for the clinical components of the curriculum. The Bureau of Labor Statistics reports that therapeutic recreation is one of the fourteen fastest growing occupations in the country. The occupational outlook statistics reflect a "39 percent increase in demand for recreational therapists with strong clinical backgrounds" for the beginning of the twenty-first century. Upon successful completion of this option, students are prepared to meet sitting requirements for the National Council for Therapeutic Recreation Certification Examination.

In addition to the required core courses, students who choose this option must complete the following departmental requirements: RMP 502, Foundations of Therapeutic Recreation; RMP 503, Therapeutic Recreation Rehabilitation Principles and Interventions; RMP 504, Therapeutic Recreation Mental Health Principles and Interventions; RMP 602, Clinical Treatment Lab I; RMP 603, Assessment and Treatment Planning in Therapeutic Recreation; RMP 604, Therapeutic Communication and Facilitation Techniques in Therapeutic Recreation; RMP 605, Clinical Treatment Lab II; CS 401, Computer Applications or approved equivalent; HHS 540, Statistics, or equivalent; PSYC 401, Introduction to Psychology; PSYC 561, Abnormal Behavior; FS 525, Human Development; ZOOL 507-508, Human Anatomy and Physiology; KIN 652, Clinical Kinesiology, and KIN 653A, Musculoskeletal Assessment.

#### **Criteria for Admission and Retention**

Internal transfer students interested in applying to the major must meet with an RMP faculty member prior to receiving an application for admission to the major. Transfer applications are accepted throughout the year, however priority is given to applications received by October 15th for Spring and March 15th for Fall. Applications can be obtained from the Department of Rec-

reation Management and Policy. Students within the major are required to maintain a minimum 2.50 semester grade-point average every semester to retain good academic standing within the major. In addition, student majors must obtain a grade of C (2.00) or better in RMP courses and a grade of C- (1.67) or better in all other courses specifically required by the department.

#### **Child Life Minor**

This interdisciplinary minor is offered to a limited number of students by the therapeutic recreation option in the Department of Recreation Management and Policy and the Department of Family Studies. Upon completion of course requirements, students will be able to sit for the Child Life Specialist exam. All students complete three core courses: RMP 502, FS 525 and FS 623. Therapeutic Recreation students will select two courses from the following: FS 635, FS 641, FS 709, FS 734, and FS 772. Students will complete an Internship which will entail a minimum of 480 hours of experience and be supervised by a certified Child Life Specialist. Therapeutic recreation majors will be assigned a minor adviser from family studies.

#### **Social Work (SW)**

[www.shhs.unh.edu/sw/](http://www.shhs.unh.edu/sw/)

(For course descriptions, see page 238.)

**Chairperson:** Jerry D. Marx

**Associate Professors:** Mary Banach, Linda Rene Bergeron, Cynthia Anne Broussard, Robert E. Jolley, Jerry D. Marx, Sharyn J. Zunz

**Assistant Professors:** Vernon Brooks Carter, Karen R. Oil, Martha H. Ortmann, Melissa Wells

**Clinical Assistant Professors:** Martha A. Byam, Kim Kelsey, Susan A. Lord, Sharon B. Murphy, Lee P. Rush

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 knowledge, skills, and value base of social work and the liberal arts. Social work graduates apply their education in working with individuals, groups, and social systems. In addition, the program prepares qualified students to pursue graduate education in schools of social work and other graduate programs in human services.

The baccalaureate program at the University of New Hampshire 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 foundation of social welfare policy, social work practice, human behavior in the social environment, research, and field education. Course content on values and ethics, populations-at-risk, human diversity, and social and economic justice is integrated throughout the curriculum.

To enable students to gain direct experience and to integrate classroom content with the demands of professional social work practice, students complete an introductory-year service learning experience as well as a 450-hour social work internship over two semesters during the senior year. The senior field placement is a "capstone" experience in the final year of the baccalaureate program and is arranged between the student and the field education coordinator. Students are required to pay a liability insurance fee for their off-campus field education 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 and full membership in the National Association of Social Workers. In addition, qualified graduates may be eligible for advanced standing in M.S.W. programs which offer advanced standing.

#### **Academic Program**

Social work majors are required to take SW 424, 525, 550, 551, 601, 622, 623, 625, 640, 640A, 641, 641A. In addition, students are expected to successfully complete four courses taken from the disciplines of anthropology/sociology, human biology, philosophy, and psychology. Many of these may also fulfill general education requirements. Students wishing to minor in social work are required to take SW 424, SW 525 and any three other courses offered by the department, excluding SW 640, 641. 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.

# COLLEGE OF LIFE SCIENCES AND AGRICULTURE

[www.colsa.unh.edu/](http://www.colsa.unh.edu/)

William R. Trumble, Dean (6/30/07)  
Thomas Brady, Dean Designate (7/1/07)  
Alberto B. Manalo, Associate Dean

Department of Animal and Nutritional Sciences  
Department of Biochemistry and Molecular Biology  
Department of Microbiology  
Department of Natural Resources  
Department of Plant Biology  
Department of Resource Economics and Development  
Department of Zoology

## Bachelor of Arts

Animal Sciences  
Bioscience and Technology  
Equine Sciences  
Preveterinary Medicine  
Biochemistry  
Biology  
Ecology, Evolution, and Behavior Biology  
General Biology  
Marine and Freshwater Biology  
Molecular, Cellular, and Developmental Biology  
Community and Environmental Planning  
Dairy Management  
Environmental Conservation Studies  
Environmental Horticulture  
Environmental and Resource Economics  
Environmental Sciences\*  
Ecosystems  
Hydrology  
Soil and Watershed Management  
International Affairs (Dual Major)  
Medical Laboratory Science  
Clinical Chemistry  
Clinical Hematology  
Clinical Immunohematology  
Clinical Microbiology  
Microbiology  
Nutritional Sciences  
Plant Biology  
Tourism Planning and Development  
Wildlife Ecology  
Zoology

## Bachelor of Science in Forestry

Forestry\*  
Forest Management  
Forest Science

\*Designated degree (the name of the specialization is on the diploma, e.g., B.A. in Ecosystems).

**The objectives of the College of Life Sciences and Agriculture are to give students a fundamental education in the biological, natural, and social sciences and to introduce them to the arts and humanities. In addition, advanced technical and professional courses are offered to prepare students for graduate school or entry-level positions in areas concerned with improving the quality of life. 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 the basic and applied aspects of life sciences and agriculture, coupled with careful selection of supportive courses, ensures graduates 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 as greenhouse, nursery, farm, and natural resource managers; or as consultants, arborists, and environmental planners.

For those graduates with international aspirations, the Peace Corps and the Foreign Agriculture Service employ farm production experts, soil and water managers, market analysts, agricultural engineers, teachers, plant and animal breeders, and nutrition specialists.

Additionally, departments prepare students for advanced study in their chosen field of interest where graduate study is required for attaining their career goals.

general education requirements. Students should see their adviser for specific information.

## Bachelor of Arts

The bachelor of arts degree is available in plant biology and zoology. Students must accumulate 128 credits, attain a 2.00 cumulative grade-point average, satisfy general education requirements, and complete a foreign language requirement (see page 18 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 except forestry. 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.

## Bachelor of Science in Forestry

The bachelor of science in forestry is a professional, designated degree available to students majoring in forestry. (For major requirements, see page 94.)

## General Science Certification

Students majoring in animal sciences, biochemistry, biology, environmental conservation studies, environmental sciences, forestry, microbiology, plant biology, wildlife ecology, 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.

## 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



## Advising System

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 at the COLSA Advising Center and in the dean's office, Rudman Hall.

## Undeclared Status

Students may select a major upon entering the college or may 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:

### Fall

LSA 400  
CHEM 403  
BIOL 411  
General education requirement  
An introductory course in any department in the college

### Spring

CHEM 404  
BIOL 412  
MATH 424B  
General education requirement

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.

## Combined Programs of Study

In addition to pursuing a single major, students may combine programs of study as follows (see University Academic Requirements for more information):

*Mimors:* See University Academic Requirements, page 16.

*Second Major:* See page 19.

*Dual-Degree Programs:* See page 18.

*Student-Designed Majors:* See Special University Programs, page 109.

*Other combined and interdisciplinary opportunities:* See page 110.

## UNH-EcoQuest New Zealand Study Abroad Program

The Department of Natural Resources 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, 661, 662, and 663 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, 662 for 8 credit hours) summer session. Contact Donna Dowal, (603) 862-2036.

## Interdisciplinary Minors

### Agribusiness

The agribusiness minor is designed to provide students in disciplines other than environmental and resource economics 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 business will also find this minor very useful. The courses in the agribusiness minor emphasize the applications of economic and business management principles.

### Required

EREC 411, Environmental and Resource Economics Perspectives  
EREC 501, Agricultural and Natural Resource Product Marketing or MKTG 550, Survey of Marketing  
EREC 504, Business Management for Natural Resource Firms  
EREC 606, Land Economic Perspectives: Uses, Policies, and Taxes  
EREC 715, Linear Programming and Quantitative Models

For additional information, contact John M. Halstead, Environmental and Resource Economics Program Coordinator, 309 James Hall, (603) 862-3914.

### Animal Behavior Minor

The animal behavior minor is designed for students who are interested in learning more about the mechanisms underlying the behavior of many different types of animals, as well as the reasons why certain behaviors may have evolved. Students interested in the animal behavior minor must complete a total of 20 credits of coursework (approximately 5 courses), from the list of courses below. Students must receive a grade of C-

or better in each of these courses and no more than eight major requirement credits can be counted toward the minor. If a student is interested in using a relevant course that is not included in the following list, they must seek permission from either Dr. Michelle Scott or Dr. Win Watson in the Zoology department.

### Required Courses (2):

ZOOL 713, Animal Behavior  
ZOOL 777, Neurobiology and Behavior

### Elective Courses (must take three, and one must be a psychology course):

PSYC 512, Psychology of Primates  
PSYC 521, Behavior Analysis  
PSYC 531, Psychobiology  
PSYC 710, Visual Perception  
PSYC 731, Brain and Behavior  
PSYC 733, Drugs and Behavior  
PSYC 735, Neurobiology of Mood Disorders  
PSYC 737, Behavioral Medicine  
PSYC 741, Animal Cognition  
BCHM 702, Endocrinology  
ZOOL 714, Ecology of Animal Behavior (Shoals)  
ZOOL 733, Behavioral Ecology

### Community Planning

Land use and its impact on the quality of life has emerged as a major policy issue in New Hampshire, as well as at the national and global levels. Planning is a multidisciplinary profession that requires people who understand the technical tools and social concepts required to guide the selection and implementation of alternative schemes compatible with long term environmental and economic objectives. Students may supplement their major and general education course 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.

### Required

*Group I-Theory and practice of planning (all courses required)*  
CD 415, Community Development Perspectives  
CD 614, Fundamentals of Planning (prereq: EREC 411)  
CD 777, Topics in Community Planning (prereq: CD 614)

### *Group II-Tools and applications in planning (choose one)*

CD 672, New Hampshire Real Estate  
CIE 505, Surveying and Mapping (coreq: MATH 425)  
NR 757, Photo Interpretation and Photogrammetry  
NR 760, Geographic Information Systems in Natural Resources  
NR 609, Soils and Community Planning  
NR 703, Watershed Water Quality Management (prereq: NR 504 or permission)  
SOC 660, Urban Sociology  
GEOG 590, Introductory Cartography

*Group III-Resource management theory (choose one)*

ECON 641, Public Economics (prereq: ECON 401, ECON 605, or permission)

EREC 572, Introduction to Natural Resource Economics  
EREC 606, Land Economic Perspectives: Uses, Policies, and Taxes (prereq: EREC 411)

EREC 627, Community Economics (prereq: EREC 411 or equivalent)

EREC 756, Rural and Regional Economic Development  
TOUR 767, Social Impact Assessment

*Group IV-Additional complementary electives (optional)*

CD 794, Community Planning Internship

GEOG 582, Economic Geography

GEOG 583, Urban Geography

For additional information, contact Professor Kelly L. Giraud, Community Development and Environmental Planning Program coordinator, 309 James Hall.

**Genetics (GEN)**

[genetics.unh.edu/](http://genetics.unh.edu/)

(For course descriptions, see page 185.)

**Professors:** Thomas M. Davis, Clyde L. Denis, J. Brent Loy, Subhash C. Minocha, Robert L. Taylor, Jr.

**Associate Professors:** John J. Collins, Estelle M. Hrabak, Anita S. Klein, W. Kelley Thomas, Louis S. Tisa

**Assistant Professors:** Vaughn Cooper, Cheryl Whistler

**Research Assistant Professor:** Kevin Culligan

**Research Associate Professor:** William A. Gilbert

The interdepartmental program in genetics involves faculty from the departments of Animal and Nutritional Sciences, Biochemistry and Molecular Biology, Microbiology, Plant Biology, and Zoology. Undergraduates interested in genetics can pursue a minor (see requirements below) or can concentrate in genetics within majors such as Molecular, Cellular, and Developmental Biology, or General Biology. Students interested in preparing for graduate work in genetics should contact the chairperson of the genetics program early in their undergraduate careers for advice on courses.

**Genetics Minor**

Completion of 20 credits from the courses listed below, with a grade of C- or better, is required for a minor in genetics. At least two courses should be selected from each of the categories. Four (or more) credits of GEN 795, Investigations in Genetics, may be counted as one course toward fulfillment of the minor. Courses taken on a pass/fail

basis may not be used for a minor. For the minor, 8 of the 20 credits can also be applied toward completion of your major degree. During the final semester, an application should be made to the dean to have the minor shown on the academic record.

**Category 1**

GEN 705, Population Genetics (prereq: BIOL 604; BIOL 528)

GEN 715, Molecular Evolution (prereq: BIOL 604)

GEN 723, Quantitative Genetics (prereq: BIOL 604; BIOL 528 strongly recommended)

GEN 753, Cytogenetics (prereq: BIOL 604)

GEN 766, Environmental Genomics (prereq: BIOL 604)

GEN 772, Evolutionary Genetics of Plants (prereq: BIOL 604 or equivalent; PBIO 412 or BIOL 411/412 or equivalent)

ZOOL 665, Conservation Genetics

**Category 2**

BIOL 604, Principles of Genetics (prereq: BIOL 411-412 and CHEM 403-404)

GEN 706, Human Genetics (prereq: BIOL 604 or ANSC 612)

GEN 711, Genomics and Bioinformatics (prereq: BIOL 604)

GEN 754, Laboratory in Biochemistry and Molecular Biology of Nucleic Acids (prereq: BCHM 658/659 or 751; or permission)

GEN 771, Molecular Genetics (prereq: BCHM 658 or 751; BIOL 604; or permission)

GEN 774/775, Plant Biotechnology and Genetic Engineering (prereq: BIOL 604 or permission)

GEN 704, Genetics of Prokaryotic Microbes (prereq: MICR 503 and BCHM 658)

**Marine Biology**

The minor is designed to provide a foundation in marine biology and related sciences to any UNH undergraduate student with the exception of students enrolled in the marine and freshwater biology option of the biology program. It is offered through the Zoology department. The minor consists of 20 credits with grades of C- or better and no pass/fail courses. No more than 8 major requirement credits may be used towards the minor. All courses in the program are selected in consultation with the minor adviser (contact Dr. Larry Harris, Zoology department).

Students should declare their intention to minor in marine biology before the end of the junior year. During the final term, students should apply to the dean to have the minor shown on their transcript.

**Required**

Five courses (20 credits); 2 of the 5 courses (8 credits) can count towards the major.

*Introductory course in Marine Science (choose one):*

ZOOL/PBIO 503, Introduction to Marine Biology

ESCI 501, Introduction to Oceanography

ZOOL 674, Field Marine Science

Four additional courses selected in consultation with the minor adviser.

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).

**Sustainable Living**

Issues of sustainable living involve every aspect of life. To learn about sustainable living, a community and bioregional context is desirable. The student must be aware of environmental issues and problems, have an understanding of ecology, increase his or her capacity to think about complex problems, and have hands-on learning experiences to approach effectiveness in sustainable living.

**Required**

BIOL 541, General Ecology,

or NR 527, Forest Ecology

NR 435, Contemporary Conservation Issues and

Environmental Awareness,

or NR 502, Forest Ecosystems and Environmental Change

NR 784, Sustainable Living

NR 785, Systems Thinking for Sustainable Living

*Choose one of the following*

EDUC 630, Development of Food and Fiber in Third-World Countries

ECON 607, Ecological Economics

GEOG 673, Environmental Geography

NR 501, Introduction to Soil Sciences

NR 504, Freshwater Resources

NR 719, Wetlands Restoration and Mitigation

NR 720, International Environmental Politics and Policies for the 21st Century

NR 724, Resolving Environmental Conflicts

NR 725, Environmental Communications and Advocacy

*Choose one of the following*

NR 601, Environmental Conservation and Sustainable Living Internship

NR 665, Applied American Environmental Philosophy

For additional information please contact Dr. Robert Eckert, Natural Resources Department, James Hall.

**Water Resources Management**

Students in Biology, Environmental Conservation Studies, Forestry, Plant Biology, Wildlife Ecology, Environmental Engineering, Environmental and Resource Economics, Community Development, 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.



**Required**

- NR 504, Freshwater Resources,
- NR 703, Watershed Water Quality Management

Choose one of the following

- EREC 676, Economics of Water Use and Quality Management, or ESCI 705, Principles of Hydrology, or NR 604, Watershed Hydrology

Choose from the list below or from number 3 above for 8 additional credits

- NR 658, Introduction to Geographic Information Systems
- NR 711, Wetland Resource Management
- NR 716, Wetland Delineation
- NR 719, Wetlands Restoration and Mitigation
- NR 721, Ecology of Polluted Waters
- NR 760, Geographic Information Systems in Natural Resources
- NR 542, Forestland Measurement and Mapping
- ESCI 710, Groundwater Hydrology
- ZOOL 708, Stream Ecology
- ZOOL 717, Biology of Lakes

For additional information, contact William McDowell, Natural Resources, James Hall, (603) 862-2249.

**Wetland Ecology**

Students in biology, environmental conservation studies, forestry, plant biology, environmental sciences, wildlife ecology, and zoology should consider obtaining a minor in wetland ecology. There is a strong demand among consulting firms, and state and federal agencies for employees with knowledge and experience relevant to wetland resource management.

**Required**

- NR 504, Freshwater Resources,
- or NR 703, Watershed Water Quality Management
- NR 711, Wetland Ecology and Management
- NR 716, Wetland Delineation,
- or NR 719, Wetlands Restoration and Mitigation,
- or ZOOL 708, Stream Ecology

**Recommended**

- ESCI 653, Estuaries and Coasts
- PBIO 566, Systematic Botany
- PBIO 625, Introduction to Marine Botany
- PBIO 721, Microscopic Algae
- PBIO 722, Marine Phycology
- PBIO 747, Aquatic Higher Plants
- MICR 713, Microbial Ecology and Evolution
- NR 527, Forest Ecology
- NR 765, Community Ecology
- NR 721, Ecology of Polluted Waters
- NR 425, Field Dendrology
- NR 501, Introduction to Soil Sciences
- NR 602, Natural Resources and Environmental Policy
- NR 706, Soil Ecology
- ZOOL 725, Marine Ecology

For additional information, contact David Burdick, (603) 862-5129 or William McDowell, (603) 862-2249.

**Programs of Study****Animal Sciences (ANSC)**

[www.anscandnutr.unh.edu/](http://www.anscandnutr.unh.edu/)

(For course descriptions, see page 148. See also *Nutritional Sciences*, page 97, and *Medical Laboratory Science*, page 95.)

The undergraduate Animal Sciences Program at UNH provides students with fundamental and applied education in nutrition, reproduction, genetics, physiology, pathology, cell biology, and large animal management. Courses are offered in all areas of dairy and light horse production.

The Department of Animal and Nutritional Sciences has four major degree programs. They are a) animal sciences with options in equine sciences (equine industry and management, therapeutic riding, and equine science), bioscience and technology, and preveterinary medicine; b) dairy management; c) medical laboratory science with options in clinical chemistry, hematology, immunohematology, and microbiology; and d) nutritional sciences. The department is housed in Kendall Hall, a five-story animal science facility. This building houses the New Hampshire Veterinary Diagnostic Lab; an electron microscopy facility; and nutrition, physiology, and cell culture labs, all of which provide opportunities for students interested in basic animal sciences. The department maintains a light horse center and offers an equine program with courses in management, equine diseases, equine discipline, physical performance, and horsemanship specializing in dressage and combined training. Dairy facilities include housing for more than one hundred milking-age cows in the new \$1.6-million Dairy Teaching and Research Center. Responding to a need by farmers for scientific research to support organic dairy efforts, UNH is the first land-grant university to have an organic dairy farm. It is a research center for organic production and management and an education center for organic dairy farmers, farmers considering the transition to organic, and students of sustainable agriculture. The organic dairy is housed at the Burley-Demeritt Farm. Miniature swine are maintained at the Burley-Demeritt farm. Poultry facilities also permit research and work experience in poultry science.

The animal sciences degree has three program options: 1) equine sciences, 2) bioscience and technology, and 3) preveterinary medicine. In addition to satisfying the specific requirements of the major and options, all animal science majors must complete the

University general education requirements.

The UNH equine sciences option offers a unique and well-rounded program of study to students pursuing a career in the horse industry. The equine program's outstanding physical facilities are complemented by a strong, science-based curriculum taught by an experienced and talented faculty.

Students graduating from the UNH equine program receive a B.S. in animal science with a concentration in equine science. The core curriculum of study provides students with a solid background in the biological and equine sciences. Students then choose one of three tracks for career specialization: I) Equine Industry and Management, II) Therapeutic Riding, III) Equine Science.

Students in the bioscience and technology option often specialize in nutrition, reproduction, genetics, or cell biology. This curriculum prepares students for advanced training in graduate school programs or in various medical professions; entry-level positions in biomedical, biotechnical, pharmaceutical, and other scientific companies; or technical positions in many research and medical units.

The preveterinary medicine option is designed to meet the academic requirements of most veterinary schools. Requirements may be met within three years, allowing students to apply to veterinary school during their senior year. However, most students finish their senior year, thus allowing more time for electives, concentration in areas of secondary interest, and completion of graduation requirements.

Employers in agriculture prefer to hire an agricultural graduate with extensive knowledge in a related field (e.g., computer science) rather than a graduate in one of these areas with no knowledge of agriculture. Hence, animal science students are encouraged to obtain training in a field that complements study in animal sciences. Such areas may include cell biology, biotechnical skills, communications, computer science, education, or business. This is generally accomplished by either taking a concentration of courses or obtaining a minor in a specialty area. Attainment of sufficient training in a specialty area enhances opportunity for employment. A careers course is offered to help students select and prepare for a particular career area.

Development of optional career goals is important for preveterinary students. Admission to schools of veterinary medicine is highly competitive. Therefore, students in this option are urged to prepare for alternative careers as they complete preveterinary requirements.

All animal science majors are required to complete ANSC 406; CHEM 403-404; and either ENGL 419, 501, or 503. In addition, the requirements in one of the three following options must also be completed:

### ***Bioscience and Technology Option***

BIOL 411-412; PHYS 401-402; MATH 424B; BIOL 528; MICR 503 or BIOL 541; ANSC 511-512 or ZOO 518 and 625/626; CHEM 545 or 651-652; BIOL 604; BCHM 658/659 or 751-752; ANSC 750 and one 700-level ANSC course.

### ***Equine Science Option***

#### **TRACK I—EQUINE MANAGEMENT**

##### **Core Courses**

ZOO 412, Biology of Animals  
 ANSC 404, Introductory Equine Science (waived for TSAS equine management graduates)  
 ANSC 406, Careers in Animal Science  
 ENGL 501, Introduction to Creative Nonfiction, ENGL 519, ANSC 543, or ENGL 529  
 AAS 228, Anatomy and Physiology of Domestic Animals  
 AAS 239, Fundamentals of Animal Health  
 ANSC 432, Animal Forages  
 AAS 235, Animal Nutrition  
 BIOL 528, Applied Biostatistics I  
 ANSC 565, Principles of Horse Trials Management  
 ANSC 620, Equine Diseases (waived for TSAS equine management graduates, but recommended)  
 ANSC 622, Equine Disease Clinic (waived for TSAS equine management graduates, but recommended)  
 ANSC 625, Equine Sports Medicine and Lameness  
 ANSC 697, Equine Seminar (waived for TSAS equine management graduates)  
 EREC 411, Environmental and Resource Economics Perspectives  
 AAS 237, Equine Handling and Care Techniques  
 AAS 246, Animal Business Applications  
 ANSC 605, Equine Business Management  
 ANSC 600, Field Experience (waived for TSAS equine management graduates)  
 ANSC 724, Reproductive Management and Artificial Insemination

##### **At least five of the following**

EREC 504, Business Management for Natural Resource Firms  
 MGT 580, Introduction to Organizational Behavior  
 CSL 202, Introduction to Non-Profit Organizations  
 ADMN 502, Financial Accounting  
 CMN 500, Public Speaking  
 ANSC 604, Equine Selection  
 AAS 247, Applied Equine Management  
 ANSC 507, Scientific Approach to Equine Discipline  
 ANSC 602, Animal Rights and Societal Issues  
 ANSC 701, Physiology of Reproduction  
 ZOO 713, Animal Behavior  
 ANSC 640, Principles of Riding Instruction  
 KIN 501, First Aid-Responding to Emergencies

##### **Suggested for all in Track I**

AAS 278, Applied Animal Science Computer Applications  
 AAS 234, Equipment and Facilities Management

#### **TRACK II—THERAPEUTIC RIDING**

##### **Core Courses**

ZOO 412, Biology of Animals  
 ANSC 404, Introductory Equine Science (waived for equine-management program)  
 ANSC 500, Methods of Therapeutic Riding  
 ENGL 519, 501, Introduction to Creative Nonfiction, ENGL 503, ANSC 543, or ENGL 529  
 ZOO 507/508, Human Anatomy and Physiology  
 AAS 226, Equine Conformation and Lameness  
 or ANSC 604, Equine Selection  
 AAS 252, Equine Health Management or  
 ANSC 620/622, Equine Diseases and Disease Clinic  
 EREC 411, Environmental and Resource Economics Perspectives  
 AAS 237, Equine Handling and Care Techniques or equivalent  
 AAS 246, Animal Business Applications  
 or ANSC 605, Equine Business Management  
 AAS 247, Applied Equine Management  
 KIN 501, First Aid-Responding to Emergencies or equivalent  
 ANSC 600, Field Experience  
 ANSC 640, Principles of Riding Instruction  
 ANSC 643, Principles of Therapeutic Riding Instruction  
 ANSC 795, Investigations

##### **At least six of the following**

OT 510, Exploring Occupational Therapy and Occupation  
 RMP 501, Recreation Services for Individuals with Disabilities  
 ANSC 507, Scientific Approach to Equine Discipline  
 RMP 557, Recreation Services Program Design  
 CSL 202, Introduction to Non-Profit Organizations  
 CSL 203, Organizing and Supervising Volunteers  
 CSL 208, Essentials of Fundraising for Community-Based Organizations or  
 CSL 209, Essentials of Grant Writing for Community-Based Organizations  
 MGT 580, Introduction to Organizational Behavior  
 CSL 207, Introduction to Non-Profit Budgeting and Accounting Practices  
 CMN 500, Public Speaking  
 EREC 504, Business Management for Natural Resource Firms  
 HHS 740, Collaborative Services for Children with Special Needs  
 OT 500, Behavior and Development of Children or FS 525, Human Development  
 COMM 520, Survey of Communications Disorders or COMM 533, Elementary American Sign Language

##### **Suggestive electives for students in Track II**

AAS 278, Applied Animal Science Computer Applications  
 AAS 254, Animal Assisted Activities and Therapies  
 AAS 251, Human/Animal Bond

##### **Diploma program providing preparation for NARHA certification**

ANSC 404, Introductory Equine Science or AAS 237, Equine Handling and Care Techniques  
 ANSC 402, Horsemanship  
 KIN 501, First Aid-Responding to Emergencies  
 ANSC 500, Methods of Therapeutic Riding  
 ANSC 795, Investigations, and a seminar on teaching therapeutic riding

#### **TRACK III—EQUINE SCIENCE**

##### **Core Courses**

CHEM 403/404, General Chemistry  
 BIOL 411/412, Principles of Biology I and II  
 ANSC 404, Introductory Equine Science  
 ANSC 406, Careers in Animal Science  
 ENGL 519, 501, Introduction to Creative Nonfiction, ENGL 503, ANSC 543, or ENGL 529  
 ANSC 511/512, Anatomy and Physiology  
 BIOL 528, Applied Biostatistics I  
 ANSC 609, Principles of Nutrition  
 ANSC 612, Genetics of Domestic Animals  
 ANSC 620, Equine Diseases  
 ANSC 622, Equine Disease Clinic  
 ANSC 625, Equine Sports Medicine and Lameness  
 ANSC 697, Equine Seminar  
 EREC 411, Environmental and Resource Economics Perspectives  
 ANSC 724, Reproductive Management and Artificial Insemination  
 or ANSC 701, Physiology of Reproduction  
 ANSC 600, Field Experience  
 or ANSC 795, Investigations in Animal Science

##### **At least four of the following**

AAS 235, Animal Nutrition  
 AAS 239, Fundamentals of Animal Health  
 ANSC 432, Animal Forages  
 ANSC 640, Principles of Riding Instruction  
 ANSC 641, Principles of Dressage Instruction  
 ANSC 642, Principles of Jumping Instruction  
 ANSC 701, Physiology of Reproduction  
 ANSC 704, Principles of Pathobiology  
 ANSC 718, Mammalian Physiology  
 ANSC 724, Reproductive Management and Artificial Insemination  
 ANSC 750, Nutritional Biochemistry  
 BCHM 658/659, General Biochemistry and General Biochemistry Lab  
 BIOL 604, Principles of Genetics  
 CHEM 545/546, Organic Chemistry and Organic Chemistry Lab  
 ZOO 713, Animal Behavior

### ***Preveterinary Medicine Option***

BIOL 411-412; PHYS 401-402; MATH 424B; BIOL 528; MICR 503; ANSC 511-512; BIOL 604; CHEM 651/652 and 653/654; BCHM 658/659; ANSC 750 and one 700-level ANSC course.

*(For course requirements for the B.S. degree in dairy management, see Dairy Management, page 91.)*

### ***General Science Certification***

*(See Department of Education and COLSA/ Degrees, pages 32 and 83.)*



**Biochemistry (BCHM)**

[biochemistry.unh.edu/](http://biochemistry.unh.edu/)

(For course descriptions, see page 157.)

The field of biochemistry and molecular biology encompasses a broad range of the molecular life sciences, from biophysics and biochemistry to applied biology and medicine. The B.S. in biochemistry is based on a solid foundation in biology, chemistry, physics and math, along with advanced courses in molecular biology, biochemistry, cell biology, and genetics. The combined B.S.-M.S. degree program allows outstanding students with well-defined career plans to augment their bachelor's degree program with an intensive research program and graduate-level course work leading to the master's degree.

The Department of Biochemistry and Molecular Biology offers specialized training in the areas of molecular genetics, signal transduction, gene regulation, bioinformatics, molecular evolution, cancer biology, macromolecular interactions, glycobiology, lipid metabolism, endocrinology, genomics, and proteomics. Undergraduate students are encouraged to become involved in research projects sponsored by external granting agencies such as the National Institutes of Health, the National Science Foundation, and others.

Students interested in the biochemistry major should consult with the department chairperson or a faculty member as early as possible to ensure the most effective curricular planning.

For first-year students with a strong high school preparation in both chemistry and mathematics (including calculus), the following schedule is recommended:

**Fall**

BIOL 411, Principles of Biology I  
CHEM 403, General Chemistry I  
MATH 425, Calculus I  
ENGL 401, First Year Writing

**Spring**

BIOL 412, Principles of Biology II  
CHEM 404, General Chemistry II  
MATH 426, Calculus II  
General education course

For first-year students lacking a strong background in chemistry and mathematics, the following schedule is recommended:

**Fall**

BIOL 411, Principles of Biology I  
CHEM 403, General Chemistry I  
ENGL 401, First Year English  
General education course

**Spring**

BIOL 412, Principles of Biology II  
CHEM 404, General Chemistry II  
MATH 424B, Calculus for Life Sciences  
General education course

**Bachelor of Science in Biochemistry**

The bachelor's degree in biochemistry consists of a set of core requirements (Group I) and a set of required electives from several subject areas (Groups II-V):

**I. All of the following**

BIOL 411, 412, Principles of Biology I, II  
CHEM 403, 404, General Chemistry I, II  
MATH 425, 426, Calculus I, II, or  
424B, Calculus for Life Sciences and  
BIOL 528, Applied Biostatistics I  
MICR 503, General Microbiology  
BIOL 604, Principles of Genetics  
BIOL 605, Eukaryotic Cell and Developmental Biology  
CHEM 547/549 and 548/550, Organic Chemistry,  
or CHEM 651/653 and 652/654, Organic Chemistry,  
or CHEM 545/546, Organic Chemistry  
and BCHM 658/659, General Biochemistry  
PHYS 401, 402, Introduction to Physics I, II,  
or PHYS 407, 408, General Physics I, II  
BCHM 751-752, Principles of Biochemistry  
BCHM 755, Laboratory in Biochemistry and Molecular  
Biology

**II. One of the following molecular biology courses**

BCHM 711, Genomics and Bioinformatics  
BCHM 766, Environmental Genomics  
BCHM 771, Molecular Genetics  
BCHM 782, Developmental Genetics  
GEN 715, Molecular Evolution  
BCHM 790, Current Topics in Biomedicine

**III. One of the following biochemistry courses**

BCHM 702, Endocrinology  
BCHM 750, Physical Biochemistry,  
or CHEM 683, 684, Physical Chemistry I, II  
BCHM 763, Biochemistry of Cancer  
BCHM 794, Protein Structure and Function  
BCHM 790, Current Topics in Biomedicine

**IV. One of the following laboratory techniques courses**

BCHM 754, Laboratory in Biochemistry and Molecular  
Biology of Nucleic Acids,  
or BCHM 799, Senior Thesis (4 cr.),  
or BCHM 795, Investigations in Biochemistry and  
Molecular Biology (4 cr.)  
ANSC 714, Research Methods in Endocrinology,  
or ANSC 751, Cell Culture  
CHEM 756, Advanced Organic Chemistry Laboratory,  
or CHEM 763, Instrumental Methods of Chemical Analysis  
Laboratory  
GEN 753, Cytogenetics  
MICR 602, Pathogenic Microbiology,  
or MICR 704, Genetics of Prokaryotic Microbes,  
or MICR 705, Immunology,  
or MICR 706/708, Virology and Virology Lab,  
or MICR 717, Microbial Physiology  
PBIO 774/775, Plant Biotechnology and Genetic Engineering

**V. One additional course from groups II-IV**

The biochemistry curriculum provides most of the required and recommended courses for students seeking admission to professional schools in medicine, dentistry, veterinary medicine, and pharmacy. Students

who major in biochemistry can also use their training in conjunction with advanced degrees in law and business.

Approximately 50 percent of the students who graduate with a major in biochemistry seek advanced degrees. Many biochemistry majors go on to attend graduate school in all areas of the life and biomedical sciences, especially graduate programs in genetics, molecular biology, biochemistry, cell biology, and chemistry. Recipients of an M.S. degree are more attractive to employers and often obtain better positions, greater salaries, and more responsibility and independence. A Ph.D. degree is eventually required for those who wish to direct research programs, be involved in state-of-the-art scientific research, become a professor in a college or university, or obtain an executive position in a science-related area of industry or government.

Students obtaining the B.S. in biochemistry 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. Students graduating in biochemistry have knowledge that is valuable in the fields of management, sales, marketing, regulatory affairs, technical writing, and scientific journalism. With additional courses in education, the B.S. in biochemistry also qualifies graduates to teach at the elementary, junior high, and high school levels.

**A combined Bachelor of Science and Master of Science in Biochemistry**

This is a five-year program leading to a combined bachelor and master's degree in biochemistry. It is designed for highly motivated and qualified students seeking additional training to further their career goals as a researcher in the life sciences.

**Admission Policy**

Admission to the combined degree program is highly competitive. Students wishing to pursue this option must have a grade-point average greater than 3.20 at the time of application. A thesis adviser must be identified during the junior year, and the approval of the adviser and department chairperson must be obtained. Prior to the first semester of the senior year, the student must formally apply to the Graduate School and receive early admission. The requirement for the Graduate Record Examinations is waived for combined degree applicants.

**Requirements**

Thirty credits of graduate level (800-900) coursework (including dual credit courses) must be completed. Six to 8 credits must be taken during the senior year, and are applied to both the B.S. and M.S. requirements. All other requirements for the M.S. degree (see Graduate School catalog) must be followed, including completion of preliminary exams, conducting a research project, and passing an oral examination based on the master's thesis project.

**Suggested Program**

Because of the intensive nature of the combined degree program, the thesis research project should be initiated as early as possible. A guidance committee should be established no later than the beginning of the fifth year to approve the student's proposed course of study. The following schedule is recommended:

**Junior year**

Identify thesis adviser and begin research project during the summer following junior year.

**Senior year**

Senior thesis (BCHM 799) during both semesters and the following summer, along with two dual-credit courses (800/900 level).

**Fall semester, fifth year**

Two 800/900 level courses (6-8 cr.)  
BCHM 997 (1 cr.)  
BCHM 899 (5 cr.)

**Spring semester and summer, fifth year**

One 800/900 level course (3-4 cr.)  
BCHM 998 (1 cr.)  
BCHM 899 (5 cr.)  
Special topics (1-2 cr. as needed)

Research should be completed and the master's thesis defended during the summer.

**Support**

Students in the B.S./M.S. program are eligible for support through University Financial Aid. Additional support may be available from the student's adviser.

**General Science Certification**

(See *Department of Education and COLSA/ Degrees*, pages 32 and 83.)

**Biology (BIOL)**

[biology.unh.edu/](http://biology.unh.edu/)

(For course descriptions, see page 157.)

**Coordinator:** David H. Townson

The interdepartmental program in biology is designed to provide a strong and a broad background in biological sciences to students interested in education in the life sciences. The biology program 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 the 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 the 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 program is aimed at promoting excellence in biological science education by involving undergraduate students in strong interaction with faculty both in the classroom and research laboratories, and to encourage the development of high-quality undergraduate programs in all aspects of biology.

The biology program prepares students for graduate work in the biological, medical and agricultural sciences, and for job opportunities in industry (biomedical, pharmaceutical, agrochemical, environmental, and biotechnological) and governmental research, secondary school teaching or a general education about living organisms. 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 major.

Courses in the biology program are selected from departments that constitute the biological sciences community at UNH. The flexibility of the curriculum allows students wide selection of courses in various departments. Students in the biology major take a common core curriculum involving introductory and upper level courses. They select one of four areas of concentration. These options are: 1) general biology; 2) ecology, evolution, and behavior biology; 3) marine and freshwater biology; and 4) molecular, cellular, and developmental biology.

While students are advised to declare the biology major as incoming freshmen to assure adequate program planning, transfer into the program at a later stage is also possible. Students who wish to concentrate in a specific area of biological sciences other than the options within the biology program should consider a major in animal science, biochemistry, microbiology, plant biology, or zoology. The biology core curriculum is followed by students in all these programs. This makes changing majors a very simple process.

**Biology Core Curriculum**

All biology and several of the biological sciences majors begin with the biology core curriculum. The biology courses in the core curriculum constitute an integrated sequence of courses imparting basic knowledge of biology in order to expose the 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 related physical sciences and math. While it is recommended that the core curriculum be substantially completed in the first two years, students are encouraged to consult with their academic adviser to select one or more courses in their major during the sophomore year that may provide a gateway to the major. This may result in delaying one or more of the core courses in the junior year. By the end of the sophomore year, students are expected to have selected a departmental major or one of the four biology options leading to a B.S. degree. These options are: 1) general biology; 2) ecology, evolution, and behavior biology; 3) marine and freshwater biology; and 4) molecular, cellular, and developmental biology.

**Biology Core Curriculum Courses**

BIOL 400, Professional Perspectives on Biology<sup>1</sup>  
BIOL 411 & 412, Principles of Biology I, II<sup>2</sup>  
BIOL 541, General Ecology  
MICR 503, General Microbiology  
BIOL 604, Principles of Genetics  
CHEM 403 & 404, General Chemistry  
CHEM 545/546 Organic Chemistry and BCHM 658/659, General Biochemistry  
or CHEM 651/653 and CHEM 652/654, Organic Chemistry<sup>3</sup>  
MATH 424B Calculus for Life Sciences or 425, Calculus I  
BIOL 528 Applied Biostatistics I or MATH 426,<sup>4</sup> Calculus II  
PHYS 401 and 402, Introduction to Physics  
ENGL 501 (or equivalent), Introduction to Creative Nonfiction<sup>5</sup>  
EDUC 500, Exploring Teaching<sup>5</sup>

Typically, students take BIOL 400; BIOL 411 & 412; CHEM 403-404; and Calculus 424B in their freshman year, and then complete the remainder of their core requirements during the sophomore and junior years.

In addition to the core curriculum, the requirements for individual options are described separately.

<sup>1</sup>BIOL 400 is required only for first year biology majors.

<sup>2</sup>BIOL 411 and 412 are not sequential and may be taken in reverse order.

<sup>3</sup>CHEM 651/653 and 652/654 and ENGL 501 are required for premedical or affiliated professional programs.

<sup>4</sup>MATH 426, Calculus II can be substituted for Statistics, but we recommend Statistics.

<sup>5</sup>Required only for those preparing for teacher certification.



### Academic Requirements

To receive the B.S. degree in biology, students must complete 128 credit hours with a 2.0 cumulative grade-point average (GPA). Courses must include all UNH General Education requirements, biology core curriculum requirements, and the requirements for the selected option. A minimum grade of C- is required in all biological science courses that are counted towards the requirements for a degree in biology (all four options). The only exception is that a passing grade below a C- will be accepted in a student's first biology course (BIOL 411 or 412). 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 this level.

Students should consult with their academic adviser during their freshmen and sophomore years for assistance in determining the most appropriate option or major for their professional goals. Since biology core courses are required of all biological science majors, it is relatively easy to change majors within the biological sciences during this period.

*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 Web site for details ([www.shoals.unh.edu](http://www.shoals.unh.edu)) 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 or the biology program office. Financial support is available for most of these programs.

Premedical and other pre-health professional students should visit the premedical office in Hood House for additional information on requirements for specific professional schools. 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: BCHM/ANSC 702, ZOOL 518, ZOOL 625/626, BIOL 605, BCHM 751/752, ANSC 511/512.

One 600, 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's approval. A Petition for Academic Variance approved by the biology program director is required to count 795-796 experiences for more than one major required course. Students should check the UNH WEBCAT ([webcat.unh.edu](http://webcat.unh.edu)), the biology Web site ([biology.unh.edu](http://biology.unh.edu)), and the UNH online catalog for updates and current course offerings.

### Biology Options

In order to receive a B.S. in biology, a student may choose from one of the four biology options. These options are: 1) general biology; 2) ecology, evolution, and behavior biology; 3) marine and freshwater biology; and 4) molecular, cellular, and developmental biology. A complete list of approved courses in each option is available from the student's adviser, the biology program office, and the biology program Web site at [biology.unh.edu](http://biology.unh.edu).

The *general biology option* within the biology major provides broad-based training in the biological sciences for students who prefer not to specialize at the undergraduate level. Students must choose eight courses in addition to the biology core curriculum courses as specified in the categories listed in the option requirements (see Web site [biology.unh.edu](http://biology.unh.edu)). Within the biology core, BIOL 528 is preferred to MATH 426; however, either is acceptable, and the sequence CHEM 545/546-BCHM 658/659 is preferred to CHEM 651/653-652/654, for all students in the option, except for those who are pre-health professionals. Corequisite lecture and lab courses count as one course. Courses listed in more than one category will satisfy requirements in only one category.

The *marine and freshwater biology (MFB) option* provides broad-based training in the aquatic biological sciences for students who prefer to take additional courses in the area of marine and freshwater biology. Students interested in aquaculture and fisheries may also choose this option by taking appropriate courses in consultation with their adviser. Students must choose eight courses in addition to the biology core curriculum courses to fulfill the requirements of this option. All students must take Biology of Lakes (PBIO/ZOOL 717) or Field Studies in Lake Biology (PBIO/ZOOL 719). For additional course requirements, the students should visit the biology Web site at [biology.unh.edu](http://biology.unh.edu).

The *molecular, cellular, and developmental biology (MCDB) option* provides an opportunity for broad training in molecular, cellular, and developmental biology, and the biotechnology area for students who would like to achieve limited specialization in this field. Students interested in the interdisciplinary fields of genetics, genomics, and bioinformatics may also choose this option by taking appropriate courses in consultation with their adviser. This is in addition to broad-based training in the basic areas of biology and related physical sciences covered in the core curriculum. Students choose eight courses from the list of approved courses (available on the Web at [biology.unh.edu](http://biology.unh.edu)) in addition to biology core curriculum courses, in order to complete this option. The sequence CHEM 651/653-CHEM 652-654 is preferable to CHEM 545/546 and BCHM 658/659.

The *ecology, evolution, and behavior (EEB) option* within the biology program provides broad training in organismal and environmental biology, and provides an opportunity for limited specialization in the field of ecology, conservation, evolution, or behavior. Students must choose eight courses in addition to the biology core curriculum to complete this option. All students are required to take ZOOL 690. An additional seven courses should be selected as specified in the list of approved courses ([biology.unh.edu](http://biology.unh.edu)). Within the biology core, BIOL 528 is preferred to MATH 426; however, either is acceptable.

### Prehealth Professional Program

Students who wish to pursue postgraduate degrees in the health care professions should visit the premedical advising office in Room 102, Hood House. For more information, call (603) 862-2064 or visit the program's Web page at [www.unh.edu/premed-advising](http://www.unh.edu/premed-advising).

### Biology Teacher Certification and General Science Certification

Biology teacher certification for students preparing to teach high school biology may be obtained through the Department of Education's five-year, undergraduate-graduate degree program. Students are required to take EDUC 500 (preferably in the sophomore year), earn a bachelor's degree in one of the biological sciences, and complete a fifth year, which includes an internship and coursework leading to a master's degree in education. General science certification for students preparing to teach science in middle and junior high schools can be obtained through the Department of

Education's general science certification program. For further information, see Education, or contact the Department of Education's teacher education coordinator.

### **Biology Minor**

A biology minor may be earned by completing the following requirements: 1) BIOL 411-412 or P BIO 412 and ZOOL 412; 2) one course from each of the three major organism groups: a) animals (ANSC or ZOOL courses), b) microbes (MICR courses), and c) plants (P BIO courses); 3) two additional biological science courses at the 600-700 level.

Students interested in a biology major or minor should contact the Biology Program Office, (603) 862-1452.

### **Community and Environmental Planning (CD)**

[www.dred.unh.edu/CD.htm](http://www.dred.unh.edu/CD.htm)

(For course descriptions, see page 166.)

The Community and Environmental Planning Program prepares students for professional careers as local government administrators, town or regional land-use planners, and community facilitators and educators. It is an applied social science degree program that gives the student an understanding of the interrelated social, economic, political, environmental, and technical factors that influence a community and its residents. The curriculum takes an interdisciplinary approach and includes field experience and internships as vital components that complement classroom and independent research.

Students majoring in community and environmental planning are encouraged to concentrate in one of three areas: 1) community change and development, 2) community public administration, and 3) community and regional planning. These areas of specialty provide the necessary background and training to prepare graduates for entry-level positions with local municipalities and agencies throughout the nation. The program also provides a firm base for graduate study in a variety of areas such as regional planning, public administration, rural sociology, economic development, and law.

A minor in community and environmental planning provides opportunities for students in other areas to better understand the application of their knowledge to specific community issues. The minor complements majors in both technical fields and liberal arts.

Local municipalities in New England are turning to full-time professional administrators to assume responsibility for the day-to-day

administration, management, and planning activities that were previously carried out by part-time town officials. Officials at the New Hampshire Municipal Association estimated that New Hampshire needs, each year, at least twenty-five new graduates in community and public administration to fill local government professional needs. In addition to professional administration or planning positions in local or regional government, employment opportunities are also available with public agencies and organizations at the state, national, and international levels.

Students interested in the challenges of community and environmental planning should consult with Kelly L. Giraud program coordinator, Department of Resource Economics and Development, 309 James Hall, (603) 862-4811.

### **Required Courses**

CD 415, Community Development Perspectives or CSL 201, Intro to CSL

CD 508, Applied Community Development

CD 614, Fundamentals of Planning

CD 777, Topics in Community Planning

CD 794, Community Planning Internship,

or CD 793, Community Administration Internship

EREC 411, Environmental and Resource Economics Perspectives

EREC 525, Statistical Methods and Applications

EREC 606, Land Economic Perspectives: Uses, Policies, and Taxes

EREC 627, Community Economics

TOUR 700, Marketing Communications Research:

Methodological Foundations

TOUR 705, Ecotourism: Managing for the Environment

or TOUR 767, Social Impact Assessment

MATH 420, Finite Mathematics

CSL 204, Managing Change and Conflict in Communities and CD 672 New Hampshire Real Estate

POLT 502, State and Local Government

or POLT 551, Global Urban Politics

### **Dairy Management**

[www.anscandnutr.unh.edu/](http://www.anscandnutr.unh.edu/)

(See page 86 for the Department of Animal and Nutritional Sciences. For Animal Science [ANSC] courses, see page 148.)

The Dairy Management Program, offered by the Department of Animal and Nutritional Sciences, 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. In addition, junior and senior students enrolled in this program will be given complete responsibility for managing the UNH teaching herd with other students, acquiring actual management experience along with their basic subject matter training. The UNH Teaching and Research Center, a modern dairy facility, houses approximately one hundred milking cows plus a similar number of non-lactating animals.

In addition to general education requirements, a typical dairy management student will take the following courses:

### **First Year**

ANSC 408 (optional), 409, 410, 430; BIOL 411; CHEM 403-404; ENGL 401; EREC 411

### **Second Year**

ANSC 432, 511, 512, 543, 650; CS 401; P BIO 421; EREC 504

### **Summer Internship**

ANSC 600

### **Third Year**

ANSC 609, 612, 530, 650, 701 and/or 715, 710

### **Fourth Year**

ANSC 698, 708, 727, 728; MGT 580 or 713

Students interested in pursuing graduate studies take MATH 424B, CHEM 545-546, BCHM 658-659 and MICR 503 in lieu of P BIO 421 and CS 401.

### **Environmental Conservation Studies**

[www.unh.edu/natural-resources/ug-ec.html](http://www.unh.edu/natural-resources/ug-ec.html)

(For Natural Resources [NR] courses, see page 217.)

The environmental conservation studies (ECS) major gives students a broad, interdisciplinary background for developing their understanding of environmental and resource problems and what is needed to solve them. It also provides a solid foundation for the development of critical thinking skills. The program is designed to ensure that graduates possess broad-based integrated knowledge of how local and global ecological systems work as well as an understanding of the interdependency between people and the environment. Building on a solid natural science base, students discover how political, institutional, and economic systems relate to environmental quality and learn ways to sustainably manage human activities within the constraints of the Earth's ecological systems. Students acquire a set of basic skills and problem solving tools that enable them to tackle complex environmental conservation problems. Graduates



will have gained hands-on practical experience integrating and applying their accumulated knowledge and skills in real world situations.

International education to support ECS students' educational goals is encouraged as a means to broaden their perspectives and knowledge, particularly through the UNH-Ecoquest New Zealand Field Studies Program. ECS students may also take advantage of a wide range of undergraduate research opportunities.

ECS students meet a set of 19 CORE requirements, through which they develop a foundation in natural resources, biology, ecology, chemistry, water quality management, soils, natural resources and environmental policy, economics, environmental ethics, and environmental law. They also acquire basic statistics, oral communication, writing and geographic information skills and develop their abilities to apply their knowledge and skills professionally through a practicum (internship) and a capstone course.

In addition to the CORE, each student chooses a 36 credit hour specialization, which may be selected from a range of natural resources and environmental policy and management course sequences that provide a specific focus as each student develops an area of academic competency and the skill sets to help meet her or his career goals. For example, students can choose specializations in the following subject areas: land and water resource policy and management; international environmental and natural resource policy and sustainable development; environmental education, communication, public participation and leadership; or conservation biology. Or a student may, in consultation with his or her adviser, design a specialization.

Students with strong interests in field-based natural resource management careers can choose a focus on a particular land or water natural resource system, such as forest resources, marine and coastal resources, watersheds or wetlands, or food production to build their expertise. Those with wildlife interests and habitat protection may choose conservation biology. Students with interests in environmental policy, politics, law and administration, or sustainable community development may want to gain additional background through selected courses in the social sciences. Those with interests in environmental education may want to obtain a teaching certificate or develop expertise in outdoor education or leadership. Others may want to pursue interests in environmental communication through courses in journalism or the visual or theater arts. Many

undergraduates in ECS participate in faculty research or gain experience through UNH's undergraduate research opportunities programs. Students with particular interests in international environmental studies may want to participate in the dual major in International Affairs.

Students graduating with a B.S. degree in environmental conservation studies, with excellent academic records, are qualified for graduate work in environmental studies, environmental sciences, natural resources and environmental policy, resource management, conservation biology, environmental law, or environmental education and communication. ECS graduates work with private or nongovernmental conservation organizations; local, state or federal natural resources or planning agencies; industrial firms (e.g., waste management, compliance, land protection, watershed management, community planning, energy conservation, etc.); in primary and secondary education; field studies programs; journalism; and specialized environmental consulting firms. A number of graduates also choose to serve in the Peace Corps or with AmeriCorps prior to making more specific career path commitments.

#### Degree Core Requirements

1. NR 400, Professional Perspectives in Natural Resources
2. NR 401, Introduction to Natural Resources
3. PBIO 412, Introductory Botany
4. Z00L 412, Biology of Animals, or BIOL 411/412
5. Introductory Resource System Course (*choose one*)  
NR 415, Global Biological Change  
or NR 425, Field Dendrology  
or NR 433, Wildlife Ecology  
or NR 502, Forest Ecosystems and Environmental Change
6. Ecology Elective (*choose one*)  
BIOL 541, General Ecology  
NR 527, Forest Ecology  
NR 660, Ecology and Biogeography of New Zealand (only for UNH-EcoQuest NZ program students)  
Z00L 503, Introduction to Marine Biology
7. Introduction to Natural Resource Economics  
EREC 411, Environmental and Resource Economics Perspectives  
or ECON 402, Principles of Economics (Micro)
8. Physical Science (*one relevant to specialization*)  
CHEM 403, General Chemistry  
ESCI 409, Environmental Geology  
PHYS 401, Intro to Physics
9. NR 504, Freshwater Resources
10. NR 501, Introduction to Soil Sciences
11. NR 602, Natural Resources and Environmental Policy (WI)
12. Environmental Ethics and Values (*choose one*)  
NR 701, Ecological Values and Ethics (WI)  
NR 784, Sustainable Living  
PHIL 755, Environmental Philosophy and Policy  
HIST 618, American Environmental History  
SOC 665, Environmental Sociology

13. One Statistical Skills course (BIOL 528, PSYC 402, SOC 502 or equivalent)
14. One Communication Skills course  
CMN 600, Public Speaking as a Civic Art  
EDUC 710B, Micro-communications  
THDA 520, Creative Drama (Children's Theater)  
THDA 583, Introduction to Puppetry  
THDA 622, Storytelling, Story Theater and Involvement Dramatics  
THDA 624, Theater for Young Audiences
15. One Critical Analysis Writing Skills course (beyond ENGL 401)  
ENG 419, 502, 503, 521, 621, or 623
16. Information Management Skills  
NR 658, Introduction to Geographic Information Systems
17. NR 718, Law of Natural Resources and Environment
18. NR 637, Practicum in Environmental Conservation (Internship)
19. NR 735, Land Conservation Principles and Practices, or NR 663, Applied Directed Research in New Zealand (WI)

#### Specialization (36 credits required)

Students select one from the following listed specialization areas to develop their expertise in an area of interest. Alternatively, a student may, in consultation with the student's adviser, design a specialization area.

A. Land and Water Resource Policy and Management

B. International Environmental and Natural Resource Policy and Sustainable Development

C. Environmental Education, Communication, Public Participation and Leadership

D. Conservation Biology

*For each area of specialization students are required to select one listed course from each of 5 specified categories:*

Category 1: Ecology (a listed 600 or higher level course)

Category 2: Economics (a listed 600 or higher level course)

Category 3: Theory (from identified courses relevant to the specialization)

Category 4: Problem Solving Skills (from identified courses relevant to the specialization)

Category 5: Professional and/or Field Skills (from identified courses relevant to the specialization)

Students select four additional courses in their Specialization to complete their 36 hour specialization. These four courses may be selected from any of the 5 categories. The majority of courses selected for the student's specialization should be at the 600 or 700 level. Special permission will be required to

apply a 400 level course to fulfill a specialization requirement. Students must achieve a grade of C- or better for all courses they wish to be counted for their environmental conservation studies major. Students work closely with a faculty adviser to plan their program of study.

Students interested in the environmental conservation studies program may consult with the program coordinator Robert Echert, James 206E, (603) 862-2508.

### **Environmental Conservation Studies Minor**

A minor in environmental conservation studies (5 courses totaling at least 20 credits) is available to students outside of the environmental conservation studies major.

#### **Required Courses**

1. *Any one of the following:* PBIO 412; ZOO 412, BIOL 411, BIOL 412.
2. NR 435, Contemporary Conservation Issues and Environmental Awareness, *or* NR 502, Forest Ecosystems and Environmental Change
3. *One course in ecology:* Possibilities include: NR 433, NR 425, NR 527, NR 660, BIOL 541.
4. *One intermediate course in Environmental Policy, Ecological or Resource Economics*  
NR 724, Resolving Environmental Conflicts  
NR 731, Ecosystem-Based Governance: Policies and Management Strategies  
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  
ECON 607, Ecological Economics  
EREC 606, 611, 627 or 676
5. *Choose One*  
NR 504, Freshwater Resources  
NR 501, Introduction to Soil Sciences  
NR 661, Restoration Ecology and Ecosystem Management in New Zealand  
NR 785, Systems Thinking for Sustainable Living

Students interested in the environmental conservation studies minor should contact Professor Mimi Larsen Becker, Department of Natural Resources, James 207B, (603) 862-3950.

### **Environmental Horticulture (PBIO)**

[www.pbio.unh.edu/undergraduate/enhortbs.html](http://www.pbio.unh.edu/undergraduate/enhortbs.html)

(For Plant Biology [PBIO] courses, see page 227.)

This program offers a flexible curriculum for students interested in a multifaceted view of plant agriculture that also embraces issues of environmental stewardship, food safety, international development, and other topics of broad public concern. A degree in environ-

mental horticulture will prepare students for careers managing greenhouses, nurseries, farms, and golf courses; in teaching; in consulting and applied research; in practicing journalism; in working for park and highway planning commissions; in working in sales or brokerage aspects of wholesale and retail marketing; and in finding employment in food- and feed-processing firms.

#### **Requirements**

Students are required to take the core courses, support courses, and 20 credits of elective courses.

#### **Core Courses**

	<b>Credits</b>
PBIO 401, Plant Biology Orientation	1
PBIO 412, Introductory Botany	4
PBIO 421, Introductory Horticulture	4
PBIO 501, Basic Biochemistry	3
<i>or</i> BCHM 658/659, General Biochemistry	5
PBIO 546, Plants, Soils, and Environment	4
<i>or</i> NR 501, Introduction to Soil Sciences	4
<i>or</i> HT 215, Soils and Land Use	2
<i>and</i> HT 217, Soils and Plant Nutrition	2
PBIO 547, Environmental Horticulture	4
PBIO 572, Plant Propagation	4
<i>or</i> HT 204, Plant Propagation	4
PBIO 566, Systematic Botany	4
PBIO 600, Field Experience (Horticulture Related)	4
PBIO 701, Plant Physiology	3
PBIO 702, Plant Physiology Lab	2
PBIO 612, Plant Genetics and Reproduction	4
<i>or</i> BIOL 604, Principles of Genetics	4
PBIO 651, Plant Pathology	4
<i>or</i> PBIO 653, Forest and Shade Tree Pathology	4
<i>or</i> HT 234, Plant Management	4
PBIO 726, Integrated Pest Management	4
PBIO 797, Senior Seminar	1

#### **Support Courses Required from Other Departments**

BIOL 528, Applied Biostatistics I	4
CHEM 403, General Chemistry I	4
CHEM 404, General Chemistry II	4
EREC 411, Environmental and Resource Economic Perspectives	4
ZOOL 745, Biology and Diversity of Insects	4

#### **Electives**

A minimum of 20 credits should be selected from department courses.

Students are offered some flexibility in selection of electives, although these electives should be related to horticulture and selected in consultation with an adviser.

### **Environmental and Resource Economics (EREC)**

[www.dred.unh.edu/undergraduate/erec.html](http://www.dred.unh.edu/undergraduate/erec.html)

(For course descriptions, see page 181.)

This program offers training in environmental and resource economics, including 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.

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. In addition, students must satisfy general education requirements, which lead to a broad university education. Majors interested in the economic or business aspects of agriculture and natural resources will be expected to take courses in the biological sciences.

Students majoring in any of the social science, life science, and agriculture departments of the University may find it to their advantage to elect courses or a minor in environmental and resource economics or agribusiness. By doing so, their basic training can be supplemented in a specific area of interest, such as resource development and natural resource policy for social science majors, farm management and agricultural marketing for agricultural majors, and community economics and finance for students interested in local government and development.

#### **Required Courses**

*All of the following*  
ECON 401, Principles of Economics (Macro)  
ECON 605, Intermediate Microeconomic Analysis  
ECON 611, Intermediate Macroeconomic Analysis, *or* ECON 635, Money and Banking  
EREC 411, Environmental and Resource Economics Perspectives  
EREC 504, Business Management for Natural Resource Firms  
EREC 525, Statistical Methods and Applications  
MATH 420, Finite Mathematics, *or* MATH 424B, Calculus for Life Sciences

*At least five of the following, of which two must be 700 level*

EREC 501, Agricultural and Natural Resource Product Marketing  
EREC 572, Introduction to Natural Resource Economics  
EREC 606, Land Economics Perspectives: Uses, Policies, and Taxes  
EREC 611, Marine Resource Economics  
EREC 627, Community Economics  
EREC 633, Economics of Travel and Tourism  
EREC 676, Economics of Water Use and Quality Management  
EREC 708, Environmental Economics  
EREC 715, Linear Programming and Quantitative Models  
EREC 756, Rural and Regional Economic Development  
TOUR 700, Marketing Communications Research: Methodological Foundations

Students who major in environmental and resource economics are qualified for a wide



variety of opportunities upon graduation. 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 in one or more of the above areas.

### **Departmental Honors**

Honors in environmental and resource economics will be awarded to students who complete 16 credits of honors courses in environmental and resource economics (including a minimum of four credits of a senior research project), and who maintain a minimum grade-point average of 3.20 in the major. Students interested in the environmental and resource economics honors program should contact the environmental and resource economics coordinator in James Hall for more information.

Students interested in a major or minor in environmental and resource economics should contact John M. Halstead, 324 James Hall, (603) 862-3914.

### **Environmental Sciences**

[www.unh.edu/envsci/](http://www.unh.edu/envsci/)

(For *Natural Resources [NR]* courses, see page 217.)

The College of Life Science and Agriculture (COLSA) and the College of Engineering and Physical Sciences (CEPS) jointly offer a bachelor of science degree in environmental sciences. Environmental sciences is an interdisciplinary field concerned with the interaction of biological, chemical, and physical processes that shape our natural environment. Students graduating with a degree in environmental sciences have an understanding of these interacting processes, the ability to effectively communicate 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 program has 12 full-time faculty members,

with major teaching and research emphases in the areas of biogeochemical cycling, environmental chemistry, 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 nongovernmental 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.

#### **Requirements**

In addition to general education requirements, two introductory environmental science courses are required, including Environmental Pollution and Protection (ENE 520). Foundation courses include two semesters of chemistry (CHEM 403, 404) and calculus (MATH 425, 426), one semester of geology (ESCI 401, 402, or 409), one semester of statistics (MATH 644 or BIOL 528), and either two semesters of physics (PHYS 407, 408), and one semester of approved biology or one semester of physics (PHYS 407) and two semesters of approved biology. Core courses include Techniques in Environmental Sciences (ESCI 534); Introduction to GIS (NR 658), Fate and Transport in the Environment (ESCI 654); Natural Resource and Environmental Policy (NR 602); and a capstone course (e.g., Senior Thesis).

Students must complete an additional seven courses in one of the following options:

#### **Ecosystems**

NR 527, Forest Ecology OR BIOL 541, General Ecology  
NR 730, Terrestrial Ecosystems  
NR 765, Community Ecology  
one approved course in taxonomy (e.g., NR 425)  
three approved electives

#### **Hydrology**

ESCI 561, Surficial Processes  
NR 501, Introduction to Soil Sciences or ESCI 512, Principles of Mineralogy  
NR 604, Watershed Hydrology  
ESCI 705, Principles of Hydrology  
ESCI 710, Groundwater Hydrology  
two approved electives

#### **Soil and Watershed Management**

NR 501, Introduction to Soil Sciences  
NR 604, Watershed Hydrology  
NR 703, Watershed Water Quality Management  
NR 706, Soil Ecology  
three approved electives

For a list of approved elective courses and for further information about the major, contact the program coordinator, Serita

Frey, Department of Natural Resources, 226 James Hall, (603) 862-3880, [enviro.sci@unh.edu](mailto:enviro.sci@unh.edu).

### **Forestry**

[www.unh.edu/natural-resources/ug-for.html](http://www.unh.edu/natural-resources/ug-for.html)

(For *Natural Resources [NR]* courses, see page 217.)

Forestry is the art and science of managing and understanding the natural and human dimensions of forests and forest use. The forestry program is designed to provide graduating professionals with a sound technical preparation and a broad general education. The forest management and forest science options of the forestry major leading to the bachelor of science in forestry degree (B.S.F.) are 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.

Professional foresters are employed by private industry, public agencies, public interest firms, groups, educational institutions, research organizations, and consulting firms. Foresters manage forests, provide for wildlife habitat and forest recreation, protect water and soil resources, and assure a sustainable supply of forest products. Some graduates work toward natural resource protection and the improvement of environmental quality.

Forestry education at UNH focuses on ecosystem management for diversity, productivity and health, based on multidisciplinary collaboration. There are opportunities in international forestry. Many students enter graduate school for advanced training in forest biology or forest management.

Technical, administrative, and managerial skills are required of all professional foresters. This program provides a foundation in scientific knowledge, as well as technical and managerial skills, with elective freedom to cultivate special abilities and interests.

Forestry majors are required to have one summer of forestry work experience (NR 599). While students are responsible for their own summer work, placement assistance is available from the faculty.

In the junior year, students must choose to concentrate in either of the following options (and must earn 24 credits within that concentration to graduate):

**Forest Management Option**

This option is designed for students who intend to plan a career in forest resource management.

**Forest Science Option**

In this option, students may specialize in specific forest sciences as background for graduate school or focus their interests in areas other than forest management. Areas of concentration include forest biology, ecology, soil science, watershed management, international forestry, and others. Students in this option are encouraged to minor in the area of their choice.

**Freshman Year**

BIOL 528, Applied Biostatistics I or equivalent  
ENGL 401, First Year Writing  
MATH 424B, Calculus for Life Sciences  
NR 400, Professional Perspectives in Natural Resources  
NR 401, Introduction to Natural Resources  
NR 425, Field Dendrology  
NR 426, Wood Science and Technology  
NR 542, Forestland Measurement and Mapping  
PBIO 412, Introductory Botany  
One oral communication skills course

**Sophomore Year**

CHEM 403, General Chemistry  
EREC 411, Environmental and Resource Economics Perspectives,  
or ECON 402, Principles of Economics (Micro)  
NR 433, Wildlife Ecology  
NR 501, Introduction to Soil Sciences  
NR 506, Forest Entomology  
NR 527, Forest Ecology  
NR 544, Forest Biometrics  
NR 599, Work Experience  
General education elective 4, 5, 6, or 8  
General education elective 4, 5, 6, or 8

**Junior Year**

NR 602, Natural Resources and Environmental Policy  
NR 629, Silviculture  
NR 643, Economics of Forestry  
NR 652, Forest Resources Assessment  
NR 658, Introduction to Geographic Information Systems  
NR 670, Forest Fire Protection  
PBIO 651, Plant Pathology  
Professional option  
Professional option  
General education elective 4, 5, 6, or 8

**Senior Year**

NR 745, Forest Management  
NR 757, Photo Interpretation and Photogrammetry  
Professional option  
Professional option  
Professional option  
NR 703, Watershed Water Quality Management,  
or NR 504, Freshwater Resources  
General education elective 4, 5, 6, or 8

Students interested in the forestry program may consult with the program coordinator, Mark Ducey, Nesmith 209, (603) 862-2249.

**Forestry Minor**

Nonforestry majors may minor in forestry by completing 20 to 22 credits of coursework approved by the forestry program faculty.

**General Science Certification**

(See *Department of Education and COLSA/ Degrees, pages 32 and 83.*)

**Genetics Program (GEN)**

(For course descriptions, see page 185.)

There is no baccalaureate degree program in genetics. Undergraduates interested in genetics can pursue their interests within the context of any of the following B.S. degree programs: biology, animal sciences, biochemistry, microbiology, plant biology, or zoology. Undergraduate students alternatively can minor in genetics. See page 85 for the genetics minor requirements. For course entries in genetics, see course descriptions at [www.undergradcat.unh.edu](http://www.undergradcat.unh.edu), under GEN, as well as relevant courses listed under the fore-listed departments and programs. Students interested in preparing for graduate work in genetics at UNH or elsewhere should contact the chairperson of the Genetics Program early in their undergraduate careers for advice on courses.

**International Affairs (dual major)**

(For program description, see page 111.)

**Medical Laboratory Science (MLS)**

[www.mls.unh.edu](http://www.mls.unh.edu)

(For course descriptions, see page 211.)

The Medical Laboratory Science program provides students with a quality education in the fundamentals of biomedical laboratory science and laboratory skills in addition to a broad-based university general education. The curriculum enables students to determine the presence, extent, or absence of human disease and to provide the valuable data needed to evaluate the effectiveness of the treatment of human disease. The program also provides an excellent background for students intending to pursue careers in the medical field and upon completion of a clinical internship qualifies them to become certified medical technologists.

Baccalaureate degree holders in Medical Laboratory Science are not only highly sought after by hospitals but also by biotechnology companies, biomedical research facilities, and in the fields of forensic medicine, public

health, and biological and chemical industry sales, service and education. Graduates of the program are also uniquely qualified to continue a post-baccalaureate education in a wide variety of disciplines and professional fields including medicine, health management and policy, business administration, education, microbiology, biochemistry, and in physician assistant programs.

Students may pursue a Bachelor of Science degree in MLS by following a clinical, research, or pre-professional curricula. Students obtain detailed curricula information in the Introduction to Medical Laboratory Science course (MLS 401) and in consultation with their academic advisers.

**MLS-Clinical Curriculum**

MLS majors following the clinical curriculum will complete MLS required courses and a 22-26 week clinical internship. Clinical internship positions are filled on established criteria published in the MLS Student Handbook, including professionalism, academic performance, interviews, and references.

Clinical students may become certified in all areas of the laboratory by completing courses in Advanced Clinical Microbiology (MLS 751), Advanced Hematology (MLS 752), Advanced Immunohematology (MLS 753), and Advanced Clinical Chemistry (MLS 754) during their internship. Upon successful completion of the clinical internship these students are awarded the B.S. degree and are eligible to take a national certification exam offered by the American Society of Clinical Pathologists (ASCP) or the National Certification Agency (NCA). Clinical students may choose to become certified in only one area of the clinical laboratory by completing either a Clinical Microbiology Internship (MLS 761), a Clinical Hematology Internship (MLS 762), a Clinical Immunohematology Internship (MLS 763), or a Clinical Chemistry Internship (MLS 764). Upon successful completion of the clinical internship these students are awarded the B.S. degree and are eligible to take a national certification exam offered by the ASCP or NCA in their categorical specialty area.

**MLS-Clinical Curriculum Academic Requirements and Essential Functions**

Students planning on participating in a clinical internship must obtain a grade of C or better in all MLS courses. These students must also have achieved a minimum 2.50 cumulative grade-point average (GPA) at the time of application for their clinical internship (junior year), and must maintain



that minimum until the internship begins. A personal interview at the clinical affiliate is required. This interview evaluates a student's understanding of the profession, communication skills, maturity, self-confidence, and supervisory potential. Students must demonstrate these attributes to participate in the clinical courses.

The Medical Laboratory Science clinical curriculum is accredited by the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS). NAACLS requires students in this program to have the following essential functions: sound intellect; good motor skills; eye-hand coordination and dexterity; effective communication skills; visual acuity to perform microscopic analyses, or read procedures, graphs, etc.; professional skills such as the ability to work independently, manage time efficiently, and comprehend, analyze and synthesize various materials; as well as have sound psychological health and stability. Additional information regarding the essential functions listed above may be obtained by contacting the MLS program director.

#### **MLS-Research Curriculum**

MLS students following the research curriculum will complete MLS required courses and an undergraduate research project under a faculty mentor, presenting their findings at a UNH undergraduate research conference at the end of their senior year. Upon successful completion of the MLS research curriculum students are awarded the B.S. degree. While they are not eligible to take a national certification exam upon graduation they are qualified to seek a post-graduation clinical internship if they wish to attain certification as a medical technologist or a specialist.

#### **MLS-Pre-Professional Curriculum**

MLS majors following a pre-professional curriculum will complete MLS required courses and additional courses required by physician assistant programs or medical schools. Upon successful completion of the MLS pre-professional curriculum students are awarded the B.S. degree.

#### **Career Mobility Program**

This option is designed to make the B.S. degree in MLS available to certified laboratory assistants, medical laboratory technicians, military-trained laboratory personnel, and other individuals with at least two years of full-time recent experience in a clinical laboratory. Career mobility program participants may challenge MLS clinical

course requirements through credit by examination. Written and practical examinations are available in the areas of clinical microbiology, clinical hematology, clinical immunohematology, clinical chemistry, and urinalysis/body fluids. Students interested in the career mobility program should contact the MLS Program director.

#### **MLS Minor**

Students may obtain a minor in MLS by successfully completing three MLS core courses and two additional approved electives for a minimum of 20 credits. Students interested in the MLS minor should consult the MLS Program director.

#### **MLS Fast Track**

This program is designed for students with a B.S. degree in a life science who wish to become eligible for certification as a medical technologist. The student must have a clinical sponsor to provide the clinical training. Students will take MLS theory classes in hematology, medical biochemistry, immunohematology, body fluids, mycology, parasitology, laboratory management, and molecular diagnostics, as well as any prerequisites, or background courses required for the program. Courses are taken through Education and Summer Studies, and no degree is conferred at completion. Contact the MLS Program director for more information.

#### **Required Courses**

ANSC 512, Anatomy and Physiology  
 ANSC 754, Molecular Diagnostics  
 BIOL 411/412, Principles of Biology I and II  
 BIOL 604, Principles of Genetics  
 CHEM 403-404, General Chemistry  
 CHEM 545/6 Organic Chemistry  
 BCHM 658/9 General Biochemistry  
 MICR 503, General Microbiology  
 MICR 602, Pathogenic Microbiology  
 BIOL 528, Applied Biostatistics I,  
 or PSYC 402, Statistics  
 or SOC 502, Statistics  
 MLS 602, Seminar  
 MLS 610, Biomedical Laboratory Management  
 MLS 640, Phlebotomy Theory  
 MLS 641, Phlebotomy Clinical Internship  
 MLS 642/643, Basic Immunology/Serology Lab  
 MLS 644/645, Hematology/Clinical Hematology Lab  
 MLS 656/657, Immunohematology and Transfusion  
 Science/Blood Banking Lab  
 MLS 658/659, Medical Biochemistry/Clinical Chemistry Lab  
 MLS 660/661, Body Fluids/Body Fluids Lab  
 MLS 720/721, Mycology, Parasitology, and Virology/  
 MPV Lab

#### **Microbiology (MICR)**

[microbiology.unh.edu/](http://microbiology.unh.edu/)

(For course descriptions, see page 212.)

Microbiology explores the world of organisms too small to be seen with the unaided eye. The primary emphasis in the Department of Microbiology is on prokaryotes (bacteria and archaea) and viruses. The curriculum provides basic familiarity with microorganisms, their interactions with other life forms (including humans), and their roles in natural systems and processes.

Baccalaureate degree holders in Microbiology secure positions in industry (food and beverage, pharmaceutical, bioproducts, etc.); in city, state, and federal agencies (public health, environmental quality, regulatory, etc.); or in universities or research institutes.

The Department of Microbiology offers programs of study leading to the bachelor of science degree. Microbiology is widely recognized as being both a basic life science and a highly pragmatic applied science. The curriculum within the microbiology program is intended to accommodate the diverse needs of potential students. It provides solid training for individuals intending to enter the workforce or to pursue graduate education in the biological sciences, biomedicine, or biotechnology. It also provides for entry into professional programs such as dentistry, human medicine, or, with little additional preparation, veterinary medicine. The curriculum is appropriate for students planning to enter the workforce immediately upon graduation, as research technicians, applied scientists, or in sales or marketing positions in the life sciences or biotechnological industry. The curriculum is also appropriate for transfer students and those planning to pursue a degree in business, including the M.B.A., for careers in managing diagnostic laboratories or in hospital administration.

Other microbiology-related courses offered in the following programs may be taken with an adviser's permission: animal sciences, biochemistry and molecular biology, plant biology, civil engineering, zoology, or medical laboratory science. Courses in these areas are reviewed periodically by the microbiology faculty to ascertain their suitability for microbiology majors.

Special Problems in Microbiology (MICR 795) is available by permission and allows students the opportunity to conduct semi-independent research projects in conjunction with departmental faculty. Up to 4 credits of Problems in Microbiology may be applied to major requirements, although students may enroll for additional hours. Students must receive a minimum grade of

C in major requirements taught in the College of Life Sciences and Agriculture (e.g., microbiology, biology, or biochemistry). A passing grade in major requirements taught outside the College of Life Sciences and Agriculture (e.g., chemistry, math, or physics) is acceptable.

Students planning to attend graduate or postgraduate professional school or to apply for certification as registered microbiologists through the American Society for Microbiology are strongly advised to take a course in quantitative analysis (CHEM 517-518).

Individuals considering a major in microbiology are strongly encouraged to enroll in MICR 503 and organic chemistry in their sophomore year. Requirements in the biology core curriculum may be deferred until the subsequent year, if necessary.

Students may obtain a minor in microbiology by successfully completing MICR 503 and four additional departmental courses totaling a minimum of 20 credits at the 600 or 700 level. Students must receive a minimum grade of C in major requirements taught in the College of Life Sciences and Agriculture (e.g., microbiology, biology, or biochemistry). BCHM 658/659 may be substituted for one of these courses. A maximum of 4 credits of Problems in Microbiology may be applied to the minor.

### Microbiology Curriculum

The microbiology curriculum is satisfied by Group I and Group II course requirements. All Group I courses are required. Two courses from the Group II requirements are also required. The microbiology major B.S. degree requirement is seven microbiology courses totaling a minimum of 28 credit hours at a grade of C or above.

#### Group I Requirements

BIOL 411-412, Principles of Biology I and II<sup>1</sup>  
 BCHM 658/659 General Biochemistry  
 or BCHM 751-752, Principles of BCHM with BCHM 755 (lab)  
 CHEM 403-404, General Chemistry  
 CHEM 651/653 Organic Chemistry<sup>2</sup>  
 or CHEM 545/546  
 PHYS 401-402, Introduction to Physics I and II  
 MATH, 424B, Calculus for Life Sciences,  
 or MATH 425 (BIOL 528, or equivalent statistics<sup>3</sup>)  
 BIOL 604, Principles of Genetics<sup>3</sup>  
 MICR 503, General Microbiology  
 MICR 602, Pathogenic Microbiology  
 MICR 704, Genetics of Prokaryotic Microbes  
 MICR 717, Microbial Physiology  
 A microbial ecology course (this requirement may be fulfilled by taking either MICR 707 or MICR 713)

#### Group II Requirements

(Two additional microbiology courses are required from the following courses.)

MICR 710, Electron Microscopy and Microbial Cytology  
 MICR 711, Genomics and Bioinformatics  
 MICR 718, Ethics and Issues in Microbiology  
 MICR 751, Cell Culture  
 MICR 702, Infectious Disease and Health  
 MICR 706, Virology (and 708, Laboratory)  
 MICR 714, Public Health and Waterborne Diseases  
 MICR 705, Immunology  
 MICR 707, Marine Microbiology  
 MICR 713, Microbial Ecology & Evolution  
 MICR 766, Plant-Microbe Interactions  
 NR 706, Soil Ecology

#### Electives

(These cannot be taken to fulfill the microbiology major requirement.)

MICR 504, Brewing and Industrial Microbiology Applications (UNHM)  
 MICR 600, Field Experience  
 MICR 603, Bacteriology of Food (UNHM)  
 MLS 720, Mycology, Parasitology, and Virology  
 P BIO 721, Microscopic Algae  
 P BIO 752, Mycology  
 MICR 790, Laboratory Teaching Experience  
 MICR 795, Problems in Microbiology<sup>3</sup>

#### Natural Resources (NR)

(For course descriptions, see page 217.)

#### Nutritional Sciences (NUTR)

[www.anscandnutr.unh.edu/](http://www.anscandnutr.unh.edu/)

(For course descriptions, see page 222.)

**Professors:** Gale B. Carey, Joanne Curran-Celentano, Anthony R. Tagliaferro

**Associate Professors:** Dennis J. Bobilya, Colette H. Janson-Sand

**Affiliate Associate Professor:** Mark R. Windt, M.D.

**Clinical Assistant Professors:** Joanne D. Burke, Ruth A. Reilly

**Lecturers:** Ingrid Lofgren, Jesse Stabile Morrell

**Extension Professor:** Catherine A. Violette

The science of nutrition is the study of nutrients in food and the body's handling of these nutrients. As an applied science, nutrition is based on biochemistry and physi-

<sup>1</sup> For students transferring into the microbiology major, the equivalent of two semesters of a laboratory biological science may be accepted with microbiology faculty approval.

<sup>2</sup> Premedical and other pre-health students should take one year of organic chemistry.

<sup>3</sup> Classes recommended for the major.

ology but can also include anthropology, economics, genetics, microbiology, pathology, animal sciences, and zoology. Consequently, the nutritionist often cooperates with workers in many different fields. The nutrition program at UNH is designed to permit specialized study in human and/or animal nutrition.

Two curricula are offered to meet the educational needs of students with differing professional aspirations.

#### Basic Science Curriculum

This curriculum provides students with a solid science background in biology, chemistry, physiology, nutrition, biochemistry, and physics. Upon graduation, students are well-prepared for technically oriented jobs in science. This curriculum is also excellent preparation for students planning further education in graduate school or professional schools of medicine and dentistry. Students in this curriculum are required to complete the biology core curriculum and NUTR 400 and 750; ANSC 511/512 or ZOOL 507/508; MICR 503; BCHM 658/659; and 12 additional credits from recommended courses in nutrition.

#### Dietetics Curriculum

Approved by the American Dietetics Association (ADA), the dietetics curriculum prepares students to apply for a post-graduate dietetic internship. Completing this internship and passing the ADA examination are essential for becoming a registered dietitian (RD), requisite for employment opportunities in clinical dietetics and community nutrition. Required courses for this curriculum are NUTR 400, 401, 405, 476, 504, 510, 550, 650, 720, 750, 773, 775, and 780; ZOOL 507/508; BIOL 411; CHEM 403/404, and 545/546; ENGL 401; HMG 403; MICR 501 or 503; BCHM 658/659; SOC 500 or PSYC 401; HMP 401; HMP 710; and either PSYC 402, SOC 502, BIOL 528, or HHS 540.

#### Plant Biology (P BIO)

[www.pbio.unh.edu/](http://www.pbio.unh.edu/)

(For course descriptions, see page 227.)

Plant biology is the study of plants at the population, organismal, cellular, and molecular level; and the investigation of the uses of plants for food, fiber, recreational, and ornamental purposes. Offerings in marine and freshwater plant biology also are provided and are facilitated by the Jackson Estuarine Laboratory and two marine laboratories where the plant biology faculty



maintains an active involvement in teaching and research. The Department of Plant Biology offers three baccalaureate degrees: bachelor of science in plant biology, bachelor of science in environmental horticulture, and bachelor of arts in plant biology. See also programs listed under biology major and marine sciences.

**B.S. in Plant Biology**

This degree is for students intending to seek employment in agricultural, pharmaceutical, and biotechnology industries; to work in governmental agencies, environmental groups, and consulting firms; to teach secondary education; or to undertake graduate studies in preparation for advanced research and teaching positions. Students interested in university teaching and/or research, and governmental and industrial research, should plan to complete an advanced degree in the field.

Students are required to take the core courses, which include the biology core curriculum, and five plant biology elective courses.

**Core Courses**

	<b>Credits</b>
BIOL 411, Principles of Biology I	4
BIOL 412, Principles of Biology II	4
CHEM 403, General Chemistry I	4
CHEM 404, General Chemistry II	4
MATH 424B, Calculus for Life Sciences	4
MICR 503, General Microbiology	5
BIOL 541, General Ecology	4
BIOL 528, Applied Biostatistics I	4
CHEM 545/546, Organic Chemistry and Laboratory	5
BCHM 658/659, General Biochemistry and Laboratory	5
PHYS 401, Introduction to Physics I	4
PHYS 402, Introduction to Physics II	4
BIOL 604, Principles of Genetics	4
PBIO 401, Plant Biology Orientation	1
PBIO 701/702, Plant Physiology and Laboratory	5
PBIO 758, Plant Anatomy	5
PBIO 774, Plant Biotechnology and Genetic Engineering	3
PBIO 566, Systematic Botany	4
or PBIO 668, Summer Flora of New Hampshire	4

**Plant Biology Electives**

Five additional courses must be selected from those listed under categories 1-5. No more than three courses from any one category can be used to fulfill the requirement. It is strongly recommended that students choose courses from as many of the categories as possible to obtain a broad background in plant biology. Core courses cannot be used to fulfill elective requirements. PBIO 795, Investigations in Plant Biology can be used once to fulfill one of the five electives, if taken for 3 or more credits. PBIO 796, Special Topics in Plant Biology can be used to fulfill

elective requirements, if taken for 3 or more credits and preapproved by adviser.

*Category 1: Systematics, Ecology, and Evolution*

PBIO 566, 625, 668, 717, 719, 721, 722, 723, 747, 752, 761; ZOO 545; NR 713, 765

*Category 2: Marine and Freshwater Plant Biology*

PBIO 503, 625, 717, 719, 721, 722, 723, 725, 727/729, 747

*Category 3: Plant Structure and Physiology*

PBIO 709, 713, 714/715, 727/729, 775

*Category 4: Environmental Horticulture*

NR 506; PBIO 546, 547, 565, 572, 650, 651, 652, 678, 689, 726; ZOO 745

*Category 5: Plant Genetics, Cell Biology, and Biotechnology*

BCHM 771; GEN 705; PBIO 751, 753, 754, 766, 772, 775

**B.A. in Plant Biology**

The curriculum provides a broad background in the liberal arts and plant biology. Students may enter this program as freshmen or transfer into it from other liberal arts or science programs. This program is of particular interest to students who intend to utilize their plant biology training in public relations, teaching, or other related careers in combination with a liberal arts background. The program allows students to obtain minors in other fields such as English, history and philosophy of science, international affairs, education, art, etc., to create an interdisciplinary program, or to pursue a double major. Students must complete a minimum of 40 semester credits in the major, including:

**B.A. Degree Core Courses**

	<b>Credits</b>
PBIO 401, Plant Biology Orientation	1
PBIO 412, Introductory Botany*	4
ZOO 412, Biology of Animals	4
PBIO 501, Basic Biochemistry	3
or CHEM 545/546, Organic Chemistry and Laboratory	5
BIOL 541, General Ecology	4
PBIO 566, Systematic Botany	4
or PBIO 668, Summer Flora of New Hampshire	4
or PBIO 721, Microscopic Algae	4
or PBIO 722, Marine Phycology	4
BIOL 604, Principles of Genetics	4
or PBIO 612, Plant Genetics and Reproduction	4
PBIO 701/702, Plant Physiology and Laboratory	5

\*waived if previous credit received for BIOL 411-412 or equivalent

**Upper Level Plant Biology Category Electives**

12 credits minimum

Select courses from several of the five plant biology categories (see B.S. program). PBIO 758 and 774 are also recommended.

**Required General Education Courses**

Required: Group 3, CHEM 403-404, General Chemistry

Recommended: Group 2, BIOL 528, Applied Biostatistics I

Group 8, PHIL 424, Science, Technology, & Society; or HUMA 651, Humanities and Science: The Nature of Scientific Creativity

**Other B.A. Requirements**

Foreign language (equivalent to one year of college language).

**Minors**

The Department of Plant Biology offers two departmental minors: a *minor in plant biology* and a *minor in environmental horticulture*.

These minors are available to all students and are designed to provide a flexible and broad selection of courses to complement any other major area of study.

**The requirements for the plant biology minor are**

PBIO 401, PBIO 412 or equivalent, and a minimum of 15 credits from the following list of courses: PBIO 566, 625, 651, 653, 668, 701/702, 709, 713, 717, 719, 721, 722, 725, 727, 729, 751, 752, 753, 754, 758, 761, 772, 774/775, 795 (maximum of 4 cr.), 796, 799; BIOL 601

**The requirements for the environmental horticulture minor are**

PBIO 401, PBIO 421, and a minimum of 15 credits from the following list of courses: PBIO 405, 547, 565, 566, 572, 612, 650, 651, 652, 653, 678, 679, 689, 701/702; BIOL 601.

For advice on course selection, students should see the department chairperson.

**Departmental Honors**

Honors in plant biology or environmental horticulture will be awarded to students who complete 16 credits of honors courses in plant biology courses (including a minimum of four credits in a senior honors thesis project), and maintain a minimum grade-point average of 3.20 (overall average and in major coursework). Students wishing to apply to the departmental honors program should consult with Professor Estelle Hrabak.

**General Science Certification**

(See Department of Education and COLSA/ Degrees, pages 32 and 83.)

**Tourism Planning and Development (TOUR)**

[www.dred.unh.edu/undergraduate/tour.html](http://www.dred.unh.edu/undergraduate/tour.html)

(For course descriptions, see page 245.)

Tourism creates immense economic activity, totaling more than \$4 trillion dollars of world spending. Tourism is also an integral part of New England's economy. Experience has shown that the public and private sectors of the tourism industry benefit substantially from proper planning. Those locations with the best planned and managed tourism

developments are likely to be the most successful tourist destinations from the standpoint of providing both high-quality tourist experiences and bringing substantial economic benefits with minimal disruptions to the social and natural environment. In response to these needs, the Department of Resource Economics and Development offers a bachelor of science degree in Tourism Planning and Development from regional and international perspectives.

The Tourism Planning and Development curriculum provides students with the skills and knowledge necessary to plan, develop, and manage natural, cultural, and financial resources in an environmentally responsible manner. The program utilizes an interdisciplinary approach to provide students with a strong liberal education supplemented by a broad professional understanding of tourism planning and its role in local, state, national, global economic, and social development. Students study both the social and environmental sciences in order to better understand the complexity of natural and social systems. The program emphasizes the practical application of planning and economic theory to the planning for the development of tourism resources.

#### Curriculum Structure

All majors must complete a core curriculum and choose one of two concentrations: international development or regional tourism planning.

#### Core Courses

The core curriculum is composed of the following courses:

TOUR 400, Introduction to Tourism  
 EREC 411, Environmental and Resource Economics Perspectives  
 EREC 501, Agriculture and Natural Resource Product Marketing  
 EREC 525, Statistical Methods and Applications  
 CD 614, Fundamentals of Planning  
 TOUR 615, Tourism Planning and Development  
 TOUR 633, Economics of Travel and Tourism  
 TOUR 560, Special Topics (8 credits)  
 TOUR 700, Marketing Communications Research: Methodological Foundations  
 TOUR 705, Ecotourism: Managing for the Environment or TOUR 767, Social Impact Assessment or CD 777, Topics in Community Planning  
 TOUR 794, Tourism Internship  
 TOUR 794 involves a 14–16 week, full-time, supervised (40 hrs.) internship, and enables students to meet and work in association with representatives from the public and private sectors of the tourism industry.

#### International Tourism Development Concentration

This concentration area prepares students to work in the dynamic and challenging environment of international tourism development. Depending on interests, lan-

guage skills, and international experiences, students may expect to find employment in settings such as national tourism offices, international tourism organizations, national and foreign consults, and multinational tourism destination resorts. In addition to the required core courses, students who pursue the international tourism development concentration must complete the following requirements: TOUR 792, International Experience; two TOUR electives; competency in a foreign language (i.e., functional reading, writing, and speaking ability equivalent to the third-year second-semester level); and two additional electives that will enhance students' career opportunities in the international area.

#### Regional Tourism Planning Concentration

This concentration area prepares students to obtain professional roles in planning in the public or private sectors of the tourism industry. Depending on interests and technical skills, students may expect to find employment in settings such as local and regional economic development organizations, chamber of commerce offices, convention and visitor bureaus, state and federal offices of tourism development, local and regional planning commissions, and resort communities. In addition to the required core courses, students who pursue the regional tourism planning concentration must complete the following requirements: TOUR 798, Independent Study in Tourism; two TOUR electives; and all the requirements for a minor in community planning.

#### Wildlife Ecology

[www.unh.edu/natural-resources/ug-wild.html](http://www.unh.edu/natural-resources/ug-wild.html)

The wildlife curriculum is for students interested in the ecology, conservation, and management of wild animals. It is designed to provide a knowledge of wildlife species and their various forest, field, and wetland habitats. Students are prepared for employment with public and private agencies in wildlife conservation and management, or for continued study at the graduate level.

Fieldwork is carried out during the academic year on local and regional wildlife populations. Majors are assisted and encouraged to obtain summer employment related to wildlife and natural resources.

The degree earned is a bachelor of science with a major in wildlife ecology. The program is administered in the Department of Natural Resources.

#### Freshman Year

BIOL 411, Principles of Biology I  
 BIOL 412, Principles of Biology II  
 ENGL 401, First Year Writing  
 MATH 424B, Calculus for Life Sciences, or MATH 420, Finite Mathematics  
 NR 400, Professional Perspectives in Natural Resources  
 NR 401, Introduction to Natural Resources  
 NR 425, Field Dendrology  
 NR 433, Wildlife Ecology  
 Elective, physical science or General Education elective

#### Sophomore Year

BIOL 528, Applied Biostatistics I  
 CHEM 403, General Chemistry  
 CHEM 404, General Chemistry  
 ENGL 501, Introduction to Creative Nonfiction, or ENGL 502, Technical Writing, or ENGL 503, Persuasive Writing  
 EREC 411, Environmental and Resource Economics Perspectives  
 NR 527, Forest Ecology, or BIOL 541, General Ecology  
 NR 655, Vertebrate Biology  
 NR 658, Introduction to Geographic Information Systems  
 ZOO 542, Ornithology, or ZOO 712, Mammalogy, or Elective

#### Junior Year

NR 602, Natural Resources and Environmental Policy  
 NR 615, Wildlife Habitats  
 NR 737, Wildlife Population Dynamics  
 ZOO 625, Principles of Animal Physiology  
 ZOO 690, Evolution, or ZOO 665, Conservation Genetics  
 ZOO 710, Ichthyology, or ZOO 713, Animal Behavior, or ZOO 733, Behavioral Ecology  
 Elective

#### Senior Year

NR 629, Silviculture or equivalent  
 NR 636, Wildlife Techniques  
 NR 738, Wildlife Policy and Management  
 Elective  
 Elective  
 Elective

Electives should be used to satisfy remaining general education requirements and the wildlife major requirements in the areas of communication skills and physical sciences (one course in each area-pertinent courses are listed in the detailed wildlife curricular guidelines available from the department).

Students interested in the Wildlife Ecology major may consult with the program coordinator, Peter Pekins, James 214, (603) 862-1017.



**General Science Certification**

(See *Department of Education and COLSA/ Degrees, pages 32 and 83.*)

**Zoology (ZOOL)**

[zoology.unh.edu/](http://zoology.unh.edu/)

(For course descriptions, see page 246.)

The Department of Zoology has a primary responsibility for undergraduate and graduate instruction in fundamental aspects of animal biology, including the principles of form, function, development, and diversity produced by animal evolution. The teaching program provides a broad coverage of basic biological processes in invertebrate and vertebrate animals at the cellular, organismic, population, and community levels. Students receive background for a variety of professional positions in the public and private sector, and for graduate programs in the biological sciences including health-related fields. The department offers the bachelor of arts, bachelor of science, master of science, and doctor of philosophy degrees. Zoology faculty contribute significantly to the biology core curriculum, marine biology minor, animal behavior minor, genetics program, University honors program, ocean projects, and undergraduate research opportunity programs, and courses at the Shoals Marine Laboratory.

There is a strong teaching and research emphasis on ecological and physiological processes in aquatic animals or ecosystems. This focus is enhanced by the geographical location of the University and the availability of facilities for aquatic research. 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, the White Mountain National Forest, and the presence of two coastal marine laboratories, as well as estuarine and freshwater laboratories.

The zoology major builds from the common background of the biology core curriculum, with 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. Zoology majors must complete 32 credits from courses in the biological sciences approved by the department with a 2.00 average. Students must receive a minimum grade of C- in major requirements taught in the College of Life Sciences and Agriculture (e.g., zoology,

microbiology, biology, biochemistry). A passing grade in major requirements taught outside the College of Life Sciences and Agriculture (e.g., chemistry, mathematics, physics) is acceptable. Minimum requirements for the B.S. in zoology are as follows: completion of the biology core courses and required courses in animal morphology, physiology and development, plus advanced electives in zoology and other biological sciences. The B.A. in zoology has a foreign language requirement in lieu of one advanced elective. B.A. students also have somewhat more flexibility when choosing courses from the biology core.

**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 receive some preferential admission consideration and, if admitted, pay the UNH in-state tuition rate plus 75 percent. Students who are interested in a zoology major should consult the department's undergraduate adviser or chair.

**General Science Certification**

(See *Department of Education and COLSA/ Degrees, pages 32 and 83.*)

---

**Departments**

**Animal and Nutritional Sciences**

**Majors:** Animal Science (Bioscience and Technology, Equine Sciences, Preveterinary Medicine), Dairy Management, Medical Laboratory Science, Nutritional Sciences

**Chairperson:** Thomas L. Foxall

**Animal Sciences Faculty**

**Professors:** William E. Berndtson, Gale B. Carey, William A. Condon, Thomas L. Foxall, Charles G. Schwab, Robert L. Taylor, Jr.

**Affiliate Professors:** Ronald E. Rompalla, Martin Stokes

**Clinical Professors:** Joseph J. Moore, Roger E. Wells

**Associate Professors:** Patricia D. Bedker, Elizabeth P. Boulton, Peter S. Erickson, David H. Townson, Paul C. Tsang

**Affiliate Associate Professors:** John A. Ryan, Arthur F. Stucchi

**Affiliate Assistant Professors:** Donald Collins, Paul F. Cotter, Sylvia Countway, Ellen J. Dijkman Dukes, Jill Polito, Bo Rueda, James A. Salikowski, Glenn T. Shwaery, James Sulikowski, Mark R. Windt

**Clinical Assistant Professors:** Barry Corroveau, Wendell P. Davis, Adele Marone, Elise R. Sullivan

**Lecturers:** Christina J. Keim, Joyce Stone

**Teacher/Trainer:** Sarah Hamilton

**Veterinary Pathologist:** Alice D. Roudabush

**Technical Specialist/Medical Technologist:** Claire Tapply

**Medical Laboratory Science Faculty**

**Professor:** Karol A. Lacroix

**Assistant Professors:** Sylvia Countway, Joyce Stone

**Affiliate Assistant Professors:** Deborah Brough, Jill Polito, Rose Schwab, Susan Slack

**Nutritional Sciences Faculty**

**Professors:** Gale B. Carey, Joanne Curran-Celentano, Anthony R. Tagliaferro

**Associate Professors:** Dennis J. Bobilya, Colette H. Janson-Sand

**Clinical Assistant Professors:** Joanne D. Burke, Ruth A. Reilly

**Lecturers:** Ingrid Lofgren, Jesse Stabile Morrell

**Extension Professor:** Catherine A. Violette

**Biochemistry and Molecular Biology**

**Major:** Biochemistry

**Chairperson:** Anita S. Klein

**Professors:** Rick H. Cote, Clyde L. Denis, Thomas M. Laue, Stacia A. Sower

**Research Professor:** Vernon N. Reinhold

**Affiliate Professors:** William G. North, Stuart A. Tobet

**Associate Professors:** John J. Collins, Anita S. Klein, Andrew P. Laudano, W. Kelley Thomas

**Assistant Professors:** Lisa B. Clark, Charles E. Warren

**Research Assistant Professors:** Kevin M. Culligan, Jennifer A. Durant

**Affiliate Assistant Professor:** Thomas P. Moody

**Microbiology**

**Major:** Microbiology

**Chairperson:** Aaron B. Margolin

**Professors:** Aaron B. Margolin, Thomas G. Pistole, Frank G. Rodgers

**Associate Professor:** Louis S. Tisa

**Assistant Professors:** Vaughn S. Cooper, Elise R. Sullivan, Cheryl A. Whistler

**Adjunct Faculty:** Steven D. Torosian

## Natural Resources

**Majors:** Environmental Conservation Studies, Environmental Sciences (Hydrology, Soil and Watershed Management, Ecosystems), Forestry (Forest Management, Forest Science), Wildlife Ecology

**Chairperson:** Mimi Larsen Becker

**Professors:** John D. Aber, John E. Carroll, Russell G. Congalton, Robert T. Eckert, Theodore E. Howard, John A. Litvaitis, William W. Mautz, William H. McDowell, Peter J. Pekins, Barrett N. Rock, Andrew A. Rosenberg

**Research Professor:** Frederick T. Short

**Affiliate Professors:** Christopher Eagar, Jeffrey H. Gove, Jeffrey S. Kahl, William B. Leak, Changsheng Li, Rakesh Minocha

**Associate Professors:** Kimberly J. Babbitt, Mimi Larsen Becker, Mark J. Ducey, Serita D. Frey, Kelly L. Giraud, George C. Hurtt, Paul C. Johnson, Thomas D. Lee, Jonathan R. Pennock

**Research Associate Professors:** David M. Burdick, Stephen H. Jones

**Affiliate Associate Professors:** Linda S. Heath, Peter A. Maddison, Lawrence J. Prelli

**Assistant Professor:** Scott V. Ollinger

**Research Assistant Professor:** Adrienne I. Kovach

**Affiliate Assistant Professors:** Matthew J. Baber, Ria Brejaart, John L. Campbell, Andrew B. Cooper, Richard Hallett, Erik A. Hobbie, Mary C. Martin, Mariko Yamasaki, Bruce S. Wildblood-Crawford

**Adjunct Faculty:** Bernard Cohen, Richard J. deSeve, Sidney A.L. Pilgrim

**Extension Professors:** Karen P. Bennett, Frank S. Mitchell, Sarah S. Smith

**Extension Associate Professors:** Darrell F. Covell, Julia P. Peterson

## Plant Biology

**Majors:** Environmental Horticulture, Plant Biology

**Chairperson:** Christopher D. Neefus

**Professors:** Garrett E. Crow, Thomas M. Davis, Wayne R. Fagerberg, Curtis V. Givan, Leland S. Jahnke, J. Brent Loy, Arthur C. Mathieson, Subhash C. Minocha, Wayne R. Fagerberg

**Affiliate Professors:** Clinton J. Dawes, Rakesh Minocha, Walter C. Shortle, Kevin T. Smith

**Associate Professors:** Alan L. Baker, Estelle M. Hrabak, Anita S. Klein, Christopher D. Neefus, James E. Pollard, John M. Roberts

**Affiliate Associate Professor:** Janet R. Sullivan

**Research Assistant Professor:** Dennis E. Mathews

**Affiliate Assistant Professors:** Sridevi Ganapathi, Jianhua Li

**Extension Professors:** Alan T. Eaton, Catherine A. Neal, Cheryl A. Smith, Stanley R. Swier

**Extension Associate Professor:** Rebecca C. Grube

## Resource Economics and Development

**Majors:** Community and Environmental Planning, Environmental and Resource Economics, Tourism Planning and Development

### *Community and Environmental Planning Faculty*

**Coordinator:** Kelly L. Giraud

**Professors:** John M. Halstead, Bruce E. Lindsay

**Associate Professors:** Kelly L. Giraud, Alberto B. Manalo, Douglas E. Morris, Robert A. Robertson

**Instructor:** Mary Adamo Robertson

**Extension Assistant Professor:** Charles A. French

### *Environmental and Resource Economics Faculty*

**Coordinator:** John M. Halstead

**Professors:** Lyndon E. Goodridge, John M. Halstead, Bruce E. Lindsay

**Associate Professors:** Kelly L. Giraud, Alberto B. Manalo, Douglas E. Morris

**Research Assistant Professor:** Troy W. Hartley

### *Tourism Planning and Development Faculty*

**Coordinator:** Robert A. Robertson

**Professors:** Lyndon E. Goodridge, John M. Halstead, Bruce E. Lindsay

**Associate Professors:** Kelly L. Giraud, Alberto B. Manalo, Robert A. Robertson

**Instructor:** Mary Adamo Robertson

**Extension Professor:** Michael R. Sciabarrasi

## Zoology

**Major:** Zoology

**Chairperson:** James F. Haney

**Professors:** John F. Burger, Donald S. Chandler, James F. Haney, Larry G. Harris, W. Huntting Howell, Thomas D. Kocher, Michelle P. Scott, James T. Taylor, Charles W. Walker, Winsor H. Watson III

**Research Professor:** Michael Lesser

**Associate Professors:** David L. Berlinsky, Jessica A. Bolker, James E. Byers, Raymond E. Grizzle, Marianne Klauser Litvaitis

**Research Associate Professors:** Raymond E. Grizzle, Molly Lutcavage

**Affiliate Associate Professors:** Richard Langan, Leslie J. Newman

**Affiliate Assistant Professors:** David T. Bernstein, Michele Dionne, Dwight D. Trueblood, Barry J. Wicklow

**Extension Professor:** Jeffrey A. Schloss

**Extension Assistant Professor:** Joyce R. Newman



# WHITTEMORE SCHOOL OF BUSINESS AND ECONOMICS

[wsbe.unh.edu](http://wsbe.unh.edu)

James Wible, Interim Dean (6/30/07)  
Daniel E. Innis, Dean Designate (7/1/07)  
Roger B. Grinde, Associate Dean  
Gail Stepina, Assistant Director of Undergraduate Programs  
Pamela Bishop, Tamara S. Rury, Academic Counselors

Department of Accounting and Finance  
Department of Decision Sciences  
Department of Economics  
Department of Hospitality Management  
Department of Management  
Department of Marketing

## Bachelor of Arts

Economics  
Financial and Managerial Economics  
International and Development Economics  
Public Policy Economics

## Bachelor of Science

Business Administration  
Accounting  
Entrepreneurial Venture Creation  
Finance  
Information Systems Management  
International Business and Economics  
Management  
Marketing  
Student-designed  
Economics  
Hospitality Management  
Bachelor of Science-Master of Science in Accounting

**The Whittemore School of Business and Economics prepares students for future careers in management, public service, research, and education. The liberal arts are the basic foundation of the curriculum, and management of change in a global community is the major emphasis. Each department and program has its unique disciplinary tradition and the simultaneous commitment to broad educational excellence in critical thought, verbal and written communications, quantitative skills, computer literacy, and ethical reasoning. International awareness and cross-cultural understanding are essential components of the educational experience of Whittemore School students. The educational process encourages the integration of practice and theory through student interaction with business, public agencies, and faculty research.**

The Whittemore School's undergraduate curricula combine a breadth of liberal education with specifics of professional education in business administration, economics, and hospitality management. Undergraduates enrolled in the Whittemore School programs take a substantial part of their coursework, normally over 50 percent, in other colleges in the University in order to fulfill the general education requirements. Beyond those requirements, students are encouraged to elect additional courses in the arts, the behavioral and social sciences, the humanities, mathematics, and the natural sciences. Thus, students who complete the Whittemore School programs in business administration, economics, and hospitality management are prepared for employment and graduate study in both these and adjacent fields.

The Whittemore School offers a minor in business administration, economics and in hospitality management. Within the limits of its resources, the Whittemore School also serves the needs of undergraduates elsewhere in the University 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 Whittemore School courses are open to nonmajors who have the prerequisite preparation.

A maximum of 32 credits in courses offered by the Whittemore School of Business and Economics may be taken by non-Whittemore School students.

## Degree Requirements

The Whittemore School offers a bachelor of arts degree program in economics and bachelor of science degree programs in business administration, economics, and hospitality management. Students who desire

a professional career in public accounting are advised to follow the five-year program leading to a bachelor of science in business administration and a master of science in accounting degree (see Accounting Program of Study, page 103, for details). Application for admission to this highly selective program is made in the junior year.

Course listings for business administration are found under accounting and finance (ACFI), business administration (ADMN), decision sciences (DS), management (MGT), and marketing (MKTG). Candidates for a degree must satisfy all of the University general education requirements for graduation as well as the particular requirements of their individual major programs. In addition, candidates must complete a math course (400 level). Economics majors must also satisfy specific requirements associated with the bachelor of arts degree (see Degree Requirements). No Whittemore School course may be taken on a pass/fail basis by a student majoring in business administration, economics, or hospitality management.

In order to graduate, students must achieve a grade-point average of at least 2.30 (2.00 for the B.A. in economics) in the major courses and a minimum grade of C- (for ADMN 403, students must obtain credit) in each major course. Any WSBE major required course in which a grade below C- is obtained must be repeated. No more than two WSBE courses may be repeated and each course may be repeated at most one time.

Modifications tend to occur in major programs during the four-year period of a student's undergraduate career. Students are expected to conform to these changes. Students transferring into the Whittemore School from other universities must have business, economics, and hospitality management courses reviewed and approved by the faculty through the Whittemore School Undergraduate Programs Office to be con-

sidered for major requirements. Transfer credit is normally granted only for 400 and 500-level courses.

For information concerning advanced degrees, see the *Graduate Catalog*.

### Advising System

Undergraduate advising in the Whittemore School is carried out jointly by academic advisers and the faculty. The academic advisers are based in the Whittemore School Undergraduate Programs Office, where student academic records are kept. The advisers assist students in program planning, preregistration, understanding and meeting general academic requirements, and general academic and career decision making. In addition, the advisers coordinate study abroad and domestic exchange and honors programs. The faculty draw on their own experience, expertise, and interests in helping students with course, program, and career selection.

The peer advising system, established in 1984, was created for the purpose of introducing freshman to the college experience. Students complete a one-credit, credit/fail course each semester (ADMN 405/406, Freshman Academic Experience I/II), led by selected upper class students under the direction of faculty. The courses' goals are to familiarize students with their major, college, and University; to introduce students to the nature of academic knowledge, academic standards, and academic/personal management skills essential for success in the University; to provide discussion of a common topic or book; to support students in their personal growth; to develop personal responsibility; and to encourage freshman to use the advising services on campus.

Undergraduates are encouraged to develop an advisory relationship with one or more faculty members with whom they have mutual interests. All students are urged to seek as much assistance as they need, from whatever source, but are reminded that theirs is the ultimate responsibility for knowing and meeting the various academic requirements for a degree.

### Independent Study/Internship

Juniors or seniors in the Whittemore School 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 under-

taken. 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 is necessary. Students may earn no more than 16 credits in internships, independent studies, field experience, and supervised student teaching experience.

The Washington internship, a semester of supervised work experience in Washington, D.C., is open to any major.

### International and Exchange Programs

The Whittemore School encourages qualified students to participate in programs of international work and study. The Whittemore School has international exchanges including Grenoble, France, Switzerland and Budapest, Hungary; and Glion, Switzerland.

Students may also elect to take a dual major in international affairs, offered in conjunction with the program for international perspectives (see page 111).

Information on all other international programs can be obtained from the sponsoring department or the Center for International Education, Hood House, Room 204.

### Five-Year Programs

#### *Four-One Program: B.S.-M.S.A.*

The American Institute of Certified Public Accountants (AICPA), the national association of professional accountants, has 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 Whittemore School 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 junior year. Details are provided in the Programs of Study sections of this catalog and the *Graduate Catalog*.

### Nonmajors

The Whittemore School also offers courses for nonmajors. Students interested in these courses should contact the undergraduate programs office.

### Minor

The Whittemore School faculty has developed a group of courses for nonmajors that, if available and when combined with certain elective courses, can constitute a minor in business administration. A list of minor requirements is available at the Whittemore School Undergraduate Programs Office, Room 120, McConnell Hall.

---

## Programs of Study

### Business Administration (ADMN)

[wsbe.unh.edu/WSBE\\_Undergrad\\_Progs/undergrad\\_progs.cfm](http://wsbe.unh.edu/WSBE_Undergrad_Progs/undergrad_progs.cfm)

(For course descriptions, see page 146.)

The business administration program provides training for individuals interested in managerial or administrative careers in business or in public or private institutions.

Since most graduates of the program embark upon business careers, the program emphasis is in that direction. However, the skills acquired through the business program are readily applicable to the problems faced by not-for profit institutions such as hospitals, school systems, government departments, and other socially oriented organizations, the program's objectives have been broadened to include all types of administration.

The curriculum offers professional education in the basic theories, principles, concepts, and analytical tools used by successful modern administrators, combining them with an introduction to the functional areas of management. Additionally students develop expertise in a particular area of business by earning an option within the business administration degree program. At the same time, typical students achieve a well-rounded education by selecting courses in the liberal arts and the sciences from other colleges and schools in the University.

The business administration program comprises ten four-credit business administration courses (ADMN prefix) representing foundational business knowledge and skills, one 1-credit business administration course to develop and demonstrate proficiency with computer applications, two four-credit economics courses (ECON prefix), and one



400-level course in mathematics (MATH prefix). All but one of these required courses are generally completed in the first five semesters of enrollment at WSBE, leaving the student with the flexibility in the final three semesters at WSBE to earn an option in one of the offered areas. University general education requirements and other non-WSBE classes are generally taken throughout a student's time at UNH.

While taking the ten core business administration courses, a student will gain an introduction to all of the major areas of business. Using this knowledge, students decide upon an area of business in which they desire to concentrate. Within the business degree program, students must designate an option. The latest a student may declare an option is during the fall semester of their junior year, typically during preregistration for spring courses. Students are encouraged to discuss their interests with several faculty members and an academic adviser in this decision-making process. The options currently offered in the business administration program are listed here. 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 abreast of these changes, through WSBE's Undergraduate Programs Office.

#### ***Options in the Business Administration Program:***

- Accounting
- Entrepreneurial Venture Creation
- Finance
- Information Systems Management
- International Business and Economics Management
- Marketing
- Student-Designed

Options comprise a minimum of four courses, but requirements do vary by option. Due to the specialized nature of some career fields, course requirements are greater in some options than others.

A typical plan of study follows. The options have different requirements, which are provided later. However, a detailed schedule of study for each option is not provided here. Students should check with the WSBE Undergraduate Programs Office for specific recommendations regarding scheduling of courses in the option areas and the suggested plan of study.

#### **Freshman: Fall**

ADMN 400, Introduction to Business  
ADMN 403, Computing Essentials for Business (1 credit, credit/fail grading)  
ADMN 405, Freshman Academic Experience I (1 credit, credit/fail grading)  
ECON 401, Macro Economics or 402, Micro Economics  
MATH 420, Finite Math or 424A, Calculus for Social Sciences

#### **Freshman: Spring**

ADMN 406, Freshman Academic Experience II (1 credit, credit/fail grading)  
ADMN 410, Management Information Systems  
ECON 401 or 402  
ENGL 401

#### **Sophomore: Fall**

ADMN 420, Business Statistics  
ADMN 502, Financial Accounting

#### **Sophomore: Spring**

Students typically declare an option during this semester.  
ADMN 503, Managerial Accounting

#### *One or two of the following courses*

ADMN 601, Introduction to Financial Management  
ADMN 611, Behavior in Organizations  
ADMN 640, Quantitative Decision Making  
ADMN 651, Marketing

#### **Junior: Fall**

Must declare an option by this semester.  
Take the remaining 600-level courses from the Sophomore Spring list.

#### **Junior: Spring**

\*Course(s) in option area

#### **Senior: Fall**

\*Course(s) in option area  
ADMN 703, Strategic Management: Decision-Making (or take in Senior Spring term)

#### **Senior: Spring**

\*Course(s) in option area  
ADMN 703, Strategic Management: Decision-Making (if not taken in Senior Fall term)

\*Depending on the choice of option and the specific requirements thereof, students may be able to take WSBE or non-WSBE electives for some of these courses.

The ***Option in Accounting*** provides students with opportunities in a variety of fields, including internal audit, external audit, tax preparation and planning, and consulting. Demand for accountants has been consistently strong. The goal of the accounting option is to prepare students for a career in accounting and the qualifications to obtain certifications, such as Certified Management Accountant (CMA), Certified Internal Auditor (CIA), and Certified Fraud Examiner (CFE). The accounting option also prepares

students to enter the Master of Science in Accounting program offered by WSBE. Obtaining a Master's degree is a necessary requirement for taking the CPA exam in most states, including Massachusetts and Maine.

#### **Required**

ACFI 621, Intermediate Financial Accounting I  
ACFI 622, Intermediate Financial Accounting II  
ACFI 723, Advanced Managerial Concepts and Applications  
ACFI 724, Auditing  
ACFI 726, Taxation and Management Strategy  
MGT 647, Business Law I

#### *In addition, one course chosen from the following*

ACFI 725, Financial Statement Analysis  
ACFI 750, Internship in Accounting  
ACFI 752, Independent Study in Accounting (including Tax Challenge)  
ADMN 799, Honors Thesis in Accounting

The ***Option in Entrepreneurial Venture Creation (EVC)*** is designed for students who intend to start a high growth business, work for a new venture or become involved in a new venture creation within an established organization. The EVC Option fosters an entrepreneurial culture throughout the program. The priority is real-world learning in the high growth environment of entrepreneurial ventures. The program includes active student participation, a seminar format, field trips to entrepreneurial ventures and guest speakers. Each student participates in a senior project and an internship at a high tech start-up.

#### **Required**

MKTG 764, New Product Development or MKTG 763, Market and Opportunities Analysis  
DS 741, Private Equity/Venture Capital  
DS/MGT 742, Internship in Entrepreneurial and Management Practice  
MGT 732, Exploration in Entrepreneurial Management

The ***Option in Finance*** provides students with opportunities in a variety of disciplines including banking, insurance, corporate finance, investment management, and risk management. Finance majors are in excellent demand. The goal of the finance option is to expose the student to all three major branches of finance: investments, corporate, and financial institutions. At the same time, the option allows the student some flexibility in choosing courses. The option helps students planning to sit for the Chartered Financial Analyst (CFA) Level I exam, the Certified Financial Manager (CFM) exam, and the Certified Financial Planner (CFP) exam.

**Required**

ACFI 701, Financial Policy  
 ACFI 702, Investments Analysis  
*In addition, two of the following*  
 ACFI 703, International Financial Management  
 ACFI 704, Derivative Securities and Markets  
 ACFI 705, Management of Financial Institutions

The *Option in Information Systems Management* provides students with both business problem-solving skills and in-depth technical knowledge. This unique combination of skills is in short supply, and the employment outlook is outstanding. The program concentrates on two areas: 1) organizations, with an emphasis on business processes, and 2) technology, with an emphasis on analysis, design, implementation, and management of an organization's information systems. Students take courses from the computer science department and WSBE in completing the option, and a senior-level industry project is a core component of the program.

**Required**

Information Systems Development: Currently CS 405, Visual Basic I, or equivalent. The Faculty Coordinator of the option must approve any substitute course for CS 405.

DS 773, Database Management Systems  
 DS 774, Electronic Commerce Systems  
 DS 775, Information Systems Project  
 DS 780, Systems Analysis and Design; or  
 DS 798, Topics in Decision Sciences (specific topics may change from year to year)

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.

**Required**

ECON 645, International Economics

*Three (3) of the following*

ACFI 703, International Financial Management  
 MGT 755, International Management  
 MKTG 760, International Marketing  
 ECON 611, Intermediate Macroeconomics  
 ECON 746, International Finance

*One of the following*

One of the remaining courses from list above.  
 4-credit graded Internship at an International Organization  
 1-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 668, Economic Development  
 ECON 692, International Economic Integration  
 ECON 745, International Trade  
 ECON 747, Multinational Enterprises

The *Management Option* 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 problem-solving, planning, and interpersonal skills related to ethical leadership in the new economy, managing innovation and change, 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. Future career paths include an array of management, supervisory, sales, and other positions in established and entrepreneurial businesses. The option is also recommended for students considering graduate education in management or law.

**Required**

MGT 614, Organizational Leadership and Structure  
 MGT 701, Business, Government, and Society

*In addition, two 600- or 700-level MGT courses. Current offerings include, which may change from year to year*

MGT 647, Business Law I (or MGT 648 Business Law II; MGT option students can count at most one Business Law course toward the MGT option)  
 MGT 713, Leadership Assessment and Development  
 MGT 732, Exploration in Entrepreneurial Management  
 MGT 755, International Management  
 MGT 798, Applied Management Seminar (open only to MGT option students with GPA of at least 3.20)  
 MGT 798, Topics in Management (topics will change from year to year)

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. The option addresses key linkages critical to effective customer and product 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. Students can earn an option in marketing by successfully completing the requirements in the following table. Students are required to minimally take the following courses:

**Required**

MKTG 752, Marketing Research  
 MKTG 753, Consumer/Buyer Behavior  
 MKTG 762, Marketing Workshop  
 MKTG 763, Market Opportunity Analysis  
 At least two additional 700-level Marketing (MKTG) courses. 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.

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 the faculty coordinator's approval, the proposal must receive approval from the academic director of undergraduate business programs and the Whittemore School Dean's Office.

Students applying for this option will normally be expected to have a grade point average of at least 3.0.

The student-designed option in business administration shall consist of at least five Whittemore School courses, at least three of which shall be from the business administration departments (currently accounting and finance, decision sciences, management, and marketing).

**Economics (ECON)**

[wsbe.unh.edu/Dept\\_Economics/home.cfm](http://wsbe.unh.edu/Dept_Economics/home.cfm)

*(For course descriptions, see page 170.)*

**Chairperson:** Evangelos O. Simos

**Professors:** Karen Smith Conway, Bruce T. Elmslie, Richard W. England, Evangelos O. Simos, James R. Wible, Robert S. Woodward

**Associate Professors:** Michael D. Goldberg, Marc W. Herold, Ju-Chin Huang, Neil B. Niman, Torsten Schmidt

**Assistant Professors:** Reagan A. Baughman, Robert D. Mohr

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 program



is 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; these include 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.

Graduate work in economics can lead to careers in college teaching, research in public and private agencies, and business consulting. Those interested in studying economics at the graduate level should ask their economics professors what undergraduate coursework is appropriate and which graduate schools would be suitable.

Courses in economics are open to nonmajors on a space-available basis. Students majoring in other programs have found that certain economics courses are useful supplements to their own majors and a help in gaining employment. For example, political science majors can profit from studying public economics, economic development, and international economics. Mathematics and engineering students might elect to study econometrics and intermediate microeconomics. Environmental conservation majors could choose to study ecological or energy economics. For more information on economics electives, please consult the Whittemore School Undergraduate Programs Office (McConnell 120) or the chairperson of the economics department.

The department offers the choice of a B.A. degree or a B.S. degree in 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 to 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.

B.A. economics majors must complete eight courses in economics plus ADMN 420 with a grade of at least C- (1.67) in each course and an average grade of 2.0 or better in the major courses. These courses must include ECON 605 and 611. In addition, majors must complete either MATH 420 or 424A. Coursework in accounting is recommended but not required.

B.S. economics majors must complete nine 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 the major courses. These courses must include ECON 605, 611, 726, and 775. In addition, majors must complete MATH 424A, ADMN 403, 410, 420, 502, and 503.

Major credit toward ECON 605 and/or 611 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.

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 economics majors must satisfy the bachelor of arts or bachelor of science degree requirements.

The economics department offers three specialized options within the bachelor of art. By selecting economics electives from an approved list, a student majoring in economics can graduate with an option in financial and managerial economics, international and development economics, or public policy economics.

*A suggested plan of study for B.A. economics majors follows*

**Freshman Year**

ECON 401, 402, Principles of Economics (Macro and Micro);  
MATH 420 or MATH 424A  
ADMN 403, Computing Essentials for Business  
ADMN 405, Freshman Academic Experience I (1 credit,  
credit/fail grading)  
ADMN 406, Freshman Academic Experience II (1 credit,  
credit/fail grading)

**Sophomore Year**

ADMN 420, Business Statistics; ECON 605, Intermediate  
Microeconomic Analysis; ECON 611, Intermediate  
Macroeconomic Analysis

**Junior and Senior Years**

Economics electives (at least 4)

*A suggested plan of study for B.S. economics majors follows*

**Freshman Year**

ECON 401, 402, Principles of Economics (Macro and Micro);  
MATH424A  
ADMN 403, Computer Essentials for Business; ADMN  
405, Freshman Academic Experience I; ADMN 406,  
Freshman Academic Experience II; ADMN 410,  
Management Information Systems; ADMN 502,  
Introductory Financial Accounting

**Sophomore Year**

ADMN 420, Business Statistics; ADMN 503, Managerial  
Accounting; ECON 605, Intermediate Microeconomic  
Analysis; ECON 611, Intermediate Macroeconomic  
Analysis

**Junior and Senior Years**

ECON 726, Introduction to Econometrics; ECON 775, Applied  
Research Skills for Economists; Economics electives  
(at least 3)

A minor in economics consisting of five courses is also available. At least three of these courses must be taken at UNH. For more on the minor and options within the major, consult the Whittemore School Undergraduate Programs Office.

**Hospitality Management (HMGT)**

[wsbe.unh.edu/Dept\\_HospMgmt/home.cfm](http://wsbe.unh.edu/Dept_HospMgmt/home.cfm)

*(For course descriptions, see page 195.)*

**Chairperson:** Raymond J. Goodman, Jr.

**Professors:** Clayton W. Barrows, Raymond J. Goodman, Jr.

**Associate Professors:** Joseph F. Durocher, Jr., John C. Niser, Udo Schlenrich

**Affiliate Assistant Professor:** Sylvia H. Marple

The program in hospitality management is an integral part of the offerings of the Whittemore School. It is one of only a few programs worldwide that is accredited by both the Association to Advance Collegiate Schools of Business (AACSB) and the Accreditation Commission for Programs in Hospitality Administration (ACPHA). Graduates are prepared to assume management trainee and management positions in all sectors of the service sector, with primary emphasis on the hospitality industry.

Graduates have accepted positions in the lodging and food service sectors (and their allied businesses and wholesalers), software companies, tourism, travel and recreation industries, and in retirement facilities, hospitals, and college and university food service operations.

In order to have a well-rounded university education, students take courses in liberal arts as well as foundation courses in business administration and economics. The hospitality management curriculum builds upon this foundation and provides experience and in-depth education in the lodging and food service-related industries, as well as the broader industries that comprise the hospitality discipline.

With our on-campus learning laboratory, the New England Center Hotel and Conference Center, the program includes a mix of practical experiences along with classroom activities. These practical experiences are provided by major consulting projects to industry as part of classroom activities, lecture series, seminars, and field trips; a minimum of 800 hours approved work experience or practicum; and by involvement in the food service and lodging operations with University hospitality (the New England Center and campus dining and catering).

The Department of Hospitality Management offers seventeen required courses and three hospitality electives in groupings. Freshman and sophomore years consist of eight core courses. Some sophomore, junior-level, and senior-level courses include most of the functional hospitality and business disciplines required to develop into a successful manager. A wide range of elective courses, independent studies, and internships can complement the required curriculum. In addition, the program requires completion of one semester of a 400-level math course.

To graduate, students must obtain a 2.30 grade-point average in all major required courses and a minimum grade of C- in each major course. Graduates of this program who are qualified for, and interested in further allied studies, are well prepared for advanced degree programs in hospitality, tourism, business, law, institutional, or health administration. Students may earn up to six total credits in internships, independent studies, field experience, and supervised student teaching experiences.

*A required plan of study is as follows*

#### Freshman Year

HMG 401, The Hospitality Industry: An Historical Perspective and Distinguished Lecture Series  
 HMG 403, Introduction to Food and Beverage Management  
 ADMN 405, Freshman Academic Experience I (1 credit, credit/fail grading)  
 ADMN 406, Freshman Academic Experience II (1 credit, credit/fail grading)  
 HMG 567, Food and Beverage Operations Management  
 ADMN 403, Computing Essentials for Business  
 ADMN 502, Introductory Financial Accounting  
 ECON 401, Principles of Economics (Macro) and ECON 402, Principles of Economics (Micro)  
 University general education courses

#### Sophomore Year

HMG 554, Lodging Operations Management  
 ADMN 420, Business Statistics  
 HMG 618, Uniform Systems for the Hospitality Industry  
 Four University general education courses

#### Junior Year

HMG 600, Hospitality Marketing Management  
 HMG 607, Advanced Food & Beverage Management  
 HMG 625, Hospitality and Employment Law  
 HMG 635, Hospitality Human Resource Management  
 ADMN 611, Behavior in Organizations  
 Hospitality Management Elective\*  
 2 general education courses

#### Senior Year

HMG 655, Hospitality Finance and Development  
 HMG 703, Strategic Management in the Hospitality Industry  
 Hospitality Management Electives\*  
 4 free electives

\*Three elective courses in Hospitality Management (or two electives and an internship, teacher assistant, or independent study analysis) are required for graduation.

*A minor in hospitality management comprises five courses. The four listed below are required.*

HMG 401, Hospitality Industry: Historical Perspectives and Distinguished Lecture Series  
 HMG 554, Lodging Operations Management  
 HMG 567, Food and Beverage Operations Management  
 ADMN 502, Introductory Financial Accounting

*Choose one of the following*

HMG 661, Meeting Planning Management  
 HMG 681, Resort Management  
 HMG 771, Beverage Management/International Wines  
 HMG 777, Casino Management  
 HMG 772, Senior Living Industries Management  
 HMG 750, Senior Operations Seminar

#### International Affairs (dual major)

*(For program description, see page 111.)*

## Departments

### Accounting and Finance (ACFI)

[wsbe.unh.edu/Dept\\_AcctFinance/home.cfm](http://wsbe.unh.edu/Dept_AcctFinance/home.cfm)

*(For course descriptions, see page 145.)*

**Chairperson:** Ahmad Etebari

**Professors:** Ahmad Etebari, Fred R. Kaen

**Associate Professors:** Stephen J. Ciccone, Afshad J. Irani, Catherine A. Plante

**Assistant Professors:** Brian John Bolton, William C. Johnson, Stefanie Tate, Le Xu

**Lecturer:** Edwin Nelson

**Adjunct Faculty:** William F. Knowles

Accounting and finance are fundamental academic disciplines in business schools. Accounting provides the basic language of businesses and the underlying structure for information systems. Finance provides important knowledge about asset management, capital markets, and risk strategies. This

department coordinates the options in accounting and finance and is responsible for the Master of Science in Accounting.

### Decision Sciences (DS)

[wsbe.unh.edu/Dept\\_DecSciences/home.cfm](http://wsbe.unh.edu/Dept_DecSciences/home.cfm)

*(For course descriptions, see page 168.)*

**Chairperson:** A. R. Venkatachalam

**Professors:** Barry Shore, Jeffrey E. Sohl, A. R. Venkatachalam

**Associate Professors:** Roger B. Grinde, R. Daniel Reid, Christine M. Shea, Eleanne M. Solorzano, Craig H. Wood

**Assistant Professors:** Kholekile L. Gwebu, Honggeng Zhou

**Instructor:** Peter W. Royce

**Lecturer:** Matthew J. Macarty

Data-driven decision expertise is critical for the survival and growth of modern enterprises. The Decision Sciences Department brings together faculty with special expertise in decision support systems, enterprise information systems, enterprise integration, management science, business statistics, operations/technology management, operations research, and manufacturing strategy. This department coordinates the options in information systems management and entrepreneurial venture creation.

### Management (MGT)

[wsbe.unh.edu/Dept\\_Management/home.cfm](http://wsbe.unh.edu/Dept_Management/home.cfm)

*(For course descriptions, see page 205.)*

**Chairperson:** Michael J. Merenda

**Professors:** Ross J. Gittel, Allen M. Kaufman, Michael J. Merenda

**Associate Professors:** Carole K. Barnett, Vanessa Urch Druskat, Peter J. Lane, William Naumes, Richard Saavedra

**Assistant Professors:** Jun Li, Anthony T. Pescosolido

**Affiliate Assistant Professor:** Margaret Naumes

**Adjunct Faculty:** Timothy Churchard, Karen Fisher, William Frago, Robert Gough, Thomas Hand, William Hassey, Eric Herr, Peter Hughes, Peter Masucci, Meera Venkatachalam

The study of management focuses on how organizations develop, craft, and implement winning strategies, structures, systems, and values in global markets. Courses emphasize the organization's stakeholders and the accompanying social, political, legal, economic, and technical dynamics of worldwide markets. The department's goal is the devel-



opment of effective, socially responsible, and ethical leaders through innovative teaching, research, and service. Courses cover such topics as leadership, decision-making, ethics, innovation, organizational learning, entrepreneurship, knowledge and human resource management, governmental policy making, and global competitiveness. The department's approach to teaching involves educational methods that promote experimental learning, self-awareness, theoretical mastery, and case studies and managing oneself. A major emphasis is on action learning through group projects, business plan preparation, and the case method.

Concentrating in marketing provides students with a wide array of career paths, including advertising, sales, retailing, market analysis, public relations, marketing research, product or brand management, sales forecasting, competitive analysis, strategic marketing planning, media planning, and several others. Accordingly, the department offers tracks beyond the set of core courses required of all marketing students to help students prepare for such careers. The department coordinates the option and tracks.

### **Marketing (MKTG)**

**[wsbe.unh.edu/Dept\\_Marketing/home.cfm](http://wsbe.unh.edu/Dept_Marketing/home.cfm)**

*(For course descriptions, see page 206.)*

**Chairperson:** Michael J. Merenda

**Professor:** Charles W. Gross

**Assistant Professors:** Ludwig A. Bstieler,  
Jeong Eun Park

**Instructor:** Mary S. Wagner

**Lecturer:** William C. Machanic

**Adjunct Faculty:** Peter F. Masucci

The marketing department is dedicated to preparing students for 21st century marketing careers by:

- offering students a strong marketing foundation and a career track that will make them attractive to employers upon graduation and provide the basis for life long marketing learning;
- interacting with students in ways that encourage individual curiosity, interest, and expression;
- engaging in leading-edge scholarly research and integrating that research into the marketing curriculum.

# SPECIAL UNIVERSITY PROGRAMS

## University-Wide Programs

Hamel Center for Undergraduate Research  
Honors Program  
Fellowship Office

## Interdisciplinary Programs

Computer and Information Technology Minor  
Earth, Oceans, and Space  
Gerontology  
Intercollege Courses  
International Affairs  
Marine Sciences  
Race, Culture, and Power  
Student-Designed Majors  
War and Peace Studies

## Preprofessional Programs

Prelaw  
Premedical/Prehealth Care Professional  
Off-Campus Programs  
Consortium (NHCUC) Student Exchange Program  
Exchange Programs Within the U.S.  
New England Subdegree Exchange Program  
UNH/UNHM Cross Registration

## Study Abroad Programs

## Other Programs

Reserve Officer Training Corps Programs

## Interdisciplinary Programs

(Found under their separate colleges and schools.)

African American studies minor, page 24  
American studies minor, page 25  
Asian studies minor, page 25  
Biology, page 90  
Canadian studies minor, page 26  
Community and environmental planning, page 91  
Dual degrees, page 18  
Environmental and resource economics, page 93  
Environmental conservation studies, page 91  
Environmental engineering minor, page 56  
Five-year B.A.-M.Ed. program, page 33  
Five-year B.S.-M.S.A. program, page 103  
Five-year B.S.-M.S. in Biochemistry, page 88  
Five-year B.S.-M.S. in Occupational Therapy, page 80  
Genetics minor, page 85  
History and philosophy of science minor, page 26  
Humanities major and minor, page 27 and 38  
Independent study and projects in the College of Engineering and Physical Sciences, page 54  
Interdisciplinary mathematics, page 67  
Justice studies minor, page 27  
Latin American studies minor, page 28  
Linguistics major, page 43  
Materials science minor, page 69  
Nutritional sciences, page 97  
Religious studies minor, page 29  
Second majors, page 19  
Student-designed majors, page 114  
Wildlife ecology, page 99  
Women's studies major and minor, page 29 and 52

**T**his section describes University-wide programs, interdisciplinary study opportunities, preprofessional programs (prelaw, premed/prehealth), off-campus and study abroad programs, and other special programs at UNH.

## University-Wide Programs

### Hamel Center for Undergraduate Research (UROP/IROP/SURF/Inquiry)

In keeping with this research university's mission to create and disseminate knowledge, UNH's Hamel Center for Undergraduate Research offers undergraduates-working in concert with UNH faculty mentors-both funding and administrative support for individually designed academic projects ranging from laboratory research to humanist scholarship and fine and performing arts creations. Once completed, projects and their student authors may receive further support from Undergraduate Research for presentations at national and international conferences and for on-line publication in the undergraduate research journal, *Inquiry*.

Initially known as UROP (Undergraduate Research Opportunities Program), the Hamel Center for Undergraduate Research currently offers year-round academic opportunities both in the U.S. and abroad via competitive grant applications. Undergraduate Research Awards (URA) are available each semester (research time commitment is flexible); Summer Undergraduate Research Fellowships (SURF) awards for the U.S. and abroad offer support between academic years. By registering for INCO 590, students can work directly with faculty members while receiving academic credit and support for research expenses. The International Research Opportunities Program (IROP), a research summer abroad under the direction of both a UNH mentor and a colleague at the research location, offers nearly unlimited possibilities for exploration of any topic anywhere in the world (recent destinations: Mongolia, Thailand, Namibia, Germany, Australia; recent topics: moose habitats, neo-natal care in China, Bangkok police department organization, impressionist strategies for open-air painting).

Grants from the Hamel Center for Undergraduate Research open doors on real-world disciplinary practice, graduate schools, post-baccalaureate fellowships, and careers; Undergraduate research develops first-hand knowledge of the world and one's place in it. For information about all

awards, programs, and *Inquiry*, contact the Hamel Center for Undergraduate Research in 209 Hood House, (603) 862-4323, or visit the Web site at [www.unh.edu/undergrad-research](http://www.unh.edu/undergrad-research).

### Honors Program

The University of New Hampshire has a tradition of encouraging academic achievement through its 21 honorary societies, including active chapters of Phi Beta Kappa and Phi Kappa Phi. In 1984, the University took another step toward the recognition of outstanding students by establishing an undergraduate honors program. The University Honors Committee, made up of representatives from all colleges of the University, the Office of Admissions, the Division of Student and Academic Services, and the Registrar's Office, supervises the operation and requirements of the program.

There are two ways to enter the University Honors Program:

1. The Office of Admissions identifies a number of qualified incoming freshmen to be admitted to the honors program.
2. Freshmen who demonstrate academic excellence are also invited to join the program.

Participation in the University Honors Program does not add courses to those required to graduate. The first two years of the program focus on general education requirements. Students take a minimum of four honors-designated general education courses, one of which is an honors seminar based on a special topic. All students must attain a cumulative grade-point average of 3.20 by the end of their sophomore year in order to continue in the honors program.

The upper class part of the honors program consists of honors work in the majors. Information describing these programs is available in department and college advising offices, in the Honors Program Office, and on-line at [www.unh.edu/honors-program/requirements/](http://www.unh.edu/honors-program/requirements/). Programs with "honors in major" work are animal sciences, anthropology, arts, biochemistry, biology, business administration, chemistry, chemical engineering, civil engineering, classics, communication, communication disorders,



computer science, earth sciences, economics, English, electrical and computer engineering, environmental conservation, environmental horticulture, environmental and resource economics, family studies, forestry, French, geography, German, health management and policy, recreation management and policy, history, hospitality management, humanities, kinesiology (exercise specialist option), linguistics, mathematics, mechanical engineering, medical laboratory science, microbiology, music, nursing, nutritional sciences, occupational therapy, outdoor education, philosophy, physics, plant biology, political science, psychology, Russian, social work, sociology, Spanish, theatre, wildlife management, women's studies, and zoology. Successful completion of University Honors Program requirements entitles the student to receive the designation "University honors in major" on his or her academic record and diploma. Completion of "honors in major" only is similarly denoted.

To satisfy honors program requirements, students must have a final cumulative grade-point average of 3.20 and meet the grade-point average requirements of their honors-in-major program. All courses used to achieve an honors designation must have a minimum grade of B-, and may not be taken pass/fail.

Full-tuition and partial-tuition merit-based scholarships are available to a select number of incoming freshmen. Several partial-tuition scholarships are also awarded to upper-class students. For more information, please contact Lisa MacFarlane, director, University Honors Program, Hood House.

### Fellowships Office

The UNH Fellowships Office provides information, counsel, and editorial support to 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 screening committees.

Established in 2005, the Fellowships Office is situated in the University Honors Program. In recruiting, advising, and supporting students with exceptionally strong records of academic excellence, the office staff collaborates campus-wide with other offices and departments of the university, including the Center for International Education 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 Fellowships Office staff holds membership in the National Association of Fellowships Advisors. For more information, please contact Dr. Robert E. Stiefel, Coordinator and Advisor, The Fellowships Office, Hood House 220. Telephone: (603) 862-0733. E-mail: Robert.Stiefel@unh.edu.

## Interdisciplinary Programs

### Computer and Information Technology Minor

The computer and Information Technology (CIT) minor is a way for students from a variety of non-technical fields to bridge the gap between a primarily non-technical education and a technical world. Graduates from varying fields are discovering that there is a great need to have computer competency in addition to the knowledge they gain in their major; and, the CIT minor, which is tailored to grow students' understanding of computer and information technology applications, helps prepare students for the future.

The student who minors in CIT must complete a minimum of 20 credits of CIT courses. All students must take CS 402, Survey of Computer Science, as well as a programming course. The other three courses can be chosen from the following options list.

Credit toward the minor will only be given for courses passed with C- or better, and a 2.00 grade-point average must be attained 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 must be made to the student's dean to have the minor shown on the academic record. Students must consult with their major adviser and also the minor supervisor.

### Requirements

1. CS 402, Survey of Computer Science
2. A programming course chosen from the following:
  - CS 405, Introduction to Applications Programming with Visual Basic
  - CS 410, Introduction to Scientific Programming
  - CS 503, Introduction to Web Programming

### Options (At least two of the Options courses must be 500-level)

- CS 401, Computer Applications
- CS 403, Online Network Exploration
- CS 502, Intermediate Web Design
- CS 504, Intermediate Web Programming
- CS 505, Database Programming
- CS 506, Intermediate Applications Programming with Visual Basic
- CS 509, Network/System Administration

Students who wish to minor in computer and information technology should consult Israel Yost, Department of Computer Science, 214 Parsons Hall, (603) 862-2245 or e-mail Israel.Yost@unh.edu.

### Earth, Oceans, and Space

**Professors:** John D. Aber, Amitava Bhattacharjee, Edward L. Chupp, Martin A. Lee, Eberhard Möbius, Berrien Moore III, Barrett N. Rock, Andrew A. Rosenberg, Andrzej Rucinski, James M. Ryan, Roy B. Torbert, Karen L. Von Damm

**Research Professors:** David S. Bartlett, Janet W. Campbell, Terry Forbes, Christopher W. Glass, Philip A. Isenberg, Changsheng Li, R. Bruce McKibben, Charles W. Smith III, Robert W. Talbot, Charles J. Vörösmarty

**Associate Professors:** Benjamin D.G. Chandran, James Connell, George C. Hurtt, Lynn M. Kistler, Mark L. McConnell, Joachim Raeder

**Research Associate Professors:** Jack E. Dibb, Mark A. Fahnestock, Charles J. Farrugia, Stephen E. Frolking, Antoinette B. Galvin, Pingguo He, Harold Kucharek, Marc R. Lessard, Clifford Lopate, Alexander A.P. Pszeny, Douglas C. Vandemark, Bernard J. Vasquez, Cameron P. Wake, Xiangming Xiao

**Assistant Professors:** Robert J. Griffin, Scott V. Ollinger, James M. Pringle

**Research Assistant Professors:** Bobby H. Braswell, John C. Dorelli, Yuri E. Litvinenko, Huiting Mao, Mary E. Martin, John R. Morrison, Chung-Sang Ng, Barkley C. Sive, Ruth K. Varney

The Institute for the Study of Earth, Oceans, and Space (EOS) is UNH's largest research organization and its first University Institute. It brings together under common themes a number of well-established research programs. Research activities are focused in EOS' four centers: the Climate Change Research Center, the Complex Systems Research Center, the Ocean Process Analysis Laboratory, and the Space Science Center.

EOS scientists are exploring processes on the Sun, solar influences on Earth and its magnetosphere, the chemistry and dynam-

ics of the atmosphere, changing climate, and large-scale ecosystems in terrestrial and marine environments, emphasizing complex impacts on and by human activities. Research takes EOS investigators from the most distant energetic phenomena in the universe to the Earth's environment in space; to tropical, temperate, and boreal forests; from the coast of New Hampshire, to the Gulf of Maine, and the deepest regions of the ocean; from the grasslands and agricultural fields of China to those of the American Midwest; from the great ice sheets of Greenland and Antarctica to the summit of Mount Washington. EOS scientists and students use satellites, aircraft, ships, and submersibles to explore and investigate the most important and inaccessible places in the universe, in our solar system, and on our planet.

The primary educational theme of the Institute is the training and mentoring of graduate students through participation in advanced research funded by major national and international organizations; for example, the National Aeronautics and Space Administration, the National Science Foundation, and the National Oceanic and Atmospheric Administration. However, EOS faculty teach and mentor undergraduate students as well, and there are numerous opportunities for undergraduates to participate in the research activities of the Institute. Undergraduates interested in EOS activities should contact either EOS faculty in their academic departments, or e-mail the EOS director's office, eos.director@unh.edu.

## Gerontology

(For course descriptions, see page 188.)

The gerontology interdisciplinary minor provides students with the opportunity to examine and evaluate the aging process as it affects the individual and society. Through in-depth inquiry, personal encounters, and classroom discussion, students develop an understanding of aging from a variety of perspectives. Students are encouraged to analyze the historical and philosophical foundations from which policies, programs, and professional activities affecting the aged are developed, implemented, and evaluated.

Gerontology minors are required to take a minimum of 20 credits (five courses) from the following list of courses approved by the Gerontology Interdisciplinary Minor Advisory Committee.

GERO 600, Introduction to Gerontology  
 GERO 795, Independent Study (a practicum arranged by the coordinator of the minor, or by the appropriate designee)  
 FS 525, Human Development  
 HMP 755, Aging and Long-Term Care Policy  
 KIN 607, Biology of Aging  
 NURS 535, Death and Dying  
 NUTR 760, Geriatric Nutrition  
 OT 501, Developmental Tasks of Adulthood  
 PSYC 582, Adult Development and Aging  
 PSYC 741, Cognitive Aging  
 SW 525, Introduction to Social Welfare Policy  
 SW 550, Human Behavior and Social Environment I  
 SW 700, Social Gerontology  
 SW 701, Women and Aging  
 SOC 720, Current Developments in the Family: Aging and Late-Life Family

Students who wish to minor in gerontology should consult the School of Health and Human Services Dean's Office.

## Intercollege Courses

(For course descriptions, see page 197.)

Courses appearing in previous editions of this catalog under the caption INCO 404 Honors: Introductory Seminar are offered this year with subject codes and the course number 444H. For more information, see University Academic Requirements, page 16. INCO 404 is reserved as a course designation for possible use in future years.

## International Affairs\*

(For course descriptions, see page 198.)

The Center for International Education offers undergraduate students the opportunity to pursue a dual major in international affairs. The dual major requires completion of the interdisciplinary international affairs program and any other major.

The purpose of the program is to expand students' global horizons, enhance their disciplinary major, and expand their career opportunities into the international arena.

\*The Department of Civil Engineering has worked with the UNH Center for International Education to develop a dual-major program in civil engineering and international affairs. Civil engineering students participating in this program develop a proficiency in a foreign language and spend at least one semester studying abroad in that language. Students can complete this program in five years or less and do not need to have existing skills in a foreign language to participate. For more information, contact Ray Cook at (603) 862-1411 or by e-mail to ray.cook@unh.edu.

## Required Core Courses

IA 401, International Perspectives: Science, Business, and Politics  
 IA 501, Global Issues in International Affairs  
 IA 701, Seminar in International Affairs

## Four Electives

Choose one from each of the program's four electives:  
 Foreign Area (to be taken prior to foreign experience)  
 Science, technology, and the private sector  
 Public policy  
 Theory in international affairs

## Competency in Geography

Satisfactory score on geography exam, administered once a semester

## Competency in a Foreign Language

Functional reading, writing, and speaking ability equivalent to the third-year, second-semester level

## Foreign Experience

Minimum of eight weeks in a non-English speaking country

The courses in the dual major program are multidisciplinary, taught by faculty from many different departments in the University. They are designed to help students appreciate the complex interrelationships and interdependencies among nations and peoples and to equip students with the analytical skills and broad perspectives necessary for both public- and private-sector international careers.

Students who wish to declare international affairs must earn a C or better in IA 401, have declared (or be prepared to declare) a disciplinary major, and have a 2.50 cumulative grade-point average. After declaration, students are expected to maintain at least a 2.50 grade-point average, which is the minimum required for study abroad at UNH.

IA 401, a prerequisite for IA 501, should be taken no later than spring of the sophomore year. IA 501 should be taken prior to foreign experience. The geography exam is offered every semester. Students may take the exam three times, but must pass it before taking IA 701.

The foreign experience (usually completed during the junior year), the geography exam, and the foreign language requirement are completed before taking IA 701 in the senior year. To acquire the knowledge, skills, and experience that come from residence in a foreign culture, 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. All foreign experiences must be pre-approved by the IA major adviser or the University Committee on International Studies.



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 Center for International Education, Hood House, (603) 862-2398, [www.unh.edu/cie](http://www.unh.edu/cie).

### Marine Sciences

Undergraduate programs in marine science and ocean engineering at the University of New Hampshire reflect the diversity of the ocean itself and are enriched by easy access to a variety of natural laboratories, including tidal rivers, estuaries, coastal areas, and the open ocean.

Studies in marine science and ocean engineering are offered through various departments of the University. Students identify the discipline (ranging from zoology through earth sciences to mechanical engineering) they like best and pursue marine specializations related to that area of study. Studies can take place in research laboratories on campus as well as at various field stations or aboard UNH research vessels.

### Marine Program

The Marine Program provides a campus-wide umbrella for marine activities and maintains specialized facilities to support efforts of faculty in individual departments and organized research units. Academic programs are focused broadly on marine biology, ocean engineering, and ocean science, and the Marine Program supports experiential learning opportunities beyond the formal classroom through three centers: the Center for Marine Biology, the Center for Ocean Engineering, and the Center for Ocean Sciences.

Estuarine research is pursued at the Jackson Estuarine Laboratory on Great Bay, which is designated a National Estuarine Research Reserve. The Coastal Marine Laboratory, a major running-seawater facility, is located in nearby Newcastle. Research on salmonids and other freshwater animals is conducted at the Anadromous Fish and Aquatic Invertebrate Research Laboratory, located near the Durham reservoir. The Institute for the Study of Earth, Oceans, and Space is a major center for ocean sciences research. The on-campus Chase Ocean Engineering Laboratory houses both educational and research activities. Off-shore and coastal studies are carried out aboard the University's 50-foot research vessel, the

*Gulf Challenger*, which has docking facilities at the Jackson Lab and at the State Fish Pier in Portsmouth Harbor. During the summer, students may live and study at the Shoals Marine Laboratory on Appledore Island, one of the Isles of Shoals. There UNH and Cornell University cooperatively offer undergraduate courses in marine sciences in a summer field laboratory setting. Each of the marine program facilities features modern specialized equipment and opportunities for undergraduate students to work and carry out independent research.

### Curricula in the Marine Sciences

There are currently two undergraduate majors and four minors in the marine sciences. The College of Life Sciences and Agriculture offers a B.S. in biology with an option in marine and freshwater biology (see biology under COLSA) and the Department of Earth Sciences offers an option in oceanography as part of its B.A. earth sciences program (see page 60). In addition to these offerings, students can declare a major in any established discipline and augment it with a minor in marine biology, ocean engineering, oceanography, or wetland ecology.

Students are encouraged to declare their intention to follow these programs as soon as possible.

### Marine Biology Minor

The minor is designed to provide a foundation in marine biology and related sciences to any UNH undergraduate student with the exception of students enrolled in the MFB option of the Biology Program. It is offered through the Zoology Department. The minor consists of 20 credits with grades of C- or better and no pass/fail courses. No more than 8 major requirement credits may be used towards the minor. All courses in the program are selected in consultation with the minor adviser. Contact Dr. Larry Harris, (603) 862-3897, Department of Zoology, for more information.

Students who want to minor in marine biology must take one introductory course (ESCI 501, Introduction to Oceanography; ZOOL/PBIO 503, Introduction to Marine Biology; or ZOOL 674, Field Marine Science) and four courses concentrating on an area of interest. For example, a student interested in marine mammals might take Mammalogy (ZOOL 712), Marine Invertebrate Evolution and Ecology (ZOOL 628), Marine Vertebrates (ZOOL 753), and Fisheries Biology (ZOOL 772). Courses commonly taken as part of the minor include BCHM 702; EREC

611; NR 610; PBIO 625, 721, 722, 725, 727; ENE 747; MICR 707, 714; ZOOL/PBIO 503 and ZOOL 610, 611, 628, 674, 710, 711, 730, 750, 751, 753, 772, 773, 795. 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 Program (TECH 797).

Students should declare their intention to minor in marine biology before the end of the junior year. During the final term, students should apply to the dean to have the minor shown on their transcript.

### Ocean Engineering Minor

The ocean engineering minor allows undergraduate engineering students to acquire a nucleus of knowledge about engineering pertaining to the ocean and the coastal zone.

To meet the University minor requirement, students must satisfactorily complete a minimum of five courses from the following list: ESCI 501, Introduction to Oceanography; OE 690, Introduction to Ocean Engineering; ESCI 752, Chemical Oceanography; ESCI 758, Introductory Physical Oceanography; ESCI 759, Geological Oceanography; OE 710, Ocean Measurements Lab; OE 744, Corrosion; OE 745, Environmental Acoustics I; OE 753, Ocean Hydrodynamics; OE 754, Ocean Waves and Tides; OE 756, Principles of Naval Architecture and Model Testing; OE 770, Fundamentals of Ocean Mapping; OE 771, Geodesy and Positioning for Ocean Mapping; OE 781, OE 785, Environmental Acoustics II; OE 795, Special Topics in Ocean Engineering; ENE 747, Introduction to Marine Pollution and Control; OE 757, Coastal Engineering and Processes; and TECH 797, Undergraduate Ocean Research Program. Ordinarily, students typically take ESCI 501, TECH 797, and OE 690 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, Dr. Kenneth C. Baldwin, (603) 862-1898, Chase Ocean Engineering Laboratory, no later than the beginning of the junior year. During the final semester, students must apply to the dean to have the minor shown on their transcript.

### ***Oceanography Minor***

The minor in oceanography is available to all students in the University interested in obtaining a broad background in oceanography and is offered through the Department of Earth Sciences. 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, James Pringle, (603) 862-5000, Department of Earth Sciences.

Required courses include 1) ESCI 501, Introduction to Oceanography; 2) two of the following courses: ESCI 750, Biological Oceanography; ESCI 752, Chemical Oceanography; ESCI 758, Introductory Physical Oceanography; ESCI 759, Geological Oceanography; 3) any two of the following courses, or a suitable substitute approved by the minor adviser (at least one of these courses should be in the biological sciences): PBIO 625, 722; CIE 757; ENE 747, 753; ESCI 653, 658, 754, 756, 760, 770, 771; MICR 707; OE 690, 710, 753, 754, 757, 785; EREC 611; TECH 797; ZOOL 503, 560, 674, 720, 725, 730, 751, 753, 772, 775; ZOOL/ESCI/750.

Students are encouraged to declare their intention to minor in oceanography before the end of the junior year. During the final semester, students should apply to the dean to have the minor shown on their transcript.

### ***Shoals Marine Laboratory***

The University of New Hampshire, in cooperation with Cornell University, offers a summer field program in marine sciences on Appledore Island of the Isles of Shoals. Undergraduate courses introduce students to a broad array of marine sciences, including oceanography, marine biology, fisheries, and marine resources. Introduction to Marine Science (ZOOL 474), a three-week, 4-credit course, is offered every other summer at the Shoals Marine Laboratory (SML). It has no prerequisites and satisfies the general education requirement in the biological sciences. The four-week, 8-credit general courses, Field Marine Science (ZOOL 674) and Field Marine Biology and Ecology (ZOOL 675), are offered in June and mid-July, respectively, each summer. They draw upon the backgrounds of numerous faculty and others associated with marine science and fisheries. There are daily lectures and work in laboratory and field. The courses are graded on a letter-grade basis; at least one full year of college biology or the equivalent is a prerequisite. All SML courses may be taken

for Honors credit by UNH students with a minimum 3.2 grade-point average.

Other credit courses are offered in marine botany, invertebrate zoology, experimental ecology, ornithology, animal behavior, fish ecology, coastal ecology and bioclimatology, wetlands, marine vertebrates, coastal policy, underwater research, and biological illustration.

Undergraduate research for credit is an option where students carry out part or all of an independent project at Shoals under the guidance of Shoals faculty. Shoals offers generous financial aid to UNH students outside of the normal UNH financial aid packages. For further information, contact Dr. Jessica Bolker at (603) 862-0071, or e-mail jbolker@cisunix.unh.edu, Department of Zoology, and consult the Web site at [www.sml.cornell.edu](http://www.sml.cornell.edu).

### ***Diving Program***

UNH has maintained an active research diving program for the past 36 years to provide assistance for faculty, staff, and students with both instruction and support for research diving, allowing many certified student divers to participate in University-sponsored underwater research projects. Today the UNH Dive Program consists of two areas: the academic portion where students, faculty, and staff may enroll in courses for academic credit (through the Department of Kinesiology), and the research portion, which supports faculty and student divers in University-sponsored underwater projects.

For further information about the UNH Diving Program as well as the offered workshops in rescue diving and diving accident management, contact Liz Kintzing, (ek@cisunix.unh.edu), diving program officer, through the Diving Program Office at (603) 862-3896.

### ***Marine Research***

There are many opportunities for undergraduates to participate in marine research under the supervision of UNH faculty.

The University has a Sea Grant College Program that supports research, teaching, and service projects through numerous partnerships with the National Oceanic and Atmospheric Administration. Marine research projects are also supported through the National Science Foundation, the Environmental Protection Agency, the Office of Naval Research, and other state and federal agencies, foundations and private donors.

Extensive research, interdisciplinary academic programs, and the extraordinary

variety of marine environments and facilities allow students to observe and learn about the frontiers of science and technology being explored in the ocean. For further information about marine opportunities, contact the Marine Program Office in the Jere A. Chase Ocean Engineering Laboratory or through the Marine Program Web site at [marine.unh.edu](http://marine.unh.edu).

### ***Race, Culture, and Power***

How does the category of race shape our lives, our politics, and our possibilities? Events in this country and internationally constantly remind us that race is an explosive issue. To be able to function as citizens of the world, one must understand the dynamics of race, culture, and power.

This minor reflects intellectual currents now being felt around the world. It prepares students to live in the twenty-first century.

Courses for the minor enable students to develop critical perspectives on the ways in which cultural differentiation and racial explanations have been used to maintain social, economic, and political power and justify inequalities and injustices.

To complete the minor, students are required to take one of the following three courses: INCO 450, an introductory course, ANTH 760: Race in Global Perspectives, or EDUC 797/897; Teaching Race, in addition to 16 credits of electives. Students must earn a C- or better in each course, and must maintain a 2.00 grade-point average in courses taken for the minor.

### ***Elective Courses***

Electives are approved for the minor and announced each semester in the Time and Room Schedule. Ordinarily, not more than two electives may be taken from the same academic department. A relevant internship may be substituted for one of the electives. Many electives are special topics and require student petition. Students should consult the minor coordinator before registration.

For further information please contact the coordinators, Nina Glick Schiller, Department of Anthropology, (603) 862-1848; [ninaglickschiller@unh.edu](mailto:ninaglickschiller@unh.edu) or Justus Ogembo, Department of Anthropology, (603) 862-2401; [jogembo@unh.edu](mailto:jogembo@unh.edu) or Mimi Winder, Administrative Assistant, Race, Culture, and Power office, 329 Huddleston, (603) 862-3753; [rcp.minor@unh.edu](mailto:rcp.minor@unh.edu).



### 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 Executive Vice President. Students who want to design their own majors are expected to give the committee evidence of careful thought and planning in a proposal submitted on or before October 15 during the student's junior year. The committee will convene soon after October 15 to review the proposals.

Submissions after this deadline are strongly discouraged, but if an application is late for reasons beyond the student's control, the SDM Committee may review the application on a case-by-case basis.

Proposal guidelines are available in the Office of the Provost and Executive Vice President and on the Academic Affairs Web site, [www.unh.edu/academic-affairs](http://www.unh.edu/academic-affairs). Click on "Undergraduate Students."

### War and Peace Studies

War is the scourge of humankind. Tribes, cities, and nations have gone to war against each other for as long as we have records; only here and there, among some small "precivilized" groups, has war been absent or strictly controlled. For as long as we have records, too, we find thoughtful people crying out against war and pleading for peace, arguing for principles to govern war's conduct and laboring to mitigate war's effects, imagining a world where war is abolished, and taking steps to bring that world about. As the scale of war has grown to a size now great enough to devastate the entire globe in a single conflict, more and more people have devoted themselves to preventing war and finding acceptable substitutes. In the nuclear era, age-old moral and religious discussion has joined with historical study and practical, even technical, research to produce a set of related disciplines sometimes called "war and peace studies."

To meet the requirements for the war and peace studies minor, students must complete two core courses (8 credits) and 12 credits of elective courses with a grade of C- or better. Ordinarily no two electives (or no more than 4 credits) may be taken from the same academic department. No elective may count for both a student's major and the war and peace minor. A relevant internship may be substituted for one of the electives. As they are announced, other relevant courses may be added to the list of acceptable electives. Students may request others not so listed. Courses carrying fewer than four credits will be counted as partial satisfaction of an elective requirement. If a good case can be made for it, a departure from any of these rules may be approved by the adviser for the minor and the coordinator.

All students will be assigned an adviser from the membership of the Committee on War and Peace Studies, ordinarily one not in the student's major department. The adviser will assist students in constructing a coherent program that suits their particular interests.

The core courses are INCO 401, War, and INCO 402, Peace. Occasionally a new core course may be included.

#### Departmental elective courses will include courses such as these

AERO 681, National Security Forces in Contemporary American Society (3 cr.)  
 CMN 456, Propaganda and Persuasion  
 HIST 617, Vietnam War  
 HIST 537, Espionage and History  
 NR 435, Contemporary Conservation Issues and Environmental Awareness  
 POLT 562, Strategy and National Security Policy  
 POLT 778, International Organization  
 SOC 780, Social Conflict

#### Special offerings that may serve as electives

ANTH 797, Advanced Topics in Anthropology (e.g., War and Complex Society)  
 ECON 698, Topics in Economics (e.g., Economics of War and Peace)  
 ENGL 595, Literary Topics; ENGL 693, 694, Special Topics in Literature; ENGL 797, 798, Special Studies in Literature (e.g., Literature of World War I, Literature of the Vietnam War)  
 HIST 600, Advanced Explorations (e.g., Comparative Revolutions)  
 HUMA 730, Special Studies (e.g., Nonviolence, Thinking about War and Peace)  
 INCO 404P, Honors: Introductory Seminar (e.g., Understanding War)  
 POLT 660, Special Topics in International Politics (e.g., Arms Control and Disarmament)

For more information, contact either Ken Fuld, Department of Psychology, or Michael Ferber, Department of English.

## Preprofessional Programs

### Prelaw

Many graduates of UNH attend law school. The faculty and staff advisers of the Prelaw Advising Committee work closely with students 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.abanet.org/legaled/prelaw/prep.html](http://www.abanet.org/legaled/prelaw/prep.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. Those skills 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.

Prelaw advising implements the ABA statement by working with student interests and strengths to select UNH courses, internships, and experiences that will develop those skills and values. Programmatically, the committee provides a prelaw library, visits to local law schools, and sponsors discussions with law school admission and financial aid representatives, and with members of the legal community. The committee also provides support for LSAT preparation, law school search, writing personal statements, and the application and selection processes.

Interested students should register with the committee by contacting the University Advising and Career Center, Hood House, at (603) 862-2064. Additional information is available on the Web at [www.unh.edu/prelaw-advising/](http://www.unh.edu/prelaw-advising/).

### Premedical/Prehealth Care Professional Study

The Pre-professional Health Programs Advising Office in Hood House provides advising for all students preparing for post-graduate careers in medicine, dentistry, optometry, chiropractics, podiatry, physical therapy, and physician assistant programs

(for information on the preveterinary medicine option in animal sciences, see page 87). There is no premedical or preidental major at UNH, so students are encouraged to major in the subject of most interest to them. A student's major is not considered in the medical school application process and students from majors in all five UNH colleges have been admitted to postgraduate health professional programs. Though premedical/preidental is not a major, interested students are expected to register with the Pre-professional Health Programs Advising Office in Hood House as soon as possible so as to be kept informed of important events, opportunities, and deadlines regarding preparation for application.

***A premedical/preidental program at UNH consists of the following:***

1. Taking the prerequisite courses for admission to a health professional program. Medical and dental schools generally require biology, physics, general chemistry, and organic chemistry—all two semesters each with laboratory. A semester of biochemistry is also required. A year of English is required, as is one year of math including at least one semester of calculus. Prerequisite courses can be taken as part of a student's major curriculum, as part of the general education requirements, or as electives.
2. Gaining volunteer/health care experience. Applicants to health professional programs will be expected to demonstrate a sustained involvement in volunteer and community service. A significant portion of this experience must take place in a health professional setting and include direct patient contact. Most students gain this experience by volunteering at a hospital, though volunteer opportunities are available in a wide range of settings, including nursing homes and community clinics.
3. Preparing for the requisite entrance exam. 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 taken by students no earlier than the spring of their junior year and should be taken only if the student has completed or is within a month of completing 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 Premedical/Preidental Advisory Committee—a body of 10-12 UNH faculty members with interest and/or experience in medical/dental education—to provide students with comprehensive confidential recommendation services at the time of application. An orientation meeting is held each September to outline the application process and establish timetables/deadlines. Students should note that the medical and dental school application process begins a full two years before matriculation; i.e., 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 grade-point average 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) 862-2064 or by e-mail at [Premed.Advising@unh.edu](mailto:Premed.Advising@unh.edu). The office also has a Web site at [www.unh.edu/premed-advising](http://www.unh.edu/premed-advising).

---

**Off-Campus Programs**

**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 consortium exchange allows matriculated undergraduates to use

educational resources that are not available at the home campus and are considered appropriate for their degree programs. The consortium exchange will be used only when academic reasons or other special circumstances warrant it. Approval of the UNH adviser and college dean is required. Schools in the NHCUC consortium include Colby-Sawyer College, Daniel Webster College, Franklin Pierce College, New England College, Southern New Hampshire University, Rivier College, St. Anselm College, UNH, 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 National Student Exchange Office in Hood House, (603) 862-3485.

**Exchange Programs Within the U.S.**

The University offers many possibilities for exchange study with other American institutions. Exchange programs provide an educational experience in a different environment within the United States. 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 more than 170 colleges and universities throughout the U.S. and its territories (including, but not limited to, Montana, New Mexico, Utah, Colorado, Florida, Alaska, and Puerto Rico). Several historically black colleges and universities are exchange members and several are members of the Hispanic Association of Colleges and Universities. 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 with at least a 2.50 grade-point average, have declared a major, receive permission from their college dean and adviser, and receive permission from the exchange 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 thus 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 National Student Exchange Office in 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 2.50 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 National Student Exchange Office in Hood House, (603) 862-3485.

### **UNH/UNHM Cross Registration**

Matriculated students at the University of New Hampshire and the University of New Hampshire at Manchester may take UNH courses at either location. Students must have permission from their academic advisers and must register for the courses on a space-available basis during the open registration period for each campus. For more information, students should contact James Wolf, associate registrar, Stoke Hall, or Nikki Blodgett, assistant registrar, UNH Manchester. See UNH Manchester, page 259, for course listings.

## **Study Abroad Programs**

The University offers opportunities for full-time degree candidates meeting eligibility criteria to study abroad in many foreign institutions. UNH-managed 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 or exchange fee. For information on study abroad programs, students should contact the Center for

International Education or the department identified in the UNH-managed program descriptions.

### **Study Abroad Eligibility**

Students enrolled in UNH baccalaureate degree programs may participate in approved study abroad programs provided they meet the following eligibility criteria:

1. must have earned at least 32 credit hours, at least 12 of which must have been earned at the University of New Hampshire at the baccalaureate level;
2. must have a minimum of 2.5 cumulative grade point average at the time of application to and at the time of departure for the study abroad program. Study abroad programs provided by UNH or other approved institutions may have higher minimum GPA requirements;
3. must have a declared major. Transfer students, including transfer students from the Thompson School of Applied Science (TSAS) are not eligible to study abroad during the first semester of their baccalaureate program at UNH.

Students enrolled in the degree programs of the Thompson School of Applied Science may participate in approved study abroad programs appropriate for two-year degree candidates. TSAS students must meet the following eligibility criteria:

1. must have earned 32 credits, at least 12 of which must have been earned at the University of New Hampshire at the associate degree level;
2. must have a minimum 2.5 cumulative grade point average at the time of application to and at the time of departure for the study abroad program. Study abroad programs provided by UNH or other approved institutions may have higher minimum GPA requirements.

### **Canada**

#### ***New England/Québec Student Exchange Program***

Students may spend one or two semesters at one of twenty French- or three English-speaking universities in the province of Québec. Eligibility requirements include a command of the language of the host campus, U.S. citizenship, and at least sophomore standing. Contact the Center for International Education, Hood House, (603) 862-2398 or [study.abroad@unh.edu](mailto:study.abroad@unh.edu).

### ***New England/Nova Scotia Student Exchange Program***

Students may spend one or two semesters at one of eleven participating Nova Scotia institutions offering programs in the liberal arts, agriculture, business, engineering, art, and other fields. Eligibility requirements include U.S. citizenship and at least sophomore standing. Contact the Center for International Education, Hood House, (603) 862-2398 or [study.abroad@unh.edu](mailto:study.abroad@unh.edu).

### **England**

#### ***Cambridge Summer 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 take courses in English, history, and the humanities, taught by faculty from Cambridge University and UNH. Students live, dine, study, and socialize together at Gonville and Caius College, one of the oldest colleges at Cambridge. The program is open to students who have successfully completed at least one year of college; participation fulfills UNH's general education requirement under Group 5. For more information, contact the director at the Department of English, Cambridge Program Office, 53 Hamilton Smith Hall, [www.unh.edu/cambridge](http://www.unh.edu/cambridge).

#### ***Lancaster 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. Contact the Center for International Education, Hood House, (603) 862-2398 or e-mail [study.abroad@unh.edu](mailto:study.abroad@unh.edu).

#### ***London Program***

At Regent's College in the heart of London, the University of New Hampshire sponsors courses in British studies, the arts, humanities, and a wide range of other basic subjects offered during the fall and spring semesters. 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 allows students to spend a semester or year in London while still making normal progress toward their U.S. degrees. To be eligible, students must have successfully completed at least one year of college, declared a major,

and achieved an overall grade-point average of at least 2.50. Interested students should contact the program coordinator, London Program Office, 53 Hamilton Smith Hall, [www.unh.edu/london](http://www.unh.edu/london).

## France

### *Summer French Language Program in Brest*

Qualified students in any major may take the equivalent of FREN 503 and/or 504, the UNH intermediate French sequence, the equivalent of FREN 631 and/or 632, and/or FREN 695, a more advanced language course not offered on the UNH campus. A port city in the province of Brittany in western France, Brest is the sister city of Portsmouth, New Hampshire.

The courses are offered summer only in intensive four-week sessions at the Centre International D'Etudes des Langes (CIEL). Students generally live with local families and attend classes a total of 24 hours per week. Credit for courses completed successfully will be automatically transferred to UNH. Application deadline is April 1 for June session and April 15 for July session. For more information contact Barbara Cooper, Department of Languages, Literatures, and Cultures, Murkland Hall, (603) 862-3771.

### *Junior Year Program in Dijon*

The Department of Languages, Literatures, and Cultures sponsors a junior year abroad program at the University of Burgundy in Dijon, France. Students generally live with French families in the heart of this historic city and take classes at the university with French students. Credit for all work completed successfully will be automatically transferred to UNH. The program is open to those who have completed FREN 631-632 and FREN 651-652, with a grade of B- or better. For more information, see Claire Malarte Feldman, Department of Languages, Literatures, and Cultures, Murkland Hall, (603) 862-1303.

### *Business Administration Program in Grenoble*

The Whittemore School makes available a spring semester of study in international business. This is an opportunity for students interested in international business, economics, and trade to participate in an English-speaking program while gaining exposure to French culture. The semester will begin early in January with a one-week orientation and introduction to France, followed by two weeks of intensive French language.

Students will be assessed and placed in the appropriate level.

Students enroll into five or six-week courses and can earn up to 18 credits a semester. Students who successfully complete six courses receive a Certificate in International Business from Group ESC Grenoble. For more information, contact Karen Schwendeman, WSBE, McConnell Hall, (603) 862-3885 or the Center for International Education, Hood House, (603) 862-2398, e-mail [study.abroad@unh.edu](mailto:study.abroad@unh.edu).

### *French Program in Paris*

A spring semester program for intermediate-level students in Paris, France (see FREN 582/682). The program is open to all qualified students at UNH who have completed FREN 503 or higher. Courses include one French language course and four additional courses taught in English; general education and French minor credit are available. The deadline for applications is October 15, therefore students interested in this program should consult with the UNH on-campus director in the late spring or early in the fall semester. Contact Juliette Rogers, Department of Languages, Literatures, and Cultures, Murkland Hall, (603) 862-1068.

## 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. Most programs require a minimum grade-point average of 3.00 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. Some programs accept students only for a full year. 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 general education requirements, students submit a Prior Approval 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.

### *Junior Year Program in Salzburg, Austria*

Students who have completed GERM 504 or equivalent may enroll for one or both semesters at the University of Salzburg through the New England Universities Consortium. UNH faculty contact person is Professor Ed Larkin, (603) 862-3549.

### *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 faculty contact person is Professor Mary Rhiel, (603) 862-0063 or CIE, (603) 862-2398, e-mail [study.abroad@unh.edu](mailto:study.abroad@unh.edu).

### *German Internship*

Students who have completed GERM 504 or equivalent may apply for an unpaid 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 Professor Nancy Lukens, (603) 862-3450.

## Guatemala

### *Discovery Guatemala-Archaeology Semester Abroad*

The semester abroad program in Guatemala provides a unique opportunity for advanced undergraduate students to experience Latin American culture while taking part in an ongoing archaeological research project. The main objective of the program is to provide students with an unparalleled experience in Maya archaeology in preparation for further research excellence and graduate careers.



Students spend the first four weeks of the program in Antigua, Guatemala's former colonial capital, nestled in a picturesque valley in the volcanic highlands. While in Antigua students will become immersed in Guatemalan language and culture.

Weekend excursions have been planned to acquire students with the great environmental and cultural richness of the host country. Students continue their Intensive Spanish study for the eleven weeks spent at the field site at San Bartolo. The San Bartolo field camp is located in an uninhabited region of tropical forest, 1 km distance from the archaeological site of San Bartolo. Archaeological Field Methods will be introduced through a series of individual one-week supervised internships with various members of the research team. For more information, contact William Saturno, (603) 862-2518 or Stephen Reyna, (603) 862-1842.

## Hungary

### *Justice Studies Program in Budapest*

The UNH Budapest Program in Justice Studies 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 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. 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. 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. Participating students will meet several times during the spring semester prior to the study abroad semester to prepare for the program. Interested students should contact the Budapest Program in the Justice Studies Office at (603) 862-1716.

### *Engineering and Physical Sciences Exchange Program in Budapest*

The College of Engineering and Physical Sciences has arranged an opportunity for its students to spend the fall semester of their junior year at the Budapest University of Technology and Economics (BME) in Budapest, Hungary. Courses at BME are taught in English and receive prior approval for degree credit. Students studying at Budapest, therefore, can graduate on schedule at UNH. A general education course on the language, geography, and culture of Hungary, taken at BME, is strongly suggested. The foreign student office at BME will appoint a Hungarian adviser for each student and will assist in obtaining housing either in dormitories, or in apartments. Further information is available from the college's educational assistant and the college's academic counselor, Bobbi Gerry; or the coordinator of student programs, Center for International Education, Hood House, or Professor Andrzej Rucinski, Foreign Exchange Program Coordinator, (603) 862-1381. For more information, visit the program's Web site at <http://www.ceps.unh.edu/academics/budapest.html>.

### *WSBE in Budapest*

The Whittemore School of Business and Economics has partnered with the Corvinus University of Budapest (formerly Budapest University of Economics Sciences and Public Administration) to offer students a unique opportunity to live and study in beautiful Budapest, Hungary. This partnership allows WSBE students to take courses at CUB in the fall semester that directly transfers into the core of the Business Administration or Economics degrees and into most business options. This ensures that students can study abroad and graduate on time. Moreover, Budapest is developing into a commercial and financial center for many U.S. companies. Its importance for the U.S. economy is growing rapidly.

Students travel to Budapest in the last week of August. A WSBE faculty member meets students at the airport and sets them up in apartments in the city that are close to the University. The school works to make the transition to life in a foreign culture as simple and easy as possible. Additionally, in the future a WSBE faculty member will be teaching at the CUB during the study abroad semester.

## Italy

### *UNH-in-Italy in Ascoli Piceno*

Students may participate in the UNH-in-Italy Program in the medieval city of Ascoli Piceno, for a semester, a year, or a summer session (see ITAL 685-686).

Academic Year Program. Students live either with Italian families or in apartments in the heart of the city and take UNH courses, taught in English, by UNH faculty. Students with advanced language skills may take courses taught in Italian. Internships are possible. There is no language prerequisite. Students must have a cumulative grade-point average of at least 2.50 and at least sophomore standing. For further information, contact Piero Garofalo, Department of Languages, Literatures, and Cultures, Murkland Hall, (603) 862-3769.

Summer Program. UNH-in-Italy offers two different summer options. One is a four-week, 4-credit workshop in painting. The other is a five-week, 8-credit program in Italian studies. Students live in apartments in the historic center of the city. Field trips to such locations as Venice, Rome, Bologna, Perugia, Urbino, Florence, and Assisi are included. For further information regarding the painting workshop, contact Grant Drumheller, Department of Art and Art History, Paul Creative Arts Center, (603)862-1351. For further information regarding the Italian Studies Program, contact Piero Garofalo, Department of Languages, Literatures, and Cultures, Murkland Hall, (603) 862-3769.

## Japan

### *Kansai Gaidai University, Osaka*

Students may spend one or two semesters at Kansai Gaidai University in Osaka, Japan. Program participants study the Japanese language, business, politics, literature, fine arts, and other courses. Eligibility requirements include a 3.00 grade-point average and sophomore, junior, or senior standing. Contact the Center for International Education, Hood House, (603) 862-2398 or [e-mail study.abroad@unh.edu](mailto:study.abroad@unh.edu).

## Mexico

### *Puebla Program*

A six-week summer program in Puebla, Mexico open to all students who are interested in taking summer courses at the Universidad de Las Américas. Students must have a cumulative grade point average of



2.50. Credit for courses completed successfully will be transferred to UNH. For more information, contact Professor Lina Lee, Department of Languages, Literatures and Cultures, Murkland Hall, (603) 862-3123, or go to [www.unh.edu/spanish/mexico.htm](http://www.unh.edu/spanish/mexico.htm).

## The Netherlands

### *Utrecht University*

The Center for International Education administers an exchange program with Utrecht University, 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. This is an especially good exchange for students wanting to combine a study abroad option with work in their majors.

Utrecht University has strengths in the sciences, especially in health care, the biological sciences, and physics. The veterinary program is the only one in Europe accredited in North America. The School of Economics offers programs in international business, marketing, and finance. The School of Law, open to qualified undergraduates, specializes in international law, comparative citizenship and immigration law, and comparative constitutional studies. In the humanities, advanced undergraduates and graduate students at all levels will find especially good opportunities in Atlantic History, linguistics, early modern studies, anthropology, international relations, women's studies, museum studies, art, European cultural studies, studies in race, immigration, ethnicity, citizenship, justice studies, and American studies. Utrecht University also offers Dutch as a second language, from conversational to intensive and professional, for international students.

Located in an especially lovely section of central Holland, Utrecht is the fourth largest city in the Netherlands. It has a classically old-Dutch city center with seventeenth-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, and, as the center of the Dutch rail system, 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). Interested students should contact the Center for International Education, Hood House, (603) 862-2398.

## New Zealand

### *UNH-EcoQuest, New Zealand*

In partnership with the UNH Department of Natural Resources, 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 from a four-course, 15-week fall or spring term for 16 credit hours, or a two-course, five-week summer session for 8 credit hours. The UNH-EcoQuest Academic program coordinator is Dr. Kimberly Babbitt. Contact Donna Dowal, the UNH-EcoQuest director of admissions, (603) 862-2036.

## Puerto Rico

### *University of Puerto Rico at Mayaguez*

Students may spend one or two semesters at the University of Puerto Rico (UPR) at Mayaguez, the second largest of the three major campuses in the UPR system. While having the opportunity to learn in a Latin American 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 and faculty members from all UNH majors. Since 80 percent of all courses at UPR are taught in Spanish, participants must be proficient in Spanish. Students must contact Paula DiNardo, National Student Exchange Office, Hood House, (603) 862-3485.

## 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 e-mail [ray.cook@unh.edu](mailto:ray.cook@unh.edu).

## Spain

### *Granada Program*

The Granada Program is administered by the Spanish program of the University of New Hampshire. Students may spend one or two semesters in a program designed for those who have completed SPAN 631 or its equivalent, have a B average in Spanish and a cumulative grade-point average of 2.50, and have at least sophomore status. Courses taught by professors from the University of Granada fulfill requirements for the Spanish major and minor and general education requirements in humanities areas. Deadlines for fall applicants is March 1; for spring applicants, October 1. For further information, contact the Spanish Program, Murkland Hall.

---

## Other Programs

### **Reserve Officer Training Corps (ROTC) Programs**

*(For course descriptions, see page 147 and 214.)*

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 of New Hampshire (UNH).

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 within 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.

# THOMPSON SCHOOL OF APPLIED SCIENCE

[www.unh.edu/thompson-school/](http://www.unh.edu/thompson-school/)

Regina A. Smick-Attisano, Director  
Cynthia Giguère, Assistant Director

## Associate in Applied Science

Applied Animal Science  
Dairy Management  
Equine Management  
Small Animal Care

Applied Business Management  
Business Management

Civil Technology  
Architectural Technology  
Construction Management  
Surveying and Mapping

Community Leadership

Food Services Management  
Dietetic Technician  
Restaurant Management

Forest Technology  
Forest Technician

Horticultural Technology  
Landscape Operations  
Ornamental Horticulture

**T**he Thompson School of Applied Science, established in 1895, is a division of the College of Life Sciences and Agriculture within the University offering the associate in applied science degree. The Thompson School of Applied Science offers 13 program specializations. They comprise a balance of professional, science-related, and general education courses in applied curriculums that prepare students to meet the specific demands of a technical or applied profession, continuing education, and the general demands of life.

The faculty at the Thompson School of Applied Science 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 education; and a commitment to practical, science-based education. They work closely with students, providing academic advising, career counseling, and special assistance when needed.

Located at the western edge of campus, the Thompson School's classrooms, laboratories, and working enterprises are designed for career-related experience under realistic conditions.

Barton Hall contains an animal science lab, a food preparation lab, a state-of-the-art grooming facility, several classrooms, and faculty offices.

Cole Hall includes a 150-seat lecture auditorium, a restaurant-style kitchen and dining area, a student study and lounge area, a computer laboratory, a small classroom, and administrative offices.

Putnam Hall houses an architecture lab, a surveying and mapping lab, a Geographic Information System (GIS) lab, a computer-aided design (CAD) laboratory, an agricultural mechanization shop (welding, engines), classrooms, and faculty offices.

- Students enrolled in *Restaurant Management* gain practical experience in three campus restaurants: the UNH Dairy Bar; and Stacey's and the Balcony Bistro, both located in Cole Hall and operated during the academic year. A paid supervised internship of 400-600 hours is required over the summer between the first and second year of studies to provide students with industry experience.

- *Forest Technology* students integrate all aspects of forest management as they complete projects on the nearly 3,000 acres of University land. 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 in boundary surveying,

mapping, forest inventory, forest planning, reforestation and forest land protection.

- *Horticultural Technology* students have the use of the Thompson School horticultural facility, with glass and poly covered greenhouses, propagating facilities, refrigerated compartments, display gardens, and the campus arboretum.

- *Business Management* students focus on small-to-medium size enterprises and gain real world experience through internships and courses such as Applied Sales. The capstone course, Business Policy, is designed so students can create their own business to market a product and generate revenues used to support scholarships and special projects.

- Whether the specialty is dairy, equine or small animals, students in *Applied Animal Science* utilize professional quality facilities on campus, such as the Dairy Center or Grooming Lab. The University's herd of Morgans, Thoroughbreds, and Warmbloods are ridden on nearby trails, and in the outside or indoor arenas during class sessions.

- *Civil Technology* students have a variety of classroom experiences ranging from an in-lab materials testing facility to two Civil Technology computer facilities with 24 hour, 7 day access featuring the latest software for surveying and mapping, architectural and computer aided design. GPS (Global Positioning System) software is also available. The Civil Technology suite of spaces provides a ready access to learning and development.

- *Dietetic Technician* students learn to assess dietary intakes and make nutrition recommendations using the most up-to-date nutrient analysis software. Outside the classroom, students make a positive impact on the lives of others through 450 hours of supervised practice that may include such activities as teaching nutrition to preschool children, providing nutrition education in a clinic for pregnant women, and promoting healthy eating to clients in a weight management program.



- Students majoring in *Community Leadership* gain enriching experiences working with organizations such as Families First, NH Housing Partnership, Red Cross, New Hampshire Public Television's station and on-campus groups. Students are involved with creating, operating and evaluating these service-learning activities.

### Associate in Applied Science Degree

To graduate with an associate in applied science degree, a student must complete specified coursework in general education, technical specialization, and general electives (see the following list), with an overall grade-point average of no less than 2.00 (out of 4.00). In addition, students must earn the minimum number of total credits required for each specialization.

#### General Education

These are courses designed for personal and professional development with special emphasis on the ability to think critically, to communicate effectively, to understand computer technology, and to process quantitative data. In addition, they serve to acquaint the student with some of the major modes of thought necessary to understand oneself, others, society, and the environment.

In this area a student must complete:

- one course in computer literacy;
- one course in mathematics;
- two to three courses in communications, to include COM 209, Expository Writing and Reading, plus elective(s);
- two to three courses in social sciences, the arts, or the humanities, to include either SSCI 201 Human Relations, or SSCI 202 Social Issues, plus an elective.

#### Technical Specialization

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 Program of Study sections for information.

#### 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 adviser approval.

### Full-Time and Part-Time Programs

The associate in applied science degree at the Thompson School can be completed by pursuing either a full-time or part-time program. 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 is defined throughout this catalog.

Some students who cannot attend on a full-time, two-year schedule or who wish to spread the financial investment of a college education over a broader period, 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 can be shortened or lengthened to meet the needs of the individual student. For further information please contact the Thompson School at (603) 862-1025 or (603) 862-3115.

### Admissions

The Thompson School welcomes applications from both high school and adult students.

High school students who plan to enter the Thompson School after graduation will be considered on the basis of high school course selection, academic achievement, class rank, and high school recommendations. Emphasis is placed on the applicant's academic achievement, personal motivation, demonstrated interest in a career field, and preparation for Thompson School programs.

All traditional-age students must submit the results of the Scholastic Assessment Test (SAT-I). Adult students who have been out of high school for a number of years may request that the Office of Admissions waive the SAT-I requirement.

For an adult 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 will 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), Scholastic Assessment Test (SAT-I), and College Level Examination

Program (CLEP); letters of reference; previous college study; and military record (if applicable).

A number of Thompson School specializations require satisfactory work in specific high school preparatory courses. These admission requirements are listed under each career specialization in this catalog.

### How to Apply

You may request an application for admission and additional information from either of the following offices: UNH Office of Admissions, Grant House, 4 Garrison Avenue, Durham, NH 03824-3510, (603) 862-1360; or Thompson School of Applied Science, Cole Hall, 291 Mast Road, Durham, NH 03824-3562, (603) 862-1025.

Applications may be submitted from September through mid-July. Notice of admission to the Thompson School will normally be sent within 30 days following receipt of all required information.

Please note: Priority deadlines for those students requesting UNH residential housing is February 1 for the fall semester and November 1 for spring semester. Housing assignments will be handled on a space-available basis after February 1. The UNH financial aid deadline 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 is held in the fall. To attend the open house or to arrange your visit, please contact the Thompson School at (603) 862-1025 or visit our Web site at [www.unh.edu/thompson-school](http://www.unh.edu/thompson-school).

### 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, page 14) 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 specialization.

For information about scholarships, loans, and work-study, write the Financial Aid Office, Stoke Hall, 11 Garrison Avenue, Durham, NH 03824-3511; or call (603) 862-3600. A financial aid form must be on file to be considered for many scholarships. (See also Financial Aid, page 5.)

The Thompson School and the College of Life Sciences and Agriculture (of which the Thompson School is a division) also provide scholarship opportunities for Thompson School students. Call (603) 862-1025 for a list of these possibilities or visit our Web site at [www.unh.edu/tsas/scholarships](http://www.unh.edu/tsas/scholarships).

### New England Regional Student Program

The Thompson School of UNH participates in the New England Regional Student Program of the New England Board of Higher Education, in 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 2006-2007. 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 or the Thompson School for more information.

Associate Degree Program	Available to Residents of
<i>Applied Animal Science</i>	
Dairy Management	MA, ME, RI, VT
Equine Management	MA, ME, RI, VT
Small Animal Care	MA, ME, RI, VT
<i>Civil Technology</i>	
Architectural Technology	CT, RI
Construction Management	CT, RI
Surveying and Mapping	CT, RI
<i>Community Leadership</i>	
Community Leadership	CT, MA, ME, RI, VT
<i>Food Services Management</i>	
Dietetic Technician	MA, RI, VT
Restaurant Management	MA, RI, VT
<i>Forest Technology</i>	
Forest Technician	CT, MA, RI, VT
<i>Horticultural Technology</i>	
Landscape Operations	RI
Ornamental Horticulture	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 civil engineering, forestry, environmental horticulture, animal sciences, dairy management, nutritional sciences, business administration, and hospitality management. Many other baccalaureate majors are also available. A final cumulative grade-point average of at least 2.50 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 also welcome graduates from the Thompson School, especially those within the University System of New Hampshire.

### Program Abbreviations

The following abbreviations are used to identify courses which are part of Thompson School of Applied Science programs.

AM	Agricultural Mechanization
AAS	Applied Animal Science
ABM	Applied Business Management
ANSC	Animal and Nutritional Science
CT	Civil Technology
COM	Communications
CSL	Community Leadership
CD	Community Development
FSM	Food Services Management
FORT	Forest Technology
HT	Horticultural Technology
MTH	Mathematics
NUTR	Nutrition
PBIO	Plant Biology
SSCI	Social Science
ZOOL	Zoology

### Programs of Study

**Thompson School Professors:** Matthew C. Chagnon, Andrew B. Conroy, John L. Hart, Thomas A. March, Robert G. Moynihan, Guy E. Petty, Donald W. Quigley, William H. Scott

**Thompson School Associate Professors:** Eugene P. Alibrio, Timothy E. Barretto, Charles A. Caramihalas, Kenneth L. Flesher, Benjamin P. Fowler, Rene J. Gingras, M. Katharine Hanson, Nancy M. Johnson, Dana M. Sansom, David E. Tooch, Steven D. Tuttle, Jerilee A. Zezula

### Applied Animal Science (AAS)

[www.unh.edu/tsas/academics/animalscience/](http://www.unh.edu/tsas/academics/animalscience/)

(For course descriptions, see page 250.)

Applied Animal Science provides students with hands-on practical skills combined with knowledge and understanding of the latest technology. The core program provides a solid background in anatomy, physiology, nutrition, health, and animal breeding. In addition, students choose a specialization in either equine management, dairy management, or small animal care. Each specialization also allows for choices of elective courses in other areas.

Practical learning experience is provided at the UNH equine facilities and the Thomas P. Fairchild Dairy Teaching and Research Center. The Thompson School also operates its own grooming shop and biology laboratories. The curriculum has a number of animal-related educational programs, including an educational partnership with the NHSPCA in Stratham, N.H., and field trips to many animal-related businesses.

### Curriculum Fee

Applied animal science, all specializations: \$522\*

### Applied Animal Science Curriculum Standards

Applied Animal Science students must maintain a minimum 2.00 cumulative grade-point average in AAS classes after 2 semesters (26 credits) to take additional AAS classes. Students with AAS averages lower than 2.00 must repeat classes with lower grades and raise their average to the required 2.00 before taking additional AAS classes. Students must have a minimum cumulative 2.00 grade-point average in AAS classes to qualify for graduation from the program.

\*This one-time, nonrefundable curriculum fee is required to cover lab materials, specialized equipment maintenance, and transportation that is unique to the applied nature of the specialization. The curriculum fee covers the entire two-year course of study for one specialization. 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.



### **Dairy Management**

To work in the highly technical, rapidly changing field of dairy management, students must become well versed in the many aspects of dairy farm operation and management. In the dairy management specialization, students put many of the skills learned in the classroom into practice immediately. Students learn to balance rations, identify and treat diseases, read a bull proof, and gain many other skills. They work at the University's dairy farm, a modern and well-equipped teaching and research center, where students work with each other to manage the CREAM (Cooperative for Real Education in Agriculture) herd.

Students learn the business of farming through field exercises in land management, forage production, financial management, and computer use on a dairy farm as well as continued practical experience with cattle. The program prepares students to work both on the farm or in related businesses.

Thompson School Dairy Management has a unique arrangement with the Animal and Nutritional Sciences (ANSC) Baccalaureate Dairy Management major. Students may start with the Thompson School program, obtain their Associate in Applied Science (A.A.S.) degree then transfer to ANSC and obtain a B.S. in two 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 advisers and maintain a 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 or farm business owner.

### **Dairy Management Program of Study**

#### **First Year, Fall Semester**

- AAS 228, Anatomy and Physiology of Domestic Animals, 4 cr.
- AAS 231, Introduction to Animal Science, 4 cr.
- AAS 244, Introduction to Dairy Management, 4 cr.
- AAS 278, AAS Computer Applications, 1 cr.
- COM 209, Expository Writing and Reading, 4 cr.

#### **First Year, Spring Semester**

- AAS 223, Dairy Selection, 2 cr.
- AAS 234, Equipment and Facilities Management, 3 cr.
- AAS 239, Fundamentals of Animal Health, 3 cr.
- AAS 242, Introduction to Business, AAS, 2 cr.
- COM 212, Technical Writing, 2 cr.
- MTH 202, Math II, 3 cr.

#### **Second Year, Fall Semester**

- AAS 232, Animal Forages, 3 cr.
- AAS 235, Animal Nutrition, 3 cr.
- AAS 246, Animal Business Applications, 4 cr.
- AAS 275, CREAM (Cooperative for Real Education in Agriculture) Program, 4 cr.
- AAS 297, Work Experience (summer), 0 cr.
- SSCI class, 2-4 cr.

#### **Second Year, Spring Semester**

- AAS 240, Animal Breeding, 3 cr.
- AAS 275, CREAM Program, 4 cr.
- SSCI 201, Human Relations or
- SSCI 202, Social Issues, 4 cr.

#### **Recommended electives include**

- AAS 221, Large Animal Behavior and Handling, 2 cr.
- AM Agricultural Mechanization courses

**Total: 67-70 credits**

### **Equine Management**

As part of new leisure industries, the equine industry in New England encompasses many different facilities and disciplines. Students in the equine management specialization combine courses in 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. Graduates have a solid basis for direct employment opportunities yet enough flexibility to further their education.

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 compete in intercollegiate shows.

Thompson School Equine Management has an articulation agreement for students wishing to pursue a B.S. from ANSC following graduation from the Thompson School. This B.S. would be obtained either in Equine Industry and Management (Track I) with four additional semesters or in Therapeutic Horseback Riding (Track II) in five additional semesters. With this articulation, students may obtain both an Associate Degree in Applied Science (A.A.S.) and a B.S. in as little as four years with full-time coursework or obtain their A.A.S., work in the field and return for their B.S. Students wishing to take advantage of these articulation agreements need to work closely with their advisers.

*Career Opportunities:* Barn manager, breeding farm manager, sales (tack shops, grain stores), horse show manager, veterinary assistant/equine practice, riding instructor.

### **Equine Management Program of Study**

#### **First Year, Fall Semester**

- AAS 228, Anatomy and Physiology of Domestic Animals, 4 cr.
- AAS 231, Introduction to Animal Science, 4 cr.
- AAS 237, Equine Management Techniques, 4 cr.
- AAS 278, AAS Computer Applications, 1 cr.
- COM 209, Expository Writing and Reading, 4 cr.

#### **First Year, Spring Semester**

- AAS 226, Equine Conformation and Lameness, 4 cr.
- AAS 236, Equine Show Preparation and Competition, 1 cr.
- AAS 234, Equipment and Facilities Management, 3 cr.
- AAS 239, Fundamentals of Animal Health, 3 cr.
- AAS 242, Introduction to Business, AAS, 2 cr.
- COM 212, Technical Writing, 2 cr.
- MTH 202, Math II, 3 cr.

#### **Second Year, Fall Semester**

- AAS 232, Animal Forages, 3 cr.
- AAS 235, Animal Nutrition, 3 cr.
- AAS 246, Animal Business Applications, 4 cr.
- AAS 247, Applied Equine Management, 3 cr.
- AAS 297, Work Experience (summer), 0 cr.
- SSCI class, 2-4 cr.
- ANSC 402, Horsemanship, 3 cr.

#### **Second Year, Spring Semester**

- AAS 240, Animal Breeding, 3 cr.
- AAS 252, Advanced Equine Management, 4 cr.
- AAS 253, Equine Competition Management, 2 cr.
- SSCI 202, Social Issues, 4 cr.
- Electives 2-5 cr.

#### **Recommended electives**

- AAS 272, Comparative Equine Operations
- AAS 293, Equine Field Operations
- ANSC 507, Equine Discipline (ANSC 402 is a prerequisite)

**Total: 65-69 credits**

### **Small Animal Care**

Animal companionship provides millions of people an oasis in a hectic, impersonal world, and pet owners consistently seek additional advice on the care of their animals. The small animal care specialization prepares students to work in companion animal care positions of all types.

In their first year, students gain experience in breed types, behavior, genetics, restraint, and training of dogs and cats. Students also master laboratory procedures such as fecal examination and heartworm testing. In addition, the students learn the basics of grooming, nutrition, first aid, disease prevention, medication administration, and toxicology. During their second year, students spend four hours a week at

the NHSPCA performing all aspects of animal care and continue with their academic subjects.

Small Animal Care is very flexible with recommended elective courses. Second year students choose classes based on their career goals. Career tracks include veterinary hospital employment, employment in the humane/animal control fields, employment or ownership within the boarding/grooming/daycare industry, or positions in laboratory animal care.

*Career Opportunities:* Veterinary assistant, laboratory animal caregiver, pet store manager, pet groomer, kennel manager, animal care and control technician, animal-assisted activities/therapy volunteer and/or coordinator.

### *Small Animal Care Program of Study*

#### **First Year, Fall Semester**

AAS 228, Anatomy and Physiology of Domestic Animals, 4 cr.  
AAS 230, Small Animal Breeds and Behavior, 4 cr.  
AAS 231, Introduction to Animal Science, 3 cr.  
AAS 278, AAS Computer Applications, 1 cr.  
COM 209, Expository Writing and Reading, 4 cr.

#### **First Year, Spring Semester**

AAS 222, Small Animal Grooming I, 2 cr.  
AAS 239, Fundamentals of Animal Health, 3 cr.  
AAS 242, Introduction to Business, AAS, 2 cr.  
AAS 249, Small Animal Care Techniques, 2 cr.  
COM 212, Technical Writing, 2 cr. or  
COM 211, Critical Reading, 2 cr.  
MTH 202, Math II, 3 cr.  
Electives 1-3 cr.

#### **Second Year, Fall Semester**

AAS 235, Animal Nutrition, 3 cr.  
AAS 246, Animal Business Applications, 4 cr.  
AAS 279, Small Animal Care Practicum, 2 cr.  
AAS 297, Work Experience (summer), 0 cr.  
SSCI 201, Human Relations, 4 cr.  
AAS Electives 2-5 cr.

#### **Second Year, Spring Semester**

AAS 224, Small Animal Management, 4 cr.  
AAS 240, Animal Breeding, 3 cr.  
AAS 279, Small Animal Care Practicum, 2 cr.  
AAS Electives, 2-4 cr.  
SSCI Class, 2-4 cr.  
Electives 2-3 cr.

#### **Recommended AAS electives**

AAS 219, Animal Cruelty: NH Laws, Investigations, and Prosecution, 1 cr.  
AAS 221, Large Animal Behavior and Handling, 2 cr.  
AAS 227, Small Animal Diseases, 2 cr.  
AAS 233, Small Animal Grooming II, 2 cr.  
AAS 236, Equine Show Preparation and Competition, 1 cr.  
AAS 237, Equine Management Techniques, 4 cr.  
AAS 251, Human/Animal Bond, 2 cr.

AAS 254, Animal Assisted Activities and Therapy, 2 cr.  
AAS 257, Small Animal Diseases Lab (AAS 227 Prereq), 1 cr.  
AAS 276, Introduction to Lab Animals, 2 cr.  
AAS 277, Lab Animal Practicum, 1 cr.  
ABM courses (permission required)  
ANSC 402, Horsemanship

**Total: 64-70 credits**

### *Admissions Requirements*

Applicants to the dairy management, equine management, and small animal care specializations must present at least one year of satisfactory work in college preparatory biology and two years of college preparatory math. One year of high school chemistry is also highly recommended. Students with weaknesses in these academic areas are encouraged to take refresher classes before starting their coursework in the applied animal science program.

### **Applied Business Management (ABM)**

[www.unh.edu/tsas/academics/business/](http://www.unh.edu/tsas/academics/business/)  
(For course descriptions, see page 252.)

The Applied Business Management program combines classwork and practical experience to give students a thorough understanding of the business field. The core curriculum includes accounting, marketing and sales, human resource management, computer applications, communications, business law and strategic management for small business. Students may select from a variety of UNH electives.

Practical experience is gained through projects with local industries, municipalities and state agencies, and student-run businesses. Students may also elect to develop internships with area businesses.

### *Curriculum Fees*

Applied Business Management:  
Business Management \$114\*

### *Business Management*

Small- to medium-sized businesses represent the largest and fastest growing segment of the state and regional economy.

\*This one-time, nonrefundable curriculum fee is required to cover lab materials, specialized equipment maintenance, and transportation that is unique to the applied nature of the specialization. The curriculum fee covers the entire two-year course of study for one specialization. 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.

The Business Management program is specifically designed for students who wish to seek entry-level management positions in existing firms, prepare for management of a family-owned business, or start a new business. Business management students gain practical exposure to essential topics in business management that prepares them to seek further specialization in a business area or to prepare for transfer to a baccalaureate program.

*Career Opportunities:* Office manager, entrepreneur, management trainee programs, assistant manager, purchasing and inventory controller, bookkeeper, domestic and international sales professional, business owner.

### *Business Management Program of Study*

#### **First Year, Fall Semester**

ABM 204, Principles of Management, 4 cr.  
ABM 205, Applied Financial Accounting, 4 cr.  
COM 209, Expository Writing and Reading, 4 cr.  
MTH 201, Math I, 3 cr.  
or MTH 202, Math II, 3 cr.

#### **First Year, Spring Semester**

ABM 207, Applied Marketing, 4 cr.  
ABM 208, Managerial Accounting, 4 cr.  
ABM 226, Business Computer Applications, 4 cr.  
COM 210, Public Speaking, 2 cr.  
Electives 4 cr.

#### **Second Year, Fall Semester**

ABM 202, Professional Writing, 3 cr.  
ABM 206, Human Resource Management, 4 cr.  
ABM 214, Applied Sales, 4 cr.  
SSCI 201, Human Relations, 4 cr.  
Electives 2-4 cr.

#### **Second Year, Spring Semester**

ABM 211, Business Policy, 4 cr.  
ABM 232, Business Law, 4 cr.  
Social Science Elective 2-4 cr.  
Electives 4 cr.

**Total: 64-66 credits**

### *Admissions Requirements*

Students entering the business management program must have a minimum of two years of college preparatory mathematics (preferably three). Several ABM courses require a strong background in basic mathematics and algebra.



## Civil Technology (CT)

[www.unh.edu/tsas/academics/civiltech/](http://www.unh.edu/tsas/academics/civiltech/)

(For course descriptions, see page 253.)

Civil Technology is a dynamic educational opportunity offering skill-based learning through class instruction, extensive laboratory experience, fieldwork, as well as portfolio opportunities. Students choose from one of the following specializations: architectural technology, construction management, or surveying and mapping.

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 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, construction contracting, materials, soils, and methodologies of professional practice in the concentration specialties.

### Curriculum Fees

Civil technology, all specializations: \$76\*

### Architectural Technology

In the Architectural Technology specialization, students expand on the broad construction-related base of the Civil Technology curriculum. From faculty who are experienced, registered architects and engineers, students are introduced to the technical skills used in the architectural profession, including computer-aided design (CAD), parametric modeling, and building science-related technologies. Course content includes engineering-based as well as design-based disciplines. The courses, when coupled with recommended electives, provide students with a substantial knowledge base for architecturally related careers. While some graduates continue their studies in accredited baccalaureate programs and become registered architects, most find work in technical support positions within the design and construction industries in either private companies or public/government entities.

**Career Opportunities:** Architectural technician, CAD designer, public works operations, land development planner, facilities management, engineering aide, or construction supervisor.

### Architectural Technology Program of Study

#### First Year, Fall Semester

CT 220, Professional Practice, 1 cr.  
 CT 222, Computer Aided Design Level 1, 4 cr.  
 CT 223, Introduction to Surveying and Mapping, 3 cr.  
 CT 224, Surveying and Mapping Lab, 2 cr.  
 AM 280, Technical Computer Literacy/Internet Applications, 4 cr.  
 MTH 203, Algebra and Trigonometry, 3 cr.

#### First Year, Spring Semester

CT 231, Design I, 4 cr.  
 AM 275, Building Science/Residential Construction, 4 cr.  
 COM 212, Technical Writing, 2 cr.  
 or COM 210, Public Speaking, 2 cr.  
 SSCI 204, Leadership Effectiveness and Group Performance, 2 cr.  
 Elective, 4 cr.

#### Second Year, Fall Semester

CT 227, Mechanical & Electrical Systems, 4 cr.  
 CT 247, Construction Contracting, 4 cr.  
 CT 281, Architecture I History and Design, 4 cr.  
 CT 297, Work Experience, 0 cr.  
 COM 209, Expository Writing and Reading, 4 cr.

#### Second Year, Spring Semester

CT 282, Architecture II, 4 cr.  
 SSCI 202, Social Issues, 4 cr.  
 \*\*Technical Elective, 4 cr.  
 Elective 4 cr.

**Total: 65 credits**

### Construction Management

In the Construction Management specialization, 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 and waste disposal systems,

\*This one-time, nonrefundable curriculum fee is required to cover lab materials, specialized equipment maintenance, and transportation that is unique to the applied nature of the specialization. The curriculum fee covers the entire two-year course of study for one specialization. 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.

\*\*Technical Elective Courses: CT 235, Introduction to Information Technology; AM 251, Welding and Fabrication Technology; AM 262, Internal Combustion Engines II (Prereq. AM 261); other courses by approval.

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 specialization find employment in a variety of building industry-related positions.

**Career Opportunities:** Construction supervisor, project manager, cost estimator, public works department, contractor, code enforcement officer, construction material tester, land-development planning, site evaluator for building components, construction product manufacturer, product representative, DOT engineering technician.

### Construction Management Program of Study

#### First Year, Fall Semester

CT 220, Professional Practice, 1 cr.  
 CT 222, Computer Aided Design Level I, 4 cr.  
 CT 223, Introduction to Surveying and Mapping, 3 cr.  
 CT 224, Surveying and Mapping Lab, 2 cr.  
 AM 280, Technical Computer Literacy/Internet Applications, 4 cr.  
 MATH 203, Algebra and Trigonometry, 3 cr.

#### First Year, Spring Semester

CT 231, Design I, 4 cr.  
 CT 233, Construction Surveying, 4 cr.  
 CT 237, Land Design and Regulations., 4 cr.  
 COM 212, Technical Writing, 2 cr.  
 or COM 210, Public Speaking, 2 cr.  
 SSCI 204, Leadership Effectiveness and Group Performance 2 cr.

#### Second Year, Fall Semester

CT 227, Mechanical and Electrical Systems, 4 cr.  
 CT 230, Statics and Materials, 4 cr.  
 CT 247, Construction Contracting, 4 cr.  
 CT 297, Work Experience, 0 cr.  
 COM 209, Expository Writing and Reading, 4 cr.

#### Second Year, Spring Semester

CT 234, Soils and Foundations, 4 cr.  
 SSCI 202, Social Issues, 4 cr.  
 AM 275, Building Science/Residential Construction, 4 cr.  
 \*\*Technical Elective, 4 cr.

**Total: 65 credits**

### Surveying and Mapping

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 specialization 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 com-

petency. Using electronic field measuring equipment, computers to create and plot maps, and satellite positioning technology, the surveyors and mappers of today are at the forefront of acquiring, analyzing, and managing land information.

*Career Opportunities:* Licensed land surveyor, DOT engineering technician, GIS technician, land development planner, construction surveyor, GPS technician.

### **Surveying and Mapping Program of Study**

#### **First Year, Fall Semester**

CT 220, Professional Practice, 1 cr.  
 CT 222, Computer Aided Design Level I, 4 cr.  
 CT 223, Introduction to Surveying and Mapping, 3 cr.  
 CT 224, Surveying and Mapping Lab, 2 cr.  
 AM 280, Technical Computer Literacy/Internet Applications, 4 cr.  
 MATH 203, Algebra and Trigonometry, 3 cr.

#### **First Year, Spring Semester**

CT 231, Design I, 4 cr.  
 CT 233, Construction Surveying, 4 cr.  
 CT 237, Land Design and Regulations, 4 cr.  
 COM 212, Technical Writing, 2 cr.  
 or COM 210, Public Speaking, 2 cr.  
 SSCI 204, Leadership Effectiveness and Group Performance 2 cr.

#### **Second Year, Fall Semester**

CT 240, Legal Aspects of Surveying, 3 cr. and CT 243, Advanced Surveying and Mapping, 3 cr.  
 CT 247, Construction Contracting, 4 cr.  
 CT 297, Work Experience, 0 cr.  
 COM 209, Expository Writing and Reading, 4 cr.  
 Elective, 4 cr.

#### **Second Year, Spring Semester**

CT 244, Advanced Surveying Computations, 4 cr.  
 SSCI 202, Social Issues, 4 cr.  
 \*\*Technical Elective, 4 cr.  
 Elective, 4 cr.

**Total: 67 credits**

#### **Elective Courses**

AM 261, Internal Combustion Engines I  
 AM 275, Building Science/Residential Construction  
 CT 227, Mechanical and Electrical Systems  
 CT 230, Statics and Materials  
 CT 233, Construction Surveying  
 CT 234, Soils and Foundations  
 CT 237, Land Design and Regulations  
 CT 240, Legal Aspects of Surveying  
 CT 243, Advanced Surveying and Mapping  
 CT 244, Advanced Surveying Computations  
 CT 281, Architecture I History & Design  
 CT 282, Architecture II (Prereq: Architecture I)

### **Admissions Requirement**

Applicants to the architectural technology, construction management, and surveying and mapping specializations must present at least two years of satisfactory work in college preparatory mathematics.

### **Community Leadership (CSL)**

*(formerly Community Service and Leadership)*

[www.unh.edu/tsas/academics/csl/](http://www.unh.edu/tsas/academics/csl/)

*(For course descriptions, see page 254.)*

The Community Leadership program (CSL) prepares students for influential roles within community organizations by combining hands-on community outreach with an academic study of communities, leadership, citizen influence, nonprofit organization management, and general education.

Students participate in faculty-supervised community outreach in a wide variety of locations including schools and other learning-focused agencies, crisis shelters, environmental organizations, animal care facilities, nursing homes, advocacy programs, town offices, citizen groups and other community-related organizations.

Through their coursework, community placements, and individualized plans of study, students learn how to: supervise volunteers, facilitate effective meetings, speak comfortably and knowledgeably to groups of various sizes, analyze community issues and their causes, manage financial information, organize projects and events, research and prepare grant proposals, create effective newsletters, influence public opinion, and organize people to work toward positive solutions for shared problems.

\*This one-time, nonrefundable curriculum fee is required to cover lab materials, specialized equipment maintenance, and transportation that is unique to the applied nature of the specialization. The curriculum fee covers the entire two-year course of study for one specialization. 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

\*\*Technical Elective Courses: CT 235, Introduction to Information Technology; AM 251, Welding and Fabrication Technology; AM 262, Internal Combustion Engines II (Prereq. AM 261); other courses by approval.

The Community Leadership program is designed to flexibly and effectively meet the needs of a diverse group of students including recent high school graduates as well as experienced community-service workers.

### **Curriculum Fee**

Community Leadership \$54\*

### **Community Leadership Program of Study**

#### **First Year, Fall Semester**

COM 209, Expository Writing and Reading, 4 cr.  
 SSCI 201, Human Relations, 4 cr.  
 CSL 201, Introduction to Community Service and Leadership, 4 cr.  
 CSL 200, Technology for Community Service and Leadership, 2 cr.  
 MTH, Mathematics, 3 cr.

#### **First Year, Spring Semester**

SSCI 202, Social Issues, 4 cr., or equivalent course determined in consultation with adviser  
 COM 210, Public Speaking, 2 cr.  
 CSL 205, Communication within Communities 4 cr.  
 CSL 202, Introduction to Nonprofit Organizations, 4 cr.  
 CSL 203, Organizing and Supervising Volunteers, 4 cr.

#### **Second Year, Fall Semester**

CSL 207, Introduction to Nonprofit Budgeting and Accounting Practices, 3 cr.  
 ABM 215, Business and Community, 4 cr., or CD 415 Community Development, 4 cr.  
 CSL 204, Managing Change and Conflict in Communities, 4 cr.  
 COM 211, Critical Reading, 2 cr.  
 CSL 290, Civic and Community Internship, 2-4 cr., or Electives, 2-4 cr.  
 Documented participation in one of the UNH Leadership Centers Programs

#### **Second Year, Second Semester**

CSL 206, Literature of Family and Community, 4 cr.  
 CSL 208, Essentials of Fund Raising for Community-Based Organizations, 2 cr.  
 CSL 209, Essentials of Grant Writing for Community-Based Organizations, 2 cr.  
 CSL 210, Community Service and Leadership Capstone Seminar, 4 cr.  
 Elective, 4 cr.

**Total: 64-68 credits**



## Food Services Management (FSM)

(For course descriptions, see page 254.)

The Food Services Management program has two distinct specializations: dietetic technician and restaurant management.

### Curriculum Fee

Food Services Management:  
Dietetic technician \$437\*  
Restaurant manager \$437\*

### Dietetic Technician

[www.unh.edu/tsas/academics/dietetic/](http://www.unh.edu/tsas/academics/dietetic/)

Students who complete the dietetic technician specialization are prepared for a variety of positions in the food, fitness, and health-care industries. In a program that combines classroom work and practical experience, students learn such skills as evaluating the nutritional status of clients, developing nutrition care plans, and providing nutrition education. They also develop skills in the management of food production and delivery systems. Students participate in supervised practice rotations in the areas of medical food service management, clinical nutrition, and community nutrition for a total of at least 450 hours. These experiences take place in local health-care settings and community nutrition programs.

The specialization is accredited by the Commission on Accreditation of Dietetics Education (CADE) of the American Dietetic Association. Students who successfully complete the program of study are eligible to sit for the Dietetic Technician Registration Exam. A Dietetic Technician Registered is eligible for membership in the American Dietetic Association, an organization of nutrition professionals.

**Career Opportunities:** Dietetic technician, Registered DTR; clinical-hospitals, health-care facilities, retirement centers; wellness-health clubs, weight clinics, wellness centers; community-community nutrition programs, public health agencies, WIC agencies; business-food companies, food vendors, distributors; food services management-schools, daycare centers, restaurants.

\*This one-time, nonrefundable curriculum fee is required to cover lab materials, specialized equipment maintenance, and transportation that is unique to the applied nature of the specialization. The curriculum fee covers the entire two-year course of study for one specialization. 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.

## Dietetic Technician Program of Study

### First Year, Fall Semester

FSM 201, Food Preparation Fundamentals, 3 cr.  
FSM 205, Hospitality Computer Applications, 3 cr.  
FSM 228/229, Applied Nutrition for Dietetic Technicians, 4 cr.  
COM 209, Expository Reading and Writing, 4 cr.  
MTH 201, Math, 3 cr.

### First Year, Spring Semester

FSM 200, Introductory Chemistry, 3 cr.  
FSM 207, Hospitality: Sanitation and Safety, 2 cr.  
NUTR 476, Nutritional Assessment, 4 cr.  
NUTR 504, Managerial Skills in Dietetics, 3 cr.  
ZOO 401, Human Biology, 4 cr.

### Second Year, Fall Semester

FSM 275, Diet Therapy, 3 cr.  
FSM 290, Managerial and Clinical Dietetics Practicum, 7 cr.  
NUTR 510, Nutrition Education and Counseling, 4 cr.

### Second Year, Spring Semester

FSM 260, Community Nutrition Practicum, 5 cr.  
FSM 265 Community Nutrition for Dietetic Technicians, 2 cr.  
FSM 295, Dietetic Seminar, 1 cr.  
COM 210, Public Speaking, 2 cr.  
SSCI 201, Human Relations, 4 cr.  
SSCI 204, Leadership Effectiveness and Group Performance, 2 cr.

**Total: 64 credits**

## Restaurant Management

[www.unh.edu/tsas/academics/restaurant/](http://www.unh.edu/tsas/academics/restaurant/)

In the Restaurant Management specialization, students experience a carefully developed combination of classroom and laboratory work. They engage in practical, hands-on experiences, using modern commercial equipment to help them refine the necessary skills to be successful in the field. Students operate two restaurants located in the Thompson School: Stacey's Buffet, and the Balcony Bistro, an upscale gourmet dining establishment. They present weekly buffets, and cater banquets and special events sponsored by the School. Finally, a required summer internship rounds out the program's hands-on experiential learning. Students can also work at the UNH Dairy Bar (which is operated by the FSM program), the New England Center, and University Hospitality Services, all located on the UNH campus. Extracurricular learning and earning opportunities are available in the many restaurants located in the Seacoast area. Students who want to continue their education are strongly encouraged to take electives from the University's four-year program to get a head start on transfer status.

**Career Opportunities:** Restaurant owner/manager, caterer, food and beverage sales, food buyer, food and beverage manager, food services director.

## Restaurant Management Program of Study

### First Year, Fall Semester

FSM 201, Food Preparation Fundamentals, 3 cr.  
FSM 203, Introduction to Restaurant and Hospitality Management, 3 cr.  
FSM 205, Hospitality Computer Applications, 3 cr.  
FSM 228, Applied Nutrition, 3 cr.  
COM 210, Public Speaking, 2 cr.

### First Year, Spring Semester

FSM 202, Menu Management, 3 cr.  
FSM 206, Food and Beverage Operations Control, 4 cr.  
FSM 207, Hospitality: Service, Sanitation, and Safety, 1 cr.  
COM 209, Expository Writing and Reading, 4 cr.  
MTH 201, Math I, 3 cr., or MTH 202, Math II, 3 cr.

### First Year, Summer Semester

FSM 297, Restaurant Management Summer Internship, 3 cr.

### Second Year, Fall Semester

FSM 209, Applied Restaurant Operations Management, 4 cr.  
FSM 218, Beverage Operations Management, 2 cr.  
FSM 240, Restaurant Sales and Promotion Management, 4 cr.  
SSCI 204, Leadership Effectiveness and Group Performance, 2 cr.

### Second Year, Spring Semester

FSM 208, Non-Commercial and Contract Food Service Management, 3 cr.  
FSM 211, Food and Beverage Facilities Planning, 2 cr.  
FSM 212, Hospitality Personnel Management, 2 cr.  
FSM 226, Dining Room Practicum, 2 cr.  
FSM 241, Applied Buffet and Catering Management, 4 cr.  
SSCI 201, Human Relations, 4 cr.  
ABM 232, Business Law, 4 cr.

**Total: 64 credits**

## Forest Technology (FORT)

[www.unh.edu/tsas/academics/forest-tech/](http://www.unh.edu/tsas/academics/forest-tech/)

(For course descriptions, see page 256.)

Students in the Forest Technology program are uniquely prepared for careers in the forest industries and natural resource management in New Hampshire and New England. Classroom lecture is backed up by practical field work in each of the subject areas. The curriculum is recognized by the Society of American Foresters and reviewed by an advisory committee representing the full spectrum of forestry organizations in the region. There is 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, a

sawmill, logging equipment, technologically advanced navigation, data collection and analysis equipment, and a faculty dedicated to teaching with vast field experience in the subject areas.

### **Admissions Requirement**

Applicants to the Forest Technology specialization must present at least two years of satisfactory work in college preparatory mathematics.

### **Curriculum Fee**

Forest Technology, specialization, \$538\*

### **Forest Technician**

Forest technicians help plan, direct, and operate forestry enterprises. Students in the forest technician specialization 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; and how to manage woodlands to improve timber quality, wildlife habitat and conserve soil, water, and other natural resources. Graduates work in the wood products-related industries, in public forestland management agencies, with forestry consulting firms or urban tree care companies, and with a range of conservation organizations. Graduates can become licensed in N.H. to practice forestry on private lands.

*Career Opportunities:* Forestry consultant, fire control technician, mapping technician, GIS/GPS technician, timber and log buyer, log scaler, lumber grader, sawmill technician, arborist, urban tree care specialist, timber cruiser/forest inventory technician, forestry equipment/products sales.

### **Forest Technician Program of Study**

#### **First Year, Fall Semester**

FORT 261, Dendrology, 3 cr.  
FORT 263, Forest Ecology, 3 cr.  
FORT 265, Forest Orientation Seminar, 1 cr.  
FORT 283, Forestry Computer Applications, 1 cr.  
COM 209, Expository Writing and Reading, 4 cr.  
MTH 203, Algebra and Trigonometry, 3 cr.

#### **First Year, Spring Semester**

FORT 260, Forest Mapping, 2 cr.  
FORT 266, Forest Surveying, 4 cr.  
FORT 270, Applied Silviculture, 4 cr.  
FORT 280, Aerial Photography Interpretation and Geographic Information Systems, 3 cr.  
SSCI 202, Social Issues, 4 cr.

#### **Second Year, Fall Semester**

FORT 269, Wildlife Ecology and Conservation, 3 cr.  
FORT 272, Mensuration, 4 cr.  
FORT 277, Logging, 4 cr.  
FORT 297, Forestry Work Experience, 0 cr.  
COM 210, Public Speaking, 2 cr.  
or COM 211, Critical Reading, 2 cr.  
or COM 212, Technical Writing, 2 cr.  
SSCI 204, Group Process and Leadership Development, 2 cr.  
Electives 2-4 cr.

#### **Second Year, Spring Semester**

FORT 273, Management Operations and Analysis, 3 cr.  
FORT 274, Industrial Forest Management Tour, 2 cr.  
FORT 276, Forest Products, 4 cr.  
FORT 278, Forest Insects and Diseases, 2 cr.  
FORT 279, Forest Fire Control and Use, 2 cr.  
Electives 2-4 cr.

**Total: 65-69 credits**

### **Horticultural Technology (HT)**

[www.unh.edu/tsas/academics/horticulture/](http://www.unh.edu/tsas/academics/horticulture/)

(For course descriptions, see page 256.)

Horticultural Technology students study the art and science of applied plant biology, 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 specializations in ornamental horticulture, or landscape operations. Employment opportunities in these areas continue to be excellent. Graduates enter a rapidly expanding job market in greenhouse production, floral design, nursery and garden center management, parks and grounds management, fruit and vegetable production, and landscape design, construction, and maintenance. 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, floriculture/greenhouse management, or business management.

### **Curriculum Fee**

Horticultural technology:  
Both specializations \$620\*

\*This one-time, nonrefundable curriculum fee is required to cover lab materials, specialized equipment maintenance, and transportation that is unique to the applied nature of the specialization. The curriculum fee covers the entire two-year course of study for one specialization. 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.

### **Ornamental Horticulture**

Students who prefer to be generalists in horticultural technology may opt for the ornamental horticulture specialization. Students gain the broadest possible background in horticultural technology, a background attractive to employers in all specialty areas. Working closely with a faculty adviser, each student designs his or her own program, taking courses in the curriculum that fulfill the student's particular needs. They first complete core requirements in the fundamentals of plant growth and development, soils, plant propagation, plant identification, and plant health care. Students may then choose elective coursework combining studies in floriculture, fruit and vegetable production, garden center management, and/or floral design.

*Career Opportunities:* Business owner/manager of garden center, nursery, flower shop, or fruit and vegetable business; greenhouse, nursery, or fruit and vegetable production; floral designer.

### **Ornamental Horticulture Program of Study**

#### **First year, Fall Semester**

HT 201, Freshman Seminar, 1 cr.  
HT 205, Plants, People and Place, 2 cr.  
HT 207, Plant Structure and Function, 4 cr.  
HT 215, Soils and Land Use (Half-term I), 2 cr.  
HT 219, Computers in Horticulture, 1 cr.  
HT 227A, Horticultural Facilities Management, 2 cr.  
COM 209, Expository Writing and Reading, 4 cr.

#### **First Year, Spring Semester**

HT 204, Plant Propagation, 4 cr.  
HT 217, Soils and Plant Nutrition (Half-term I), 2 cr.  
HT 227B, Horticultural Facilities Management, 2 cr.  
MTH, Mathematics course, 3 cr.  
SSCI 203, Environmental Issues and Society, 2 cr.  
HT 234, Pest Management, 4 cr.

#### **Second Year, Fall Semester**

HT 227C, Horticultural Facilities Management, 1 cr.  
HT 240, Introduction to Floral Design, 2 cr.  
HT 275, Floriculture Crop Production, 2 cr.  
HT 286, Fruit and Vegetable Production, 3 cr.  
HT 297, Horticultural Work Experience, 2 cr.  
COM 210, Public Speaking, 2 cr.  
or COM 211, Critical Reading, 2 cr.  
or COM 212, Technical Writing, 2 cr.  
HT Electives 4-7 cr.

#### **Second Year, Spring Semester**

HT 227D, Horticultural Facilities Management, 1 cr.  
HT 258, Herbaceous Ornamental Plants, 2 cr.  
HT 276, Bedding Plant Production, 2 cr.  
HT 288, Horticultural Business Management, 4 cr.  
HT Electives 3-7 cr.  
SSCI 201, Human Relations, 4 cr. or  
SSCI 202, Social Issue, 4 cr.

**Total: 66-72 credits**



### ***Landscape Operations***

Landscape horticulture 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 landscaping increasingly requires a degree of technical and scientific expertise, as well as creativity, artistry, and problem-solving skills. Students in the landscape operations specialization gain a solid foundation in general horticulture and a thorough introduction to the landscape industry. In their classes, students meld theory and practice, and they apply what they learn in weekly lab periods and on-site visits to area operations. Many graduates eventually start their own landscape companies, and others continue their education toward a four-year degree in areas such as landscape architecture, parks and recreation, plant and soil science, environmental science, or business management.

*Career Opportunities:* Landscape design, landscape construction, garden centers, nurseries, golf courses, schools and parks, private and public grounds maintenance/management.

### ***Landscape Operations Program of Study***

#### **First Year, Fall Semester**

HT 201, Freshman Seminar, 1 cr.  
HT 205, Plants, People and Place, 2 cr.  
HT 207, Plant Structure and Function, 4 cr.  
HT 215, Soils and Land Use (Half-term I), 2 cr.  
HT 219, Computers in Horticulture, 1 cr.  
COM 209, Expository Writing and Reading, 4 cr.  
SSCI 203, Environmental Issues and Society, 2 cr.

#### **First Year, Spring Semester**

HT 217, Soils and Plant Nutrition (Half term I), 2 cr.  
HT 234, Pest Management, 4 cr.  
HT 256, Horticultural Pruning, 2 cr.  
MTH, Mathematics course, 3 cr.  
SSCI 201, Human Relations, 4 cr.  
or SSCI 202, Social Issues, 4 cr.  
Electives, 1-5 cr.

#### **Second Year, Fall Semester**

HT 251, Introduction to Design Communication, 2 cr.  
HT 257, Woody Landscape Plants, 3 cr.  
HT 260, Grounds Maintenance, 2 cr.  
HT 263, Landscape Construction, 4 cr.  
HT 297, Horticultural Work Experience, 2 cr.  
COM 210, Public Speaking, 2 cr.  
or COM 211, Critical Reading, 2 cr.  
or COM 212, Technical Writing, 2 cr.  
Approved Electives 1-5 cr.

#### **Second Year, Spring Semester**

HT 258, Herbaceous Ornamental Plants, 2 cr.  
HT 270, Grounds Management (Half-term II), 2cr.  
HT 272, Landscape Design Studio, 4 cr.  
HT 288, Horticultural Business Management, 4 cr.  
HT Electives 4-8 cr.

**Total: 66-72 credits**

# UNIVERSITY OF NEW HAMPSHIRE AT MANCHESTER

[www.unhm.unh.edu](http://www.unhm.unh.edu)

Kristin R. Woolever, Dean  
Daniel W. Reagan, Associate Dean

## Bachelor of Arts

Business  
Communication Arts  
English  
History  
Humanities  
Politics and Society  
Psychology  
Undeclared

## Bachelor of Science

Computer Information Systems  
Electrical Engineering Technology  
Computer Technology Option  
Mechanical Engineering Technology  
Nursing (Registered Nurse Baccalaureate Program)  
Sign Language Interpretation

## Associate in Arts

General Studies

## Associate in Science

Biological Sciences  
Business Administration

## Certificate Programs for Professional Advancement

Business and Accounting Skills for Managers  
Communication Skills for Managers  
Human Behavior Studies

## College Transition Program

**T**he University of New Hampshire at Manchester was established in 1985 as the University's sixth college to provide access to UNH associate, bachelor, and graduate degree programs for people who live and work in central New Hampshire. The college combines the tradition of liberal arts and professional degree programs in a rich, urban learning environment with a focus on excellence in teaching and opportunity. UNH Manchester is centrally located in Manchester's historic mill yard where it has served as a catalyst for the revitalization of the city's downtown area and symbolizes the region's growth and diversity.

## UNH Manchester Degree Programs

*(For a complete listing of programs and courses, go to [www.unhm.edu/catalog/courses.html](http://www.unhm.edu/catalog/courses.html).)*

UNH Manchester offers University of New Hampshire bachelor of arts and science degree programs in the humanities and social sciences, and technology. Each year more than 1600 students who live and work in the Merrimack Valley region choose UNH Manchester for its range of educational resources and positive learning environment. The UNH Center for Graduate & Professional Studies is located at the UNH Manchester campus and offers UNH graduate degree and professional programs to working professionals in the region.

UNH Manchester's small classes encourage interaction between faculty and students and support educational excellence. Students find a convenient, affordable university education designed to meet the unique requirements of commuting students. The University Center, located in Manchester's historic mill yard at 400 Commercial Street, is convenient and easily accessible by major highways and city bus service.

Undergraduate degree students in Manchester earn the same UNH degree as their peers on the Durham campus. Students are required to satisfy University admission and graduation requirements, which include completion of at least 128 credits, a 2.00 minimum cumulative grade-point average, general education requirements, and, for the bachelor of arts degree, a foreign language requirement. The foreign language is not required in the bachelor of science programs.

Students may also pursue UNH associate in arts or associate in science degree programs full or part time with a choice of concentrations. Requirements for the associate degrees include completion of 64 credits, a 2.00 minimum grade-point average, and an interdisciplinary core course. Those

students who complete the last 16 credits of the associate degree with a grade-point average of at least 2.50, earn a cumulative associate degree grade-point average of 2.50 or higher, and are recommended by their academic advisers are guaranteed admission to a baccalaureate program at the University in either Durham or Manchester. The University does not, however, guarantee admission to a specific college or program.

Selected graduate degrees from UNH are also available through the University of New Hampshire at Manchester.

## Minors

The following academic minors are available at UNH Manchester for enrolled baccalaureate candidates. Further information may be obtained from the Academic Counseling Office, (603) 641-4170.

*American Sign Language and Deaf Studies*  
*Art*  
*Business (pending approval)*  
*Computer Information Systems*  
*Education*  
*English*  
*History*  
*Humanities*  
*Illumination Engineering*  
*Philosophy*  
*Political Economy*  
*Political Science*  
*Psychology*  
*Sociology*  
*Women's Studies*

## Pre-Majors

Students entering the associate in arts program in general studies may prepare for transfer admission to many baccalaureate degree programs available through the University's Manchester and Durham campuses. By working closely with an academic adviser, general studies students can select



structured course plans or pre-majors that are compatible with almost every baccalaureate major.

### **Certificate Programs for Professional Advancement**

UNH Manchester's credit certificate programs are designed for individuals who want to enhance their credentials for a new position or to take the first step toward a college degree. The programs also meet the needs of working professionals with postsecondary degrees who need to expand their knowledge or update their skills.

Each program provides a concentrated learning experience in a specific subject area designed for students with varied educational backgrounds and experience. Students must complete four required courses at UNH Manchester in their chosen program to earn a certificate. The college's accessible course schedules allow students to attend day or evening classes, full or part time.

#### ***Communication Skills for Managers (4 courses, 16 credits)***

The fundamentals of oral and written communications are presented in this certificate program. Critical thinking is emphasized. Students learn to read, write, and speak more effectively both personally and professionally.

#### ***Business and Accounting Skills for Managers (4 courses, 16 credits)***

Students gain a basic understanding of American businesses and how they work. A general overview of the functional areas in business as well as fundamental concepts of accounting, finance, and the use of computers to manage information is presented in the coursework.

#### ***Human Behavior Studies (4 courses, 16 credits)***

An understanding of psychological, cultural, and social aspects of human behavior is developed in this program. The coursework explores how culture and intellect influence behavior and communication with others.

### **College Transition Program**

The University of New Hampshire at Manchester's College Transition Program (CTP) enables students to begin their University studies as candidates for the associate in arts degree while receiving an intensive yearlong (two semesters) plan of academic support and study skill enhancement.

Students are identified as CTP eligible during the standard admission application review process. CTP students are required to supplement their academic schedules with noncredit coursework to strengthen study skills.

Attendance at the New Student Orientation, mandatory testing and placement, and enrollment in the CTP support services and course work are required for all CTP students. After orientation, CTP students work closely with academic advisers to design appropriate course plans, establish performance goals, determine which learning support services are required, and monitor academic achievement.

Students who successfully complete two semesters of CTP may continue on to earn their associate degree through either full-time or part-time study.

### **Application Deadlines**

The UNH Manchester application deadline for the fall semester is June 15 and for the spring semester is November 1. For priority consideration for financial aid, the application deadline is March 1 for the following academic year.

### **For More Information**

The UNH Manchester catalog is available online at [unhm.unh.edu/catalog/catalog.pdf](http://unhm.unh.edu/catalog/catalog.pdf). To request a catalog or more specific information on UNH Manchester courses and degree programs, contact the Office of Admissions, University of New Hampshire at Manchester, University Center, 400 Commercial Street, Manchester, NH 03101, or e-mail [UNHM.admissions@unh.edu](mailto:UNHM.admissions@unh.edu), phone (603) 641-4150; fax (603) 641-4125; TTY/TTD (603) 641-4308.

## **Associate Degree Programs**

### **General Studies**

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 AA in General Studies is the first two years of a baccalaureate program and all 400-level courses transfer to and fulfill the University's general education requirements. Students who earn an AA in General Studies have a foundation for continued study in any major while they develop problem-solving ability, cognitive

skills, and learning techniques that are vital to a life-time of learning. Many students begin their college study in the AA 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 AA degree.

To graduate with an Associate of Arts Degree in General Studies, students must complete 64 credits and fulfill two types of requirements: University (general education) and degree requirements and earn a minimum cumulative GPA of 2.0. The program includes 9 courses from the general education 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 AA General Studies program includes the following course requirements**

- Two writing-intensive courses, one of which must be ENGL 401, First-Year Writing
- One course in quantitative reasoning
- Two courses in biological sciences, physical sciences or technology
- One course in historical perspectives
- One course in foreign culture or fine arts
- One course in social science
- One course in works of philosophy, literature, and ideas
- Completion of interdisciplinary core course, Humanities I or Humanities II
- Elective courses

For more information about the AA in General Studies, please contact the UNH Manchester Office of Admissions at (603) 641-4150 or e-mail [unhm.admissions@unh.edu](mailto:unhm.admissions@unh.edu).

### **Associate in Science Degree Programs**

#### ***Biological Sciences***

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 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.

Students must complete a minimum of 68 credits to graduate. There are 2 tracks in the A.S. degree program at UNH Manchester: biology and microbiology.

#### **Biology Track Requirements**

Math 425, Calculus I

PSYC 402, Statistics in Psychology (BIO 528, Applied

Biostatistics, offered on the Durham campus, may be substituted)

BIOL 413, Principles of Biology I

BIOL 414, Principles of Biology II

CHEM 403, General Chemistry I

CHEM 404, General Chemistry II

MICR 503, General Microbiology

CHEM 545/546, Organic Chemistry and Organic Chemistry Laboratory

BCHM 658/659, General Biochemistry and General Biochemistry Laboratory

BIOL 541, General Ecology

BIOL 604, Principles of Genetics

#### **Microbiology Track Requirements**

Students opting for the microbiology track must take all courses listed in the biology program with the exception of BIOL 541 General Ecology. Two additional courses MICR 504 Brewing and Industrial Microbiology, and MICRO 603 Bacteriology of Food are required of students in the microbiology track.

*Note:* Pre-medical and pre-dental students should enroll in CHEM 651-652 and 653-654 at Durham. These courses may substitute for CHEM 545/546 and BCHM 658-659. In addition they should also enroll in MATH 426.

For more information about the biological sciences program, contact Professor Stephen Pugh, program coordinator, (603) 641-4128, e-mail [sfp@cisunix.unh.edu](mailto:sfp@cisunix.unh.edu). Or contact the UNH Manchester Office of Admissions at (603) 641-4150 or e-mail [unhm.admissions@unh.edu](mailto:unhm.admissions@unh.edu).

#### **Business Administration**

The Associate of Science degree program in Business Administration prepares students for admission to a baccalaureate program in business or for the first step to a managerial or administrative career. The program builds on the University's General Education program with required and elective courses in the business administration major and utilizes the resources of Manchester's business community and its economic strengths. Students develop an

understanding of accounting, economics and computer applications and learn about the legal aspects of business, interpersonal communication, business statistics and technology through the elective courses.

#### **Associate Degree in Business Administration Program of Study**

Students must complete a minimum of 68 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 10 general education courses, students must complete 7 courses (28 credits) in the major.

#### **Required Courses**

ADM 400, Introduction to Business

CIS 411, Introduction to Computer Applications

ECN 412, Introduction to Microeconomics

ADM 532, Introduction to Financial Accounting

ADM 533, Introduction to Managerial Accounting

#### **Business Administration Electives**

*(Choose two of the following courses. Students may select electives from 600-level ECN or ADM courses with adviser permission.)\**

ADM 430, Introduction to Business Statistics

CIS 510, Computer Information Systems

CIS 515, Multimedia: Introduction & Applications

CIS 520, Database Management Concepts

CIS 542, Operating System Applications

CMN 457, Introduction to Interpersonal Communication

CA 450, Public Speaking

ECN 411, Introduction to Macroeconomic Principles

ECN 625, The Regulation of Business

ECN 635, Money, Banking and Macroeconomic Activity

ECN 640, Business Law and Economics

ECN 650, Economics for Managers

Other 600-level ECN or ADM courses by permission

\*Students planning to pursue the BA in Business should select ADM 430, Introduction to Business Statistics, and ECN 411, Introduction to Macroeconomic Principles.

For more information about the A.S. Business Administration Program, contact Tom Birch, Ph.D., program coordinator, at (603) 641-4108 or e-mail [tbirch@cisunix.unh.edu](mailto:tbirch@cisunix.unh.edu); or contact the Office of Admissions at (603) 641-4150, e-mail [unhm.admissions@unh.edu](mailto:unhm.admissions@unh.edu).

## **Bachelor's Degree Programs**

### **Bachelor of Arts in Business (B.A.)**

*(For course descriptions, see page 259 and 263.)*

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 institutional and cultural climate within which businesses are operating. The program utilizes the resources of Manchester's business community and its economic strengths. During the first two years of study, students take introductory classes in business administration, economics, accounting, business statistics, and information systems along with elective and general education classes. The intermediate business core includes required courses in marketing, organizational behavior and financial or operations management. Additionally, students choose an option of focused study either in Business Economics and Political Economy, Business and Technology, or General Business Administration. For students with a unique interest, the opportunity also exists to create a Self-Designed concentration with approval of his/her 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.

For more information about the B.A. Business Administration Program contact Jack McCarthy, D.B.A., program coordinator, at (603) 641-4186, by e-mail to [jack.mccarthy@unh.edu](mailto:jack.mccarthy@unh.edu); or contact the Office of Admissions at (603) 641-4150, [unhm.admissions@unh.edu](mailto:unhm.admissions@unh.edu).

#### **Business Program of Study**

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 ADM 430, ECN 411, or ECN 412 to satisfy both General Education and major requirements. Transfer students must complete at least half of their credits in the major and the eight-credit capstone experience in residence at UNH Manchester.



**Introductory Business Core Courses (8 courses)**

ADM 400, Introduction to Business  
 ECN 411, Introduction to Macroeconomic Principles  
 ECN 412, Introduction to Microeconomic Principles  
 CIS 411, Introduction to Computer Applications *or*  
 ADM 403, Computer Essentials  
 CIS 510, Computer Information Systems  
 ADM 430, Business Statistics  
 ADM 532, Financial Accounting  
 ADM 533, Managerial Accounting

**Intermediate Business Core (3 courses)**

ADM 610, Marketing Principles and Applications  
 ADM 620, Organizational Behavior  
 ADM 601, Financial Management *or*  
 ADM 650, Operations Management

**Business Field Concentrations (4 courses)**

*Business Economics and Political Economy*

4 courses from the following (including at least one course at 600-level or above):

POLT 401, Politics and Society  
 POLT 403, United States in World Affairs  
 POLT 560, World Politics  
 ECN 640, Business Law and Economics  
 ECN 625, Regulation of Business  
 ECN 635, Money, Banking and Macroeconomic Activity  
 ECN 650, Economics for Managers  
 ECN 670, Public Sector Economics  
 HUMA 412, Industry and Welfare  
 HUMA 660, The Moral Dimensions of Economic Life  
 POLT 595, 596 Explorations in Politics  
 POLT 762, International Political Economy  
 ADM 695, Independent Study

*Business and Technology*

4 courses from the following:

CS 403, Online Network Exploration  
 CIS 425, Introduction to Computer Programming  
 CIS 515, Multimedia: Introduction and Applications  
 CIS 520, Database Management Concepts  
 CIS 550, Networking Concepts  
 CIS 610, Systems Analysis & Design

*General Business Administration*

4 courses from the following (but including no more than 2 ECN courses):

ADM 601, Financial Management *or*  
 ADM 650, Operations Management  
 ADM 675, Special Topics in Business Administration  
 ADM 685, Special Topics in Business Administration  
 ADM 695, Independent Study  
 ECN 640, Business Law and Economics  
 ECN 625, Regulation of Business  
 ECN 635, Money, Banking and Macroeconomic Activity  
 ECN 650, Economics for Managers  
 UMST 500, Internship

*Self Designed Concentration*

4 courses (or 16 credit hours) with faculty approval, including at least one course at 500-level or above.

**Business Capstone Experience (2 courses)**

ADM 701, Business, Government and Society  
 ADM 750, Business Internship Seminar *or*  
 ADM 760, Applied Senior Project *or*  
 ADM 770, Special Topics Senior Seminar  
*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.

**Communication Arts (B.A.)**

(*For course descriptions, see page 260.*)

Students majoring in Communication Arts explore the how and why of the ways we communicate through our words, actions, and technologies. The program examines a variety of communication practices—moving image media, news, and personal relationships—as these are applied and developed across a range of social, cultural, professional, organizational, and historical contexts. In addition to classroom instruction, the program provides students with opportunities for fieldwork (including internships and service learning initiatives) that connect them to the urban community and integrate their education within “real life” communication settings.

Communication Arts prepares students for many careers and postgraduate options, including advanced graduate study. Students emerge from the program with a rare combination of hands-on and theoretical knowledge that is attractive to employers from industries and professions such as film, radio, television, journalism, public relations, sales, advertising, counseling, conflict mediation, and others. The Communication Arts degree also translates well to related work in government, social service, and community affairs. Employers in the general business community seeking well-rounded, liberal arts graduates who can communicate effectively in a variety of mediums also find our graduates highly desirable. Further, through internships students have the opportunity to learn more about their chosen fields and better prepare themselves for the transition to professional life.

Beyond the academic and professional rewards, study in Communication Arts enhances the meaning and richness of our everyday lives by enabling us to better see and understand the intricate ways in which communication binds people together.

For more information, contact Barbara Jago, Ph.D., program director, at (603) 641-4106 or e-mail [bjago@comcast.net](mailto:bjago@comcast.net). Visit the Communication Arts Web page at [www.unhm.unh.edu/programs/ca](http://www.unhm.unh.edu/programs/ca), or contact the Office of Admissions at (603) 641-4150.

**Degree Requirements**

Communication Arts majors must complete 10 courses (40 credits) and maintain an overall grade point average in the major of 2.0 or better. Transfer students must complete at least 20 credits in the CA major at UNH Manchester. CMN 455, 456, and 457 may not be used to satisfy general education requirements for CA majors. Information on prerequisites for CA courses can be found in the course descriptions at the back of this catalogue. CA majors considering taking CIS 515, HIST 690, HUMA 796, or PSYC 762 must meet the necessary prerequisites for each course and should consult with their faculty adviser before registering. Degree requirements for the major are presented below.

**I. Required Core Courses—12 credits (3 courses)**

Students must earn a “C” or better in each course if it is to count toward either the UNH Manchester Communication Arts major or the UNH Durham Communication major.

CMN 455, Introduction to Mass Communication  
 CMN 456, Propaganda and Persuasion  
 CMN 457, Introduction to Interpersonal Communication

**II. Selected Coursework—28 credits (3 courses from area A, 2 from area B, 2 from area C)**

Students must earn a “C-” or better in each selected course to satisfy CA requirements.

*A. Communication Practices: Applied (12 credits). Any 3 courses.*

CA 450, Introduction to Public Speaking  
 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 508, Conflict in Relational Communication  
 CA 510, Language and Interaction  
 CA 512, Scriptwriting  
 CA 513, Radio News Production  
 CA 514, Fundamentals of Video Production  
 CA 515, Advanced Video Production  
 CA 516, Speechwriting  
 CA 520, Special Topics in Applied Communication  
 CIS 515, Multimedia: Introduction and Applications  
 HIST 690, Public History  
 PSYC 762, Counseling

*B. Communication Practices: Organization, History, and Policy (8 credits). Any 2 courses.*

CA 525, Media Programming  
 CA 526, Organization of Newswork  
 CA 527, History of Film  
 CA 528, Media Policy and Law  
 CA 530, Celluloid Relationships  
 CA 531, History and Organization of Advertising  
 CA 535, Marital Communication  
 CA 539, Communicating in Families

CA 550, Special Topics in Communication Organization, History, and Policy  
HUMA 640, Birth of Rock and Roll

*C. Communication Practices: Theory and Research (8 credits). Any 2 courses.*

CA 600, Research Methods: Media  
CA 601, Exploring Relationships  
CA 610, Communication Technologies and Culture  
CA 611, Theories of Relational Communication  
CA 612, Narrative  
CA 615, Film History: Theory and Method  
CA 618, Documentary  
CA 720, Seminar in Communication Arts  
CA 795, Independent Study

The core requirements for Communication Arts are identical to those for Communication, therefore credit for CMN 455, CMN 456, CMN 457 automatically transfers for students transferring from Manchester to Durham to major in Communication, as well as for students transferring from Durham to Manchester to major in Communication Arts. All other courses in Communication Arts have a CA designation. The transfer of these courses to satisfy degree requirements for the Communication major in Durham is determined on a course-by-course basis by Communication faculty. Likewise, the transfer of Communication courses (other than CMN 455, 456, 457) to satisfy degree requirements for the Communication Arts major in Manchester is determined on a course-by-course basis by Communication Arts faculty.

### ***Suggested Concentrations in Communication Arts***

Students are welcome to choose courses from across the Communication Arts curriculum, but those wishing to meet specific academic or professional goals may plan coursework using one of the concentrations suggested below. In addition, students may enhance their studies with activities beyond the classroom, including a wide range of internships available across the region. Communication Arts students may also participate in the University's Web radio station, [www.UNHM.net](http://www.UNHM.net), as well as in numerous area film festivals.

#### **Concentration in Moving Image Media**

CA 501, Internship  
CA 502, Image and Sound  
CA 504, Film Criticism  
CA 512, Scriptwriting  
CA 514, Fundamentals of Video Production  
CA 515, Advanced Video Production  
CA 525, Media Programming  
CA 530, Celluloid Relationships  
CA 600, Research Methods: Media

CA 610, Communication Technologies and Culture  
CA 615, Film History: Theory and Method  
CA 617, Aesthetic Theory in Moving Image Media  
CA 618, Documentary

#### **Concentration in News**

CA 450, Introduction to Public Speaking  
CA 501, Internship  
CA 503, Techniques for News Reporting  
CA 513, Radio News Production  
CA 525, Media Programming  
CA 526, Organization of Newswork  
CA 528, Media Policy and Law  
CA 600, Research Methods: Media  
CA 610, Communication Technologies and Culture  
CA 618, Documentary

#### **Concentration in Relational Communication**

CA 501, Internship  
CA 506, Gender  
CA 510, Language and Interaction  
CA 530, Celluloid Relationships  
CA 539, Communicating in Families  
CA 550, Special Topics: Marital Communication  
CA 601, Research Methods: Relational Communication  
CA 611, Theories of Relational Communication  
CA 612, Narrative  
CA 720, Seminar in Communication Arts

#### **Computer Information Systems (B.S.)**

*(For course descriptions, see page 262.)*

The Bachelor of Science degree in Computer Information Systems (CIS) prepares graduates with skills to work in the highly integrated field of Information Systems. The program focuses on functional areas of information technology that are used to manage computers, communications, and information resources within an organization. Students will:

- Gain knowledge of computer information systems technology
- Collaborate with individuals and groups on design and implementation of application solutions
- Communicate effectively (written and oral) about deploying information technology
- Review and critically evaluate current trends in computer technology to select appropriate solutions for specific organizational goals
- Develop awareness of social and ethical issues in the computer profession.

Career opportunities for students with a CIS degree are varied, but may include such areas as database support, helpdesk manager, technical writer, PC Administration, Systems Analyst, Web development, network

administration, and training. Career options exist in a wide range of organizations as all businesses continue to implement IT solutions.

The CIS program is based on three levels of technology courses, a self designed concentration, and the General Education requirements of the University. The CIS core courses prepare graduates with a broad foundation in Computer Information Systems. The self-design concentration prepares students to explore a specific area of CIS application.

Suggested areas include: business, education, writing, or communications. Students select a concentration in consultation with their adviser before their junior year.

*Courses in Level One provide an understanding of the use of technology in organizations, develop competencies for personal productivity, and strengthen the student's ability to work in the information marketplace. Students select 3.*

#### **Level One**

CIS 405, Introduction to the Internet and Web Authoring  
CIS 411, Introduction to Computer Applications  
CIS 425, Introduction to Computer Programming  
CIS 515, Multimedia: Introduction and Applications.

*Courses in Level Two build on the introductory experiences and expand functional competencies in CIS. Students select 4.*

#### **Level Two**

CIS 510, Fundamentals of Computer Information Systems  
CIS 520, Database Design and Development  
CIS 542, Operating System Applications  
CIS 550, Network Concepts  
CIS 560, Computer Law and Ethics

*Courses in Level Three focus on CIS development, implementation and project management. Students select 3.*

#### **Level Three**

CIS 610, Systems Analysis and Design  
CIS 620, Network Administration and Maintenance  
CIS 630, Application Programming using Java  
CIS 650, System Implementation with DBMS  
CIS 680, Internship

*Students complete 128 credits.*

10 courses in the General Education program (40 credits)

13 courses in CIS (52 credits)

4 courses in a required self-designed concentration (16 credits)

5 free electives. (20 credits)

Required courses must be completed with a minimum grade of C.

Students must attain a minimum gpa of 2.0 in major courses required for graduation. Students must complete 24 credits of CIS courses in residence.



For additional information about the B.S. in Computer Information Systems, contact Karla Vogel, program coordinator, at (603) 641-4127, or by e-mail to [karla.vogel@unh.edu](mailto:karla.vogel@unh.edu); or contact the Office of Admissions at (603) 641-4150.

### Engineering Technology (B.S.)

(For course descriptions, see page 263.)

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 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 Technology Accreditation Commission of the Accreditation Board of Engineering Technology (TAC/ABET) or show academic evidence of ability to successfully complete the requirements of this calculus-based program.

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.

### Engineering Technology Program of Study

Students may major in electrical engineering technology, mechanical engineering technology, or computer technology. Regardless of the preferred academic specialization, all entering students should have completed a minimum of twelve semester hours of college level mathematics, including two semesters of calculus. Students without this background will be required to take either MATH 426 Calculus II, MATH 527 Differential Equations with Linear Algebra, or MATH 644 Statistics during the first semester of the junior year. The typical junior and senior year course selections follow.

### Electrical Engineering Technology (EET)

ET 625, Technical Communications  
ET 630, Analytical Methods in Technology  
ET 671, Digital Systems  
ET 674, Control Systems & Components  
ET 677, Analog Systems  
ET 733, Business Organization and Law  
ET 680, Communications and Fields  
ET 734, Economics of Bus. Activities  
ET 762, Illumination Engineering  
ET 763, Lighting Design & Application\*  
ET 788, Introduction to Digital Signal Processing  
ET 790, Microcomputer Technology  
ET 791, Electrical Engineering Technology Project  
CS 410C, Introduction to Scientific Programming  
General Education requirements (5)

*Electrical engineering technology students must also complete a minimum of nine credit hours of courses in communication skills.*

### Mechanical Engineering Technology (MET)

ET 625, Technical Communications  
ET 630, Analytical Methods in Technology  
ET 639/640, HVAC 1 & 2  
ET 641, Production Systems  
ET 644, MET Concepts in Design and Analysis or  
ET 649, Production Tooling and Manufacturing Process  
ET 674, Control Systems and Components  
ET 675, Electrical Technology  
ET 733, Business Organization & Law  
ET 734, Economics of Business Activities  
ET 745, Instrumentation or ET 762 Illumination Engineering  
ET 763, Lighting Design & Application\*  
ET 751, Mechanical Engineering Technology Project  
CS 410C, Introduction to Scientific Programming  
General Education Requirements (5)

*Mechanical engineering technology students must satisfactorily complete CHEM 403, General Chemistry, or offer evidence of equivalent coursework. They must also complete a minimum of nine credit hours of courses in communication skills.*

### EET Computer Technology Option

ET 625, Technical Communications  
ET 630, Analytical Methods in Technology  
ET 601, Data Structure & Databases  
ET 671, Digital Systems  
ET 647, Adv. Perspectives on Prog.  
ET 707, Object Oriented Design  
ET 733, Business Organization and Law  
ET 734, Economics of Bus. Activities  
ET 790, Microcomputer Systems  
ET 791, Electrical Engineering Technology Project Technical Electives  
ET 627, Adv. Developmental Theory of E-commerce  
ET 667, Graphics and Animation  
ET 717, Network Security  
ET 737, Web Server Databases  
ET 747, User Interface Design  
ET 777, Adv. Distributed Programming Trends  
ET 787, Artificial Intelligence and Expert Systems  
ET 790, Microcomputer Systems

\*Optional technical elective taken by students in the Lighting minor.

For information about the engineering technology program, contact B.S. Engineering Technology Program Chair and Program Coordinator for the Electrical Engineering Technology (EET) and the EET Computer Technology Option Programs: Professor David A. Forest, (603) 641-4322 or by e-mail to [daforest@cisunix.unh.edu](mailto:daforest@cisunix.unh.edu) or [davidunh@comcast.net](mailto:davidunh@comcast.net).

For information about the engineering technology program, contact Professor Ralph Draper, B.S., Mechanical Engineering Technology program coordinator, (603) 641-4323 or e-mail [rwd@cisunix.unh.edu](mailto:rwd@cisunix.unh.edu).

For admissions information, contact the Undergraduate Office of Admissions at (603) 641-4150, e-mail [unhm.admissions@unh.edu](mailto:unhm.admissions@unh.edu).

### English (B.A.)

(For course descriptions, see page 264.)

Through the study of a wide variety of literary materials, English majors deepen their understanding of history, culture, language, and human behavior. They also gain skill in writing, reading, and critical thinking.

The faculty of the UNH Manchester English department specialize in Twentieth-century poetry, poetry writing, women's literary traditions, American literary folklore, New England culture, protest literature, nature writers, American and British fiction, Victorian literature and art, Renaissance drama, interdisciplinary studies, composition, journalism, grammar, and the use of computers to teach literature and writing.

Many upper-level courses are conducted as seminars, and individual conferences with professors are common. Field trips to see local performances of drama and poetry readings are often planned in conjunction with specific literature courses.

Job prospects for English majors after graduation are varied. English majors find employment in libraries and museums, government agencies, nonprofit organizations, publishing companies, journalism, the media, social work, banking, and many other fields.

### English Program of Study

For the English major at UNH Manchester, students must complete a minimum of 40 credits in major coursework. Introduction to Critical Analysis (ENGL 419) must be completed with a grade of C or better. Except for ENGL 419, all courses must be completed with a grade of C- or above in order to count towards the English major. Major requirements include ENGL 419, two additional

500-level courses, and seven courses numbered 600 or above with an overall G.P.A. in the major of 2.0 or better. In selecting these courses, students must meet the following distribution requirements:

ENGL 419, Introduction to Critical Analysis, or ENGL 529, Writing About Literature

Literature before 1800: Either two advanced courses (numbered 600 or above), or one advanced course and ENGL 513

Literature after 1800: Either two advanced courses, or one advanced course and one course from the following list: ENGL 514, 515, or 516

Total English courses must include three 500 level courses and seven courses numbered 600 and above.

A typical freshman program in the first semester consists of Freshman English and three general education requirements or electives.

In the second semester the student typically would take Introduction to Critical Analysis, an introductory literature course, and two general education requirements or electives.

For more information about the English program, contact Fred Metting, Ph.D., program coordinator, (603) 641-4161 or e-mail [fbm@cisunix.unh.edu](mailto:fbm@cisunix.unh.edu). Or contact the UNH Manchester Office of Admissions at (603) 641-4150, e-mail [unhm.admissions@unh.edu](mailto:unhm.admissions@unh.edu).

### History (B.A.)

(For course descriptions, see page 266.)

The study of history is an essential element of a liberal education. The history major provides both an awareness of the past, and the tools to evaluate and express one's knowledge. Study of the past gives meaning to the present. It increases our understanding of the political, social, economic, and cultural forces that influence our lives. It opens a collective memory to us-of our community, our nation, the Western world, and the human race itself.

The student who majors in history will have the opportunity to study the breadth of human experience and will acquire the skills in critical reading and writing which form the foundation of the educated life. Students of history learn to analyze conflicting evidence, to find cause and effect, to express themselves effectively, and to ask relevant questions. Through careful observation and evaluation of information they seek explanations for human events. The study of history may include all of human culture and society and provides tremen-

dous latitude in the subjects which may be studied. The interdisciplinary nature of the field makes it a natural focus for study which may encompass a variety of other fields.

Students majoring in history must complete ten 4-credit history courses or their equivalent with a grade of C- or better, and an overall average in these courses of 2.0 or better.

History majors are urged to complete HIST 500 in the semester following the major declaration and HIST 797 during the senior year. In addition, a major must take at least 8 courses of which a minimum of 3 must be at the 600-level or above. Only one 695/ 696 independent study course may be used to fulfill the 600 level requirement, and no more than 2 independent studies may be used toward the ten-course requirement. No more than two 400 level courses may be counted toward the major. The program must be planned in consultation with an adviser.

*The distribution of required courses for the major is as follows:*

HIST 500, Introduction to Historical Thinking

Approved area of specialization

4 courses numbered 500 and above centered around a nation, region, time period or interdisciplinary theme. Two of these courses may be taken in another department with the approval of the student's adviser.

Complimentary history courses-at least three history courses from outside the area of specialization.

History elective may be a history course from the area of specialization or complementary area.

HIST 797, Colloquium in History

A particular feature of the history program at UNH Manchester is the opportunity to do internships for academic credit. These internships, which enable students to work in museums, historical societies, government agencies, archives, and in other institutional settings, may be arranged with the help of the faculty.

A typical freshman program consists of at least two history courses (Introduction to Historical Thinking, Western Civilization, Historical Survey of American Civilization); Freshman English; three to five general education requirements; and electives.

For more information about the history program, e-mail John Resch, Ph.D., program coordinator, at (603) 641-4134, or by e-mail to [jpr@cisunix.unh.edu](mailto:jpr@cisunix.unh.edu). Contact the UNH Manchester Office of Admissions at (603) 641-4150, e-mail [unhm.admissions@unh.edu](mailto:unhm.admissions@unh.edu).

### Humanities (B.A.)

(For course descriptions, see page 267.)

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 a 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 a historical period through study of its literature, arts, history, philosophy, and sciences.

Students with specific career interests are encouraged to consult with the college's academic advisers to identify courses appropriate to their needs and interests. Study in areas such as business or computer information systems, for example, can often be combined successfully with the humanities major.

Humanities majors find employment in a wide range of fields or pursue graduate study in fields such as law or education. Skills and knowledge developed through the major are important in virtually all social and career responsibilities, although the humanities major is not preparation for a specific career.

### Humanities Program of Study

For the humanities major at UNH Manchester, students must complete 40 credits with a minimum grade of C in each course. The required courses for the humanities major are:

#### Core Courses (required of all majors)

HIST 500, Introduction to Historical Thinking  
or ENGL 419, Introduction to Critical Analysis

HUMA 411, Humanities I

HUMA 412, Humanities II

HUMA 795, Humanities: A Study of Creativity

HUMA 796, Humanities: A Study of Contemporary Issues



**Self-Designed Concentration**

This is an approved program of studies designed by the student in consultation with a faculty adviser. 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 about the humanities major, contact Terry Savage, Ph.D., program coordinator at (603) 641-4149, or by e-mail to [tmsavage@unh.edu](mailto:tmsavage@unh.edu); or contact the Office of Admissions at (603) 641-4150.

**Politics and Society (B.A.)**

The new politics and society program at UNH Manchester provides a range of tools to help students understand politics in social, economic, legal, and historical contexts. The 128-credit, interdisciplinary program explores politics in the real world. Through 56 credits in major coursework including research, internships, and the senior capstone project, students connect with local, state, and national politics. They develop critical thinking, communication, and research skills essential for graduate education and positions in journalism, government, politics, diplomacy, and business.

For complete program requirements including course descriptions, contact Michael Contarino, Ph.D., program director, (603) 641-4138, e-mail [mcl1@cisunix.unh.edu](mailto:mcl1@cisunix.unh.edu).

**Psychology (B.A.)**

(For course descriptions, see page 268.)

Psychology is the scientific study of behavior. 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. It seeks to understand the fundamental principles involved in how people and animals learn and adapt to their environments.

The Department of Psychology offers opportunities for independent study in cooperating New Hampshire mental health 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.

Psychology graduates find employment as trained research assistants, mental health

aids 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.

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 understanding of the behavior of humans and animals.

**Psychology Program of Study**

Students majoring in psychology must complete 44 credits with a minimum of C- in each course and a 2.00 overall average in all major requirements. Students with a first major in psychology may not use any psychology courses to fulfill general education 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 counselor 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 4 credits each must make up for any credit deficit created by acceptance of transfer credits into the psychology major.

Specific course selections should be discussed with the advisers. Exceptions to the requirements for the major require a petition to the department.

**Program Requirements****A. Three core courses (PSYC 401, 402, and 502)****B. Four 500 level depth courses**

Group I: Two courses:

PSYC 511, PSYC 512, PSYC 513, PSYC 521, PSYC 531, PSYC 591 (only Behaviorism section)

Group II: Two courses:

PSYC 552, PSYC 553, PSYC 561, PSYC 571, PSYC 581, PSYC 582

**C. Four 700 level depth courses**

Four 700 level courses (1 from Group I, 1 from Group II, and 2 from Group I and/or Group II). PSYC 702 and PSYC 705 may be substituted for one Group I or one Group II course, but they may not both be used to fill the same group.

Group I:

PSYC 702, 705, 710, 712, 713, 720, 722, 731, 733, 735, 737, 741A-D

Group II:

PSYC 702, 705, 755, 756, 758, 762, 763, 771, 780, 783, 785, 791A-G, 793

For more information about the psychology program, contact Gary Goldstein, Ph.D., program coordinator, (603) 641-4179, or e-mail [gary.goldstein@unh.edu](mailto:gary.goldstein@unh.edu). Or contact the UNH Manchester Office of Admissions at (603) 641-4150, e-mail [unhm.admissions@unh.edu](mailto:unhm.admissions@unh.edu).

**Registered Nurse Baccalaureate Program (B.S.)**

(For course descriptions, see page 267.)

As health care moves to advanced practice, prevention and community based programs, nurses with professional credentials have increased responsibility in directing nursing care.

The UNH Department of Nursing in the School of Health and Human Services offers the registered nurse baccalaureate degree (BSN) as a program designed to reach the diverse geographical population of registered nurses in New Hampshire, Massachusetts, Vermont, and Maine. A nationally accredited program, the curriculum builds upon the students' prior learning and his or her RN credential. The individualized, competency-based program is flexible and recognizes the value of the practicing nurse. An RN may earn advanced standing through transfer credit and challenge examinations.

An RN who is prepared with a baccalaureate degree in nursing is eligible to work in all areas of nursing with healthy or ill clients and in all health care settings. The Bachelor of Science degree is often required for management positions and community health programs. The program also prepares nurses for graduate-level study.

Graduates of recognized nursing programs who meet University admission criteria may pursue the program on a full- or part-time basis. Curriculum requirements may be met through transfer credits, course enrollments, and challenge examinations. A valid RN license and one year of practice experience are preferred though not mandatory for upper level nursing coursework. The nursing component is based on the belief that RN students enter the program with knowledge and competence gained through previous educational and work ex-

periences. Individualized plans of study are developed to enable completion of nursing coursework.

### ***RN Baccalaureate Program of Study***

RNBP degree requirements are satisfied by the completion of 128 credit hours with a grade average of C or better. Thirty-five credit hours are obtained in upper division nursing coursework with the remaining credit hours in the University's general education requirements, nursing prerequisite credit hours, and general elective credit hours. Nursing coursework with grades of C or better from associate degree programs transfer for full credit.

Prior to registering for nursing courses with a clinical component, students must submit the following:

Copy of current C.P.R. Certification (provider or equivalent)  
Proof of liability coverage  
A completed immunization form  
Current RN License

### **Prerequisite Courses**

English Composition  
Human Anatomy & Physiology I & II  
Human Development (Life Span)  
Microbiology  
Nutrition in Health & Disease  
Psychology  
Statistics

### **Nursing Courses**

NURS 606, Seminar on Professional Nursing  
NURS 617, Nursing and Health Care Policy  
NURS 622, Clinical Decision Making II  
NURS 645, Research in Nursing  
NURS 655, Community Health Nursing I: Population Health  
NURS 656, Community Health Nursing II: Individuals, Families and Aggregates  
NURS 656C, Nursing in the Community: Clinical  
NURS 703, Nursing Leadership/Management and the Organizational Context  
NURS 719, Professional Nursing Practice

For more information, contact Susan Fetzer, R.N., Ph.D., M.B.A., program coordinator at (603) 641-4140 or (603) 358-2606, or by email to [sfetzer@unh.edu](mailto:sfetzer@unh.edu). Or contact the UNH Manchester office of Admissions at (603) 641-4150; email [unhm.admissions@unh.edu](mailto:unhm.admissions@unh.edu).

### **Sign Language Interpretation (B.S.)**

(For course descriptions, see pages 259 and 269.)

The sign language interpretation program at UNH Manchester is a specialized, in-depth program with a national reputation

for quality. In 1999, the program became the first interpreting program in the nation to be found in compliance with the National Interpreter Education Standards of the Conference of Interpreter Trainers (CIT). In addition, UNH Manchester houses one of northern New England's most comprehensive collection of books and media materials on sign language interpretation.

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 sign language interpretation program at UNH Manchester provides students with a strong theoretical foundation as a generalist in ASL/English interpretation 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 sign language interpretation graduate with a varied and flexible academic base. Students also develop 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 interpretation 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 general education program.

Graduates of the sign language interpretation program may pursue careers in ASL/English interpretation, 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.

### ***B.S. Sign Language Interpretation Program of Study***

Students must complete 64 credits in the major, 40 credits in the University's general education program, and 24 credits in

elective courses. Students must complete 64 credits 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 531 and INTR 630 with at least a B- (or successfully demonstrate competence in American Sign Language and consecutive interpretation, respectively). Transfer students must complete a minimum of 8 SLI courses at UNH Manchester.

### ***Minor in American Sign Language and Deaf Studies***

Students must complete 24 credits to earn a minor. Coursework includes three required courses and three electives in ASL and Deaf Studies.

### **Required Courses**

#### **Language Courses**

ASL 435, American Sign Language I\*†  
ASL 436, American Sign Language II\*†  
ASL 531, American Sign Language III\*†  
ASL 532, American Sign Language IV\*†  
ASL 621, Advanced ASL Discourse for Interpreters\*†  
INTR 539, Comparative Linguistic Analysis for Interpreters\*†

#### **Culture Courses**

INTR 438, A Sociocultural Perspective on the Deaf Community\*†  
INTR 658, Deaf/Hearing Cultural Dynamics\*†

#### **Interpreting Courses**

INTR 430, Introduction to Interpretation\*  
INTR 439, Ethics & Professional Standards for Interpreters\*  
INTR 540, Principles and Practice of Translation\*  
INTR 630, Principles and Practice of Consecutive Interpretation\*  
INTR 636, Principles and Practice of Simultaneous Interpretation\*  
INTR 732, Simultaneous Interpretation of Discussions, Speeches, and Reports\*  
INTR 734, Field Experience and Seminar I\*  
INTR 735, Field Experience and Seminar II\*

\* Required for the B.S.

† Meet the requirements for the minor

For more information about the sign language interpretation program, contact Professor Jack Hoza, program director, (603) 641-4143 or e-mail [jack.hoza@unh.edu](mailto:jack.hoza@unh.edu). Or contact the UNH Manchester Office of Admissions at (603) 641-4150; e-mail [unhm.admissions@unh.edu](mailto:unhm.admissions@unh.edu).

\* Required for the B.S.

† Meet the requirements for the minor



## The Undeclared Option

Students who are admitted to UNH Manchester as bachelor's degree candidates, but who prefer to postpone the declaration of a major or academic specialization, may do so through the undeclared option. Undeclared students may take until the second semester of their sophomore year to select a major.

Applicants for admission to UNH Manchester who are uncertain of their academic interests are encouraged to apply as undeclared. After admission undeclared students are assisted by academic advisers in purposeful exploration of academic interests and in making appropriate course selections. At UNH Manchester, the undeclared option can also be an effective way to prepare for entry to a variety of academic programs that are available at the Durham campus only. Students must declare a major by the time they attain 57 semester hours.

### *Undeclared Program Requirements and Program of Study*

To graduate from UNH, students must fulfill three types of requirements: University (general education), degree, and major requirements.

While undeclared, students develop their program of study with the guidance of an academic adviser. They work toward completing their general education requirements and explore their interests and possible baccalaureate degree majors. Once a major is declared, the student follows the major program of study to fulfill graduation requirements.

To graduate with a baccalaureate degree, students must complete the following requirements:

Completion of at least 128 credits with a minimum cumulative grade-point average of 2.0.

Completion of four writing intensive courses, one of which must be ENGL 401, First-Year Writing

Completion of the University general education requirements.

Proficiency in a foreign language.

Satisfaction of major requirements.

The last 32 hours of credit must be UNH courses completed following admission and matriculation, unless prior permission is granted to transfer part of this work from another institution.

For more information about the Undeclared major, call the UNH Manchester Office of Admissions at (603) 641-4150, or e-mail [unhm.admissions@unh.edu](mailto:unhm.admissions@unh.edu).

---

## FACULTY

**Professors:** Deborah Brown, John J. Cerullo, Thaddeus M. Piotrowski, John P. Resch

**Associate Professors:** Ralph W. Draper, David A. Forest

**Associate Professors:** Thomas D. Birch, Michael Contarino, Ann E. Donahue, Lorraine D. Doucet, Gary S. Goldstein, Barbara J. Jago, Jeffrey F. Klenotic, Robert L. Macieski, Fred Metting, Alison K. Paglia, Susanne F. Paterson, Stephen R. Pugh, Terry M. Savage, John E. Sparrow, Susan A. Walsh, Carolyn B. White, Richard A. Zang

**Assistant Professors:** Gail Fensom, Jack E. Hoza, Sarah Prescott Kenick, Roberta Kieronski, John F. McCarthy, Patrice T. Mettauer, Anthony Tenczar, Karla E. Vogel

**Senior Lecturer:** Robert M. Pugh

**Lecturers:** Walter Alderman, Patrick F. McCarthy, William F. Troy

# GRADUATE SCHOOL

[www.gradschool.unh.edu](http://www.gradschool.unh.edu)

Harry J. Richards, Dean  
Cari A. Moorhead, Associate Dean

## Master of Arts

Economics  
English  
\* Language and Linguistics  
\* Literature  
Environmental Education  
History  
\* Museum Studies  
Justice Studies  
Music  
\* Music Education  
\* Music Studies  
Political Science  
Sociology  
Spanish

## Master of Science

Accounting  
Animal Sciences  
Biochemistry  
Chemical Engineering  
Chemistry  
Civil Engineering  
Communication Sciences and Disorders  
\* Early Childhood Intervention  
\* Language and Literacy Disabilities  
Computer Science  
Earth Sciences  
\* Geology  
\* Ocean Mapping  
\* Oceanography  
Electrical Engineering  
Family Studies  
\* Marriage and Family Therapy  
Genetics  
Hydrology  
Kinesiology  
Management of Technology  
Materials Science  
Mathematics  
\* Applied Mathematics  
\* Statistics  
Mechanical Engineering  
Microbiology  
Natural Resources  
\* Environmental Conservation  
\* Forestry  
\* Soil Sciences  
\* Water Resources  
\* Wildlife  
Nursing  
Nutritional Sciences  
Occupational Therapy  
Ocean Engineering  
\* Ocean Mapping  
Physics  
Plant Biology  
Recreation Management and Policy  
\* Recreation Management  
\* Therapeutic Recreation  
Resource Administration and Management  
Resource Economics  
Zoology

\* Option within the major.

**T**he Graduate School offers a wide range of programs leading to the master's degree, one program leading to the C.A.G.S., and a number of programs leading to the Ph.D. degree. Graduate programs have been developed systematically to achieve academic excellence by careful utilization of institutional resources and regional opportunities. A highly qualified graduate faculty supervises programs and establishes the requirements for admission and degrees, which are administered by the dean of the Graduate School. The Graduate School extends its programs to central and southern New Hampshire through the Center for Graduate and Professional Studies. Located on the campus at the University of New Hampshire at Manchester, the center offers a number of part-time professional master's programs.

## Admissions

Persons holding a baccalaureate degree from an accredited college or University and wishing to take graduate-level courses at the University as part of a graduate degree program must apply for admission to the Graduate School. Admission to the Graduate School is both limited and competitive and is based solely upon academic qualifications and potential.

Applications for admission and the Graduate Catalog, containing detailed descriptions of graduate programs, may be obtained from the Graduate School, Thompson Hall, 105 Main Street, Durham, N.H. 03824-3547 or [www.gradschool.unh.edu](http://www.gradschool.unh.edu).

## Early Admission-University of New Hampshire 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 required to be considered for early admission. Such seniors are normally admitted prior to the start of their last undergraduate semester. Seniors who have been admitted under early admission may enroll for a maximum of two courses for up to eight graduate credits prior to completing their bachelor's degree.

## Dual Credit-UNH Seniors

University of New Hampshire seniors who have been admitted to the Graduate School under early admission may, upon recommendation of the department and approval

of the Graduate School, be allowed a maximum of two graduate-level courses for up to 8 credits toward both a bachelor's and master's degree. 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. Dual credit forms are available at the Graduate School.

## Financial Assistance

Graduate assistantships are available in most departments. These involve part-time work in connection with the University's instructional or research activities. University awards, such as tuition scholarships, are also available to qualified students. Assistantships and scholarships are awarded on the basis of academic qualifications.

Financial assistance in the form of college work study and loans may be available through the Financial Aid Office.

## UNH Center for Graduate and Professional Studies

The Center for Graduate and Professional Studies offers a wide range of post-baccalaureate programs for professionals in business, education, social services, healthcare, government, and related fields. All graduate programs supported by the center are directed by UNH faculty and are administered by the UNH Graduate School. Currently, master's degree or other post-baccalaureate courses and programs are offered in Manchester in: Business Administration, Counseling, Educational Administration, Teacher Education, Public Administration, Public Health, Social Work, and Nursing.



**Master of Arts in Teaching**

Elementary Education  
Secondary Education

**Master of Education**

Administration and Supervision  
Counseling  
Early Childhood Education  
\* Special Needs  
Elementary Education  
Reading  
Secondary Education  
Special Education  
Teacher Leadership

**Master of Science for Teachers**

Chemistry  
College Teaching  
English  
Mathematics  
Master of Business Administration  
Master of Arts in Liberal Studies  
Master of Fine Arts  
Painting  
Writing

**Master of Public Administration**

**Master of Public Health**

\* Ecology  
\* Nursing  
\* Policy and Management

**Master of Social Work**

**Certificate of Advanced Graduate Study**

Educational Administration and Supervision

**Doctor of Philosophy**

Animal and Nutritional Sciences  
Biochemistry  
Chemistry  
\* Chemistry Education  
Computer Science  
Earth and Environmental Sciences  
\* Geology  
\* Oceanography  
Economics  
Education  
Engineering  
\* Chemical Engineering  
\* Civil Engineering  
\* Electrical Engineering  
\* Materials Science  
\* Mechanical Engineering  
\* Ocean Engineering  
\* Systems Design  
English  
Genetics  
History  
Mathematics  
Mathematics Education  
Microbiology  
Natural Resources and Environmental Studies  
Physics  
Plant Biology  
Psychology  
Sociology  
Zoology

**Professional Development and Training**

Professional Development and Training, part of UNH's Center for Graduate and Professional Studies, serves individuals, businesses, and organizations in New Hampshire and surrounding regions by offering a wide range of professional development opportunities throughout the year, including one-day seminars, special institutes and conferences, and short-term Certificate Programs.

Programs are designed to assist professionals in developing new or advanced knowledge and skills in a variety of fields. Instruction provides a balance of theory and practical skills that participants can immediately apply to the workplace.

Offerings focus on pertinent topics in business, management and supervision, professional coaching, human resources, computers, CAD, teaching and school administration, health and human services, engineering, manufacturing, surveying, soil science, town and state planning, fundraising and grant writing, and more.

Training is offered on the Durham campus, in Manchester, and at the UNH training facility at Pease International Tradeport in Portsmouth.

From time to time, institutes and conferences are held to address current topics of concern at an in-depth level.

Professional Development and Training also offers customized training services—helping companies assess their training needs, and then designing and delivering customized training to meet these needs.

\* Option within the major.

# CONTINUING EDUCATION AND SUMMER SESSION

[www.learn.unh.edu](http://www.learn.unh.edu)

**C**ontinuing Education provides public access to higher education for individuals not formally admitted into 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 or GED. Individuals may register for a maximum of 11 credits per term without special permission.

*Graduate* Graduate courses (numbered 800-999) are open to individuals with a bachelor's degree from an accredited college or university. Individuals may register for a maximum of 8 credits per term without special permission.

## Full-time Special Student Status

*Undergraduate* Non-degree students who wish to register for 12 or more credits in a single semester must receive written permission from the Office of Admissions. Special tuition and fee rules apply. Call (603) 862-1360 for more information.

*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. Call (603) 862-3000 for details.

## 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. Visit [www.admissions.unh.edu](http://www.admissions.unh.edu) or call (603) 862-1360 for details.

## CATS Program

CATS stands for "Challenging Academically Talented Students" and 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 or more information, please visit [www.admissions.unh.edu/cats/index.html](http://www.admissions.unh.edu/cats/index.html) or call (603) 862-1360.

## Prerequisites

Individuals are responsible for meeting all course prerequisites before registering for classes. Visit [www.learn2.unh.edu/courses/prerequisites.html](http://www.learn2.unh.edu/courses/prerequisites.html) for undergraduate and graduate course descriptions and prerequisite information.

## Academic Standards and Expectations

A cumulative grade-point average of 2.00 (C grade) is the minimum acceptable level for undergraduate work at the University. The records of special undergraduate 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 [www.unh.edu/student/rights](http://www.unh.edu/student/rights).

## Student Resources

Non-degree students are encouraged to take advantage of the wide range of resources available on campus. Visit [www.learn2.unh.edu/resources/](http://www.learn2.unh.edu/resources/) for a complete list of student services and campus resources.



### **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. For more information, visit [www.learn.unh.edu](http://www.learn.unh.edu) or call (603) 862-4234.

### **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 that 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.learn.unh.edu](http://www.learn.unh.edu) or call (603) 862-2015.

# DESCRIPTION OF COURSES

## Explanation of Arrangement

The title and Arabic number designate the particular course. When two course numbers are connected by a hyphen, the first semester of the course, or its equivalent, is a prerequisite to the second. If the course numbers are separated by a comma, qualified students may take the second semester without having had the first. Course numbers separated by a slash indicate same subject offerings at lower and upper levels.

In courses that are not designated by title as laboratory courses, the notation "Lab" indicates that laboratory sessions are a part of the course.

All courses marked with "#" have not been offered in the last three years.

## Prerequisites and Corequisites

Each prerequisite for a course is separated from the other prerequisites by a semicolon; e.g., Prereq: EDUC 601; PSYC 635. If permission (of the instructor, department, adviser, or committee) is a prerequisite for all students, it is listed among the prerequisites (e.g., Prereq: EDUC 601; PSYC 635; permission). If, on the other hand, permission may be substituted for one or more of the listed prerequisites, it follows the other prerequisites and is separated from them by a slash mark (e.g., Prereq: EDUC 601; PSYC 635/for permission). If permission may be substituted for only one of the prerequisite courses, it is listed with the course for which it may be substituted (e.g., Prereq: EDUC 601 or permission; PSYC 635).

Corequisites are courses that must be taken in the same semester.

## Credits

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 description indicates that no letter grade is given but that the course is graded Credit or Fail.

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*.

*The 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 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.

---

## Accounting & Finance (ACFI)

*(For program description, see page 104.)*

### 620. Topics in Accounting

Special topics; may be repeated. Prereq: ACFI 621 or ACFI 723 depending on topics and junior standing. 4 cr.

### 621. Intermediate Financial Accounting I

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. 4 cr.

### 622. Intermediate Financial Accounting II

Selected topics within financial reporting such as accounting for investments, leases, pensions, and income taxes. Focus on how and why these issues are accounted for in the manner prescribed by current GAAP. Prereq: ACFI 621. 4 cr.

### 640. Topics in Finance I

Special topics; may be repeated. Prereq: ADMN 601 and junior standing. 2 to 4 cr.

### 650. Wildcat Investment Fund

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 4 credits. Prereq: permission. 2 cr.

### 701. Financial Policy

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 601. 4 cr.

### 702. Investments Analysis

Security valuation, efficient markets, portfolio management, options, and alternative investments. Computer research topics. Prereq: ADMN 601. 4 cr.

### 703. International Financial Management

Financial management problems facing multinational firms. Primary focus on effects of currency denominations on financial decisions. Prereq: ADMN 601. 4 cr.

### 704. Derivative Securities and Markets

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 601. 4 cr.

### 705. Financial Institutions

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 601. Writing intensive. 4 cr.

### 720. Topics in Finance II

Special topics. Prereq: ADMN 601 and senior standing. Writing intensive. 4 cr.

### 723. Advanced Managerial Accounting Concepts and Applications

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. 4 cr.

### 724. Auditing

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. 4 cr.

### 725. Financial Statement Analysis

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. Not offered every year. 4 cr.

### 726. Introduction to Federal Income Tax

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. 4 cr.



**740. Topics in Accounting II**

Special topics. Prereq: ACFI 621 or 723, depending on topics, and senior standing. 4 cr.

**750. Internships in Accounting**

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. Cr/F. 1 to 4 cr.

**751. Internships in Finance**

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. Cr/F. 1 to 4 cr.

**752. Independent Studies in Accounting**

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. 1 to 4 cr.

**753. Independent Studies in Finance**

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. 1 to 4 cr.

**754. Honors Seminar in Accounting and Finance**

Seminar discussions of advanced readings in accounting and finance. For seniors with standing in the honors program. 4 cr.

**406. Freshman Academic Experience II**

Reading and a question-focused discussion of a volume or book of readings on an important business and/or economic topic. Further consideration of academic issues facing college freshmen. How to deal with difficult academic problems. Cr/F. 1 cr.

**410. Management Information Systems**

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. Prereq: ADMN 403. 4 cr.

**420. Business Statistics**

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 ADMN 430; BIOL 528; EREC 525; HHS 540; MATH 644; PYSC 402; SOC 502. Prereq: ADMN 403 and 410; MATH 420 or 424A. 4 cr.

**444. Corporate Social Responsibility in a Global Economy**

An in-depth exploration of the relationship between the modern corporation and democratic values. Among industrialized democracies, corporate concentrated economic power privileges those who strategically control the firm and have direct claims on the firm's surplus. This surplus generates new wealth which raises living standards over time. Also explores the tension between the rights of the private/civil sector and the reach of government. Writing intensive. 4 cr.

**502. Financial Accounting**

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 had ACFI 501 or ADM 532. 4 cr.

**503. Managerial Accounting**

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. No credit for students who have had ADM 533. Prereq: ADMN 502. 4 cr.

**601. Introduction to Financial Management**

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 WSBE majors only. Prereq: ECON 401. Pre- or Coreq: ADMN 420, ADMN 502; ECON 40 4 cr.

**611. Behavior in Organizations**

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. Open to WSBE majors only. No credit for students who have had MGT 580. Prereq: ADMN 400; ADMN 410. Pre- or Coreq: ADMN 503. Writing intensive. 4 cr.

**640. Quantitative Decision Making**

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 WSBE majors only. Prereq: ADMN 420; ADMN 503. 4 cr.

**651. Marketing**

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. Open to WSBE majors only. No credit for students who have had MKTG 550 or HMG 600. Prereq: ADMN 400; ECON 40 4 cr.

**685. Study Abroad**

Open to students studying abroad in the discipline as approved by the department chair and Undergraduate Programs Office. Special fee. Cr/F. 1 to 16 cr.

**686. Study Abroad**

Open to students studying abroad in the discipline as approved by the department chair and Undergraduate Programs Office. Special fee. Cr/F. 1 to 16 cr.

**695/695W. Independent Study**

Individual research projects that are student designed. Initial sponsorship of a business administration faculty member must be obtained, and approval of WSBE Undergraduate Programs Office and department chair. For juniors and seniors in high standing. 1 to 12 cr. 695W is writing intensive.

**696. Supervised Student Teaching Experience**

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 four credits may be earned as a teaching assistant in any one course. Cr/F. 1 to 4 cr.

**703. Strategic Management: Decision Making**

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 com-

---

**Administration (ADMN)**

(For program description, see page 103.)

**400. Introduction to Business**

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 WSBE faculty person and include visits and discussions with executives from New Hampshire companies. Writing intensive. 4 cr.

**403. Computing Essentials for Business**

Self-paced course covering the fundamental skills and proficiency of general business software applications. Topics will include word processing and spreadsheet applications. Cr/F. 1 cr.

**405. Freshman Academic Experience I**

An introduction to the nature of academic knowledge, academic standards, and academic management skills essential for success in the University and the Whittemore School. An introduction to a volume or book or readings on an important business and/or economic topic. Cr/F. 1 cr.

ponents. Open to WSBE majors only. Prereq: ADMN 601; ADMN 611; ADMN 640; ADMN 651 and senior standing. 4 cr.

#### 795. Internship

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 Group C elective. Prereq: Cumulative GPA of at least 3.0, permission of the instructor, department chair, and director of undergraduate programs. Cr/F. 1 to 12 cr.

#### 798/798W. Topics

Special topics; may be repeated. Prereq: permission. 1 to 4 cr. 798W is writing intensive.

#### 799. Honors Thesis/Project

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. 4 to 8 cr.

## Aerospace Studies (AERO)

(For program description, see page 119.)

#### 301. Leadership Laboratory

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.

#### 415. Foundations of the United States Air Force I

Mission and organization of today's Air Force as an instrument of the U.S. national defense policy. Customs and courtesies, officership, and communication foundations are discussed. 1 cr.

#### 416. Foundations of the United States Air Force II

Air Force installations, fundamentals of Air Force written and verbal communication, and current events of interest to Air Force Officers are discussed. 1 cr.

#### 541. Evolution of United States Air Force Air and Space Power I

The nature of warfare; development of air power from balloons and dirigibles through World War II. 1 cr.

#### 542. Evolution of United States Air Force Air and Space Power II

Development of air power from post-World War II through the peaceful use of air power humanitarian efforts; and research and development of present and future aerospace vehicles. 1 cr.

#### 671. Air Force Leadership Studies I

An integrated management course emphasizing the individual as an officer/leader in the Air Force. Motivation and behavior, leadership, communication, group dynamics, and decision making in a changing environment. Air Force cases studied. 4 cr.

#### 672. Air Force Leadership Studies II

Organizational and personal values; management of forces in change; organizational power, politics, managerial strategy, quality, and tactics; Air Force cases studied. 4 cr.

#### 681. National Security Affairs I

Focus on the armed forces as part of American society, emphasizing civil-military relations in context of U.S. policy formulation and implementation. Requirements for adequate national security forces; political, economic, and social constraints on the national defense structure; impact of technological and international developments on strategic preparedness; the variables involved in the formulation and implementation of national security policy. 4 cr.

#### 682. National Security Affairs II

Focus on attitudes toward the military, socialization processes, role of the professional military leader-manager, and military justice and administrative law. 4 cr.

#### 695. Officer Internship (Air Force)

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. 4 cr.

## American Studies (AMST)

(For program description, see page 25.)

#### #444A. Portable, Exportable Nation

Through specific case studies and theories on national identity and cultural transmission, the course explores American efforts to "export" American ideas, values, and products to other parts of the world. The final project involves students "exporting" their own ideas about U.S. culture by building a class Web site (the "portable" nation), which is open to students in other countries. Writing intensive. 4 cr.

#### 444B. New Orleans: Place, Meaning, and Context

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. 4 cr.

#### 444C. Photographing America

How has the camera shaped the way we see ourselves, and the world around us? How can we "read" a photograph? What kinds of ethical and aesthetic concerns are involved in recording "reality"? What is the relationship between art and social concerns? How do photographs tell stories, and with what consequences? In what ways do photographers borrow literary images, and writers borrow photographic techniques? How does thinking visually change the way we read? How have photographers and writers—sometimes self-consciously and sometimes unwittingly—affected the definitions of what it means to be an American? What does something "American" look like, anyway? In this class, we'll try to answer these questions in all their complexity by looking at both photographic and written documents, from the

late nineteenth century, when photography was a relatively new technology, to the present. Writing intensive. 4 cr.

#### 501. Introduction to American Studies

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. 4 cr.

#### 502. Introduction to African American Literature and Culture

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 ENGL 517.) Writing intensive. 4 cr.

#### 503. Introduction to Native American Studies

An introduction to the methods used in the interdisciplinary study of the history, literature, material culture, and other aspects of life and culture among Native American peoples. Specific tribes and nations covered may vary, but concepts emphasized include contact, colonialism, and sovereignty. (Also offered as ENGL 540.) 4 cr.

#### #603. Photography and American Culture

Interdisciplinary study of the relationship between photography and the literature, art, politics, and history of the nineteenth and twentieth centuries. Introduces theories of photography as well as works of individual artists. Topics vary from year to year. Writing intensive. 4 cr.

#### 604. Landscape and American Culture

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 ecocriticism. Writing intensive. 4 cr.

#### 605. Film in American Culture

Advanced, focused study of American cinema. Topics vary from year to year and with instructor. Focus may range from general consideration of American film history, theory, and criticism, to specific analyses of selected types of American cinema: "classical" Hollywood, "new" Hollywood, and "alternatives" to specific periods, movements, genres, and film-makers. Prereq: ENGL 533, or CMN 550, or permission. Special fee. Writing intensive. 4 cr.

#### #607. Religion in American Thought and Life

Interdisciplinary study of the varied nature of American religious experience and its relationship to other aspects of American culture. Topics vary from year to year, and may include, for example: the interdisciplinary study of a spiritual community, African-American religious history, material culture and spiritual expression, politics



and religious free speech, religious culture in the nineteenth-century, multi-ethnic American religions, and literature. (Also offered as ENGL 607, HIST 607, HUMA 607, RS 607) Writing intensive. 4 cr.

#### **608. Women Artists and Writers 1850-Present**

Studies the impact of gender on the lives and works of selected American artists. Considers lesser known figures such as Fannie Fern, Lily Martin Spencer, and Mary Hallock Foote as well as better known artists such as Willa Cather and Georgia O'Keefe. Prereq: permission, or one of the following: WS 401, HIST 566, ENGL 585, 586, 685, 785, or a 600-level art history course. (Also offered as ARTS 608, ENGL 608, HIST 608, and HUMA 608.) Not offered every year. Writing intensive. 4 cr.

#### **609. African American Experience in the 20th Century**

Investigates 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 1960's. Special attention to the theme of accommodation with and rejection of dominant white culture. (Also offered as ENGL 609, HUMA 609.) Writing intensive. 4 cr.

#### **#610. New England Culture**

An interdisciplinary course investigating some of the major contributions New England has made to American life. Focuses on periods such as the Puritan era 1620-90), the Transcendentalist period (1830-1860), late nineteenth-century industrialism, and the contemporary era. New England places are also featured, such as Boston, Newport, Salem, the Connecticut River Valley, and rural northern New England. Course materials are drawn from the literature, history, art history, and material culture. Writing intensive. 4 cr.

#### **611. Indigenous New England**

An interdisciplinary introduction to the literatures, histories, and cultures of indigenous people located in what is now New England. Course topics may include U.S. American Indian policy, tribal government structures and resistance, history and forms of Native literacy, contemporary sovereignty struggles, popular culture, and film. At least one field trip to a regional Native community required. Special fee. (Also offered as ENGL 740.) 4 cr.

#### **612. Periods in American Culture**

Intensive multidisciplinary study of the art, literature, material culture, and the social, political, and cultural movements of a specific period in the American past. Periods vary from year to year. Examples: the 1890's, the 1690's, the 1770's, the 1950's. May be repeated for credit if subject matter is different. 4 cr.

#### **#613. Regions in American Culture**

The study of the culture, history, and politics of particular regions in the United States. Topics vary and may include: the history and literature of the South; natural resources, expansion, and European American/Native American contacts in the West; cultural interactions of the Southwest. May be repeated for credit if subject matter is different. 4 cr.

#### **614. Native American Studies Topics**

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. 4 cr.

#### **615. Asian American Studies Topics**

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. 4 cr.

#### **620. Internship**

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. 1 to 8 cr.

#### **665. Applied American Environmental Philosophy**

Applying the philosophical theory underlying environmental studies and approaches to environmental conservation. Students conduct critiques of extensive readings and write papers creatively analyzing aspects of selected philosophical works. Major research manuscript required. (Also offered as NR 665.) Writing intensive. 4 cr.

#### **696. Special Topics**

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. 4 cr.

#### **697. Seminar in American Studies**

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. 4 cr.

#### **795. Independent Study**

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. 1 to 8 cr.

## **Animal Sciences (ANSC)**

(For program description, see page 86.)

#### **401. Animals and Society**

The use of animals in agricultural production, for recreation, companionship, and research is considered. The nutrition, genetics, diseases, and reproduction of domestic animals are covered. Special fee. Lab. 4 cr.

#### **402. Horsemanship**

For beginning, intermediate, and advanced riders. Basics of balance seat, specializing in basic dressage and combined training. Limited number of students may stable their horses at the University. Special fee. May be repeated for a maximum of 15 credits. Lab. Prereq: permission. 3 cr.

#### **403. Summer Horsemanship**

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. 1 cr.

#### **404. Introductory Equine Science**

Study of the horse industry encompassing nutrition, genetics, breeds, selection procedures, and health maintenance. Special fee. Lab. 4 cr.

#### **405. Food and Society**

Consideration of the cultural significance of food, emphasizing historical, psychological, social, political, and economic aspects. (Also offered as NUTR 405.) Writing intensive. 4 cr.

#### **406. Careers in Animal Science**

Survey of various areas of animal and veterinary science and opportunities available. Cr/F. 1 cr.

#### **407. Animal Ethics: Your Child or Your Dog**

The differences between animal welfare and animal rights, application of these two ethical philosophies to current uses of animals in research, as food (factory farming), the production and use of transgenic animals, and the use of animals as organ donors for humans (xeno-transplantation). Students will depend on information from other disciplines ranging from moral philosophy and ethics to history of genetics, production agriculture, and ethology. 4 cr.

#### **408. Large Animal Behavior and Handling Techniques**

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 techniques which can be applied to the fields of veterinary medicine, animal research, commercial agriculture, and animal control. 2 cr.

#### **409. Introduction to Dairy Herd Management**

Economic principles and management factors involved in successful dairy herd management. Criteria for success, record keeping, applied genetics, housing, materials handling, feeding, and health care are topics covered. (Not offered every year.) Coreq: ANSC 410. 3 cr.

#### **410. Introduction to Dairy Herd Management Lab**

Practical study of various aspects of dairy herd management. Farm visits and case studies will be involved. Should be taken concurrently with ANSC 409. (Not offered every year.) 1 cr.

#### **415. Women and Science**

The history of women in sciences, beginning with the first women scientists to women scientists in the 21st century. Exploration of a variety of topics in multiple disciplines to acquire a better understanding of the issues, including: culture, society, politics, economics, and gender; as well as race, class, and sexuality; which have affected the advancement of women in science through the centuries. Issues are examined to determine the status

of women scientists and what the future holds for women in the sciences. Writing intensive. 4 cr.

**420. The Horse in History, Art, and Culture**  
The horse as a unifying theme and vehicle for the exploration of the history, art and culture of ancient and modern America, Europe, and Asia. Examines the horse's relationship with man throughout history, working in the often-revolutionary effect the horse has had on human development and civilization. Topics to include: changing use of the horse in transportation, warfare and sport; role of the horse in attention to myth, folklore and culture; history of breeds/types of horse in world cultures. Special attention to the depiction of the horse in art as a reflection of the horses use in society and of the developments in artistic style. 4 cr.

#### **430. Dairy Cattle Selection**

Principles of selecting dairy cattle based on performance, pedigree analysis, progeny testing, and type evaluation. Lab. 2 cr.

#### **432. Animal Forages**

Production and utilization of New England forage crops. Selection of species and varieties; cultural and harvesting practices for top production of excellent quality. Combining uses for greatest efficiency in feeding various livestock classes. Lab. 3 cr.

#### **444. Women and Science**

Are men really better than women at science? Were so few scientific achievements attributed to women because so few women participated in science? Were there so few women identified because they produced so little to be significant? Or had women simply not been recognized for their accomplishments in the sciences? This course focuses on the history of women, beginning with the first women scientists to women scientists in the 21st century. In addition this course will explore a variety of topics in multiple disciplines to acquire a better understanding of the issues, including: culture, society, politics, economics, and gender, as well as race, class and sexuality, which have affected the advancement of women in science through the centuries. These issues will be examined to determine where women scientists are at this point in time and what the future holds for women in the sciences. Writing intensive. 4 cr.

#### **444A. Animal Ethics: Your Child or Your Pet**

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. 4 cr.

#### **500. Methods of Therapeutic Riding**

Comprehensive examination of therapeutic riding including types of therapeutic riding and its physical, mental, and emotional benefits for clients with a variety of disabilities. Topics include hypnotherapy, equine-facilitated mental health, equipment needs/modifications, special considerations for the therapy horse, and the role of the volunteer therapist, and instructor. Special fee. 4 cr.

#### **507. Scientific Approach to Equine**

##### **Discipline**

Physiological development, control, and education; biting, lunging, driving, and equine gymnastics. Special fee. Lab. 3 cr.

#### **511. Anatomy and Physiology**

Introduction to the principles of human structure 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, cardiovascular, respiratory, endocrine, gastrointestinal, and renal systems. Structure of the above systems will be covered at both the microscopic and macroscopic levels. Prereq: CHEM 403-404. Special fee. Lab. No credit if credit earned for ZOOL 507-508; ZOOL 518 and ZOOL 625. Not open to freshmen. 4 cr.

#### **512. Anatomy and Physiology**

Introduction to the principles of human structure 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, cardiovascular, respiratory, endocrine, gastrointestinal, and renal systems. Structure of the above systems will be covered at both the microscopic and macroscopic levels. Prereq: CHEM 403-404. Special fee. Lab. No credit if credit earned for ZOOL 507-508; ZOOL 518 and ZOOL 625. Not open to freshmen. 4 cr.

#### **520. Classical Dressage Experience in Portugal**

Concentrated study of the Portuguese method of classical dressage at L'Escola de Equitação de Alcaíça 'N Alaiça, 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. 2 cr.

#### **530. Dairy Cattle Diseases**

Covers the principles of immune response, disease development, immunological basis for disease control, management practices to maintain animal health, and dairy cattle disease identification and prevention. 2 cr.

#### **543. Technical Writing in Animal Sciences**

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. 2 cr.

#### **565. Principles of Horse Trials Management**

Theory and hands-on involvement in the organizational process of managing an eventing 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. One 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.) 2 cr.

#### **600/600W. Field Experience**

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. 1 to 4 cr.

#### **602. Animal Rights and Societal Issues**

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. 4 cr.

#### **604. Equine Selection**

Principles of selecting the performance sport horse with an analysis of conformation, gait, soundness, and pedigree. Breed improvement through applied genetics, heritability, stallion and mare selection and inherited abnormalities. An additional hour has been added totaling 4 contact hours. 4 cr.

#### **#605. Equine Business Management**

Many of the careers equine science students aspire to are actually small businesses. Running a successful equine-related enterprise involves equine business planning, marketing, management and profitability, in addition to an equine science background. These concepts apply when developing a new equine business, expanding or refocusing a current equine business, and to those working as part of the management team of an existing equine business. This course will examine these underlying fundamentals. Students will also be involved in business planning for an equine business, evaluation and redirection recommendations for an existing equine business, case studies, role-plays. 4 cr.

#### **607. Small Animal Diseases**

Common diseases in companion animals; emphasis on canine and feline medicine. 2 cr.

#### **609. Principles of Nutrition**

Applied animal nutrition and nutrient metabolism. Prereq: one year of chemistry; one semester of physiology. 4 cr.

#### **612. Genetics of Domestic Animals**

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. 4 cr.

#### **615. Norwich Farm Dairy Internship**

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. 14 cr.

#### **620. Equine Diseases**

Body-systems approach to the discussion of medical and surgical diseases affecting the horse. Prereq: ANSC 404. Coreq: ANSC 622. 2 cr.



**622. Equine Disease Clinic**

Evaluation techniques of the normal and abnormal horse using the University horse herd. Discussion of clinical cases within the herd. Prereq: ANSC 404; Coreq: ANSC 620. Special fee. 2 cr.

**623. Comparative Histology**

Introduction to microscopic anatomy of domestic animals tissues and body systems with reference to human, avian, fish, and marine mammals. Structure and function briefly correlated. Prereq: BIOL 411-412 and ANSC 511-512 or permission. Recommended for all premed, prevet, and pre dental students. 4 cr.

**625. Equine Sports Medicine and Lameness**

Limitations of the healthy horse in athletic competition and the prevention and treatment of equine athletic injuries with heavy emphasis on the musculoskeletal system. Prereq: ANSC 404; ANSC 511-512; permission. Special fee. 4 cr.

**640. Principles of Riding Instruction**

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. 4 cr.

**641. Principles of Dressage Instruction**

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. 2 cr.

**642. Principles of Jumping Instruction**

Advanced principles and theory of jumping and advanced concepts in teaching and coaching over fences in the arena and cross-country. 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. 2 cr.

**643. Principles of Therapeutic Riding Instruction**

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 NARHA instructor certification process. Spring semester only. Prereq: ANSC 640 and ANSC 500. 2 cr.

**650. Dairy Industry Travel Course**

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. 1 cr.

**651. Biotechnology Experience/Biomufacturing**

Course begins by introducing the student to the proteins and companies of biotechnology and to current good manufacturing practices. Remainder of 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. Prereq: BIOL 411-412; CHEM 403-404. (Also listed as MICR 651.) Permission required. 4 cr.

**655. Biotechnology Experience/Research**

Biotechnology Research Experience is one of two courses that provides students with state-of-the-art tools of biotechnology and an opportunity to master skills and acquire the knowledge needed to effectively work in a biotechnology lab within the industry. Research protocols used in this course illustrate aspects of the "central dogma" of molecular biology. Prereq: BIOL 411, 412, and MICR 503. (Also listed as MICR 655.) 4 cr.

**694. Summer Cooperative for Real Education in Agricultural Management**

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. 4 cr.

**695, 696. Supervised Teaching Experience**

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. 1 to 2 cr.

**697. Equine Seminar**

Current equine industry issues, recent literature and research, and professional preparation. Offered to sophomores and juniors only. Cr/F. 1 cr.

**698. Cooperative for Real Education in Agricultural Management (CREAM)**

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. Permission. Two semesters of 4 cr. each are required. 4 cr.

**701. Physiology of Reproduction**

Comparative aspects of embryology, anatomy, endocrinology, and physiology of reproduction. Special fee. Lab. 4 cr.

**702/702W. Endocrinology**

Biochemical and molecular structure and function of vertebrate endocrine systems. Influence of endocrine system on the physiology of vertebrates, with special reference to mammals. Current investigations of the endocrine system as a regulator and integrator of body functions including such systems as growth, reproduction, metabolism, differentiation, and behavior. (Also offered as BCHM 702.) Prereq: BCHM 658 or 751; permission. Special fee. 4 cr. 702W is writing intensive.

**704. Principles of Pathobiology**

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. Prereq: ANSC 511/512 or permission. 4 cr.

**705. Veterinary Microbiology and Zoonotic Disease**

Clinical microbiological techniques using veterinary medical specimens. Along with the isolation and identification of bacterial, fungal and parasitic pathogens, the zoonotic potential of a variety of organisms is discussed. Prereq: permission of instructor. 2 cr.

**706. Human Genetics**

The genetic basis of human traits and diseases. New understanding added by molecular genetic approaches. Human genome project, gene therapy. Discussion of genetic components of quantitative and behavioral traits in human evolution. Prereq: BIOL 604 or ANSC 612. (Also offered as GEN 706.) (Not offered every year.) 3 cr.

**707. Veterinary Histologic Techniques**

Routine histologic techniques including tissue trimming, processing, sectioning, routine and specialized staining, lab safety, and troubleshooting skills are taught through small group discussions, demonstrations, and hands-on training. Prereq: permission of instructor. 2 cr.

**708. Ruminology**

Anatomy of the ruminant gastrointestinal tract, physiological factors related to rumen function, and microbial metabolism of carbohydrates, protein, and lipids. Prereq: MICR 503 or equivalent. 2 cr.

**710. Dairy Nutrition**

Feeding management of dairy cattle. Emphasis on feedstuffs, nutritional requirements, and diet formulation for efficient production and optimum health. Prereq: ANSC 609 or 750; permission. 4 cr.

**714. Research Methods in Endocrinology**

Principles of biomedical, cellular, and molecular techniques and their applications to research in the endocrine system. Techniques include protein and nucleic acid assays, thin layer chromatography, radioimmunoassay, enzyme-linked immunosorbent assay, agarose and polyacrylamide gel electrophoresis, transfection, restriction analysis, plasmid amplification, RNA extraction, and dot-blot hybridization. Prereq: ANSC 701 or BCHM 658 or ANSC 702/BCHM 702; permission. Special fee. Lab. Writing intensive. 5 cr.

**715. Physiology of Lactation**

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. 4 cr.

**718. Mammalian Physiology**

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: ANSC 511-512; ZOOL 627, and one semester of biochemistry or permission. Writing intensive. 4 cr.

**724. Reproductive Management and Artificial Insemination**

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. Prereq: ANSC 701; permission. Special fee. Lab. 4 cr.

**727. Advanced Dairy Management I**

Advanced management evaluation of milking procedures, reproduction, genetics, herd health, feeding, housing, and milking systems. Prereq: junior or senior standing; permission. 4 cr.

**728. Advanced Dairy Management II**

Advanced management evaluation of record keeping, financial and business management, personnel management, waste management, and marketing. Prereq: junior or senior standing; permission. Writing intensive. 4 cr.

**750. Nutritional Biochemistry**

Detailed analysis of the digestion, absorption, transport and intermediary metabolism of nutrients. Nutrient requirements are evaluated in the context of their physiological and biochemical functions. Prereq: ANSC 511-512; BCHM 658; or equivalents. (Also offered as NUTR 750.) Fall semester only. Writing intensive. 4 cr.

**751. Cell Culture**

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. An interdisciplinary course with emphasis on the application of cell culture to contemporary research in the biological sciences. Prereq: MICR 503; permission. (Also offered as MICR 751 and PBIO 751.) Special fee. Lab. 5 cr.

**754. Molecular Diagnostics**

To introduce advanced undergraduate and graduate students in chemistry, biochemistry, molecular biology, medical laboratory science, physics, and engineering to the basic concepts and principles of biotechnology-based diagnostic and detection methods. These include immunoassay, nucleic acid probes, biosensors, and microarrays. Also introduces advanced students to the basic concepts of applied R & D and product development. Provides a fundamental understanding of biotechnology-based diagnostic methods and the basic steps necessary to develop a product based on a laboratory concept. 4 cr.

**#760. Geriatric Nutrition**

Emphasis on the nutritional requirements and status of the elderly in view of psychological and physiological changes in aging. Approaches for nutrition intervention and support will be addressed. Prereq: NUTR 400 or permission. (Also offered as NUTR 760.) Cr/F. Summer session only. 3 cr.

**795/795W. Investigations**

Investigations in genetics, nutrition, management, diseases, histology, equestrian management/agri-

business, physiology, cell biology, microbiology, dairy management, or teaching experience. May be repeated. Prereq: permission. 1 to 4 cr.

**799. Honors Senior Thesis**

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. Prereq: permission. IA. Writing intensive. 1 to 4 cr.

---

**Anthropology (ANTH)**

(For program description, see page 30.)

**411/411H/411W. Global Perspectives on the Human Condition: An Introduction to Anthropology**

By providing a global perspective on the human experience, this course helps us think about the issues that confront students as citizens of the world. Gleaning lessons from cultures past and present this course examines what it means to be human. Whether humans are violent or peace-loving, egalitarian or hierarchical is linked to specific ways of life, rather than reflecting a fixed human nature. The course examines the economic, political, and social forces that shape human behavior and the global forces that people around the world currently confront. From an anthropological perspective it addresses pressing social issues such as sustainable development, hunger and poverty, population growth, religion and changing world views, racism, urbanization, commodification, and movements for social justice. 4 cr. 411H and 411W are writing intensive.

**412. Broken Pots and Buried Cities: Adventures in Archaeology**

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. 4 cr.

**413. Monkeys, Apes, Stones, and Bones: Introduction to Physical Anthropology Archaeology**

An introduction to physical anthropology. Deals with the historical and comparative biology of humans, looking at humans as members of the animal kingdom, focusing on the attributes shared with our primate relatives, and the origins of uniquely human attributes. Using the approaches of biological anthropology (and archaeology), the course traces human physical and cultural development from its earliest beginning, more than five million years ago, to about 15,000 years ago, just before the beginnings of plant and animal domestication and the rise of complex societies. 4 cr.

**450. Introduction to Race, Culture, and Power**

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 ex-

plains 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.) 4 cr.

**500/500W. Peoples and Cultures of the World**

A) North America; B) South America; C) Middle East and North Africa; D) Sub-Saharan Africa; E) South Asia; F) Southeast Asia; G) Oceania; I) Caribbean; Z) Other. Characteristic ecological, historical, and sociocultural factors in the major ethnographic regions of the globe. Analysis of selected societies and institutions. Offered in the following sections as staff is available and student needs dictate. North America: Study of the economy, society, religion, art, and ideas of North American Indians from precolonial times to the present. South America: A survey of the indigenous cultures and selected studies of the relationship between environment and culture. Changes in culture and social organizations since the 16th century will be considered where historical data permit. Middle East and North Africa: The role of ecological, social, cultural, and historical factors in shaping Middle Eastern and North African culture today. Special attention will be paid to family, values, and religion; to nomadic, village, and urban ways of life; and to issues of unity, diversity, colonialism, and culture change. Sub-Saharan Africa: Study of Sub-Saharan economy, society, and culture from precolonial times to the present. South Asia: Emphasis on India, Sri Lanka, and Nepal. Traditional and changing South Asian cultures, including caste, family, economy, and religious traditions of Hinduism and Buddhism. Southeast Asia: Geographical, historical, ethnic, and sociocultural factors characteristic of the region. Impact of Indian, Chinese, Islamic, and European civilizations. Analysis of selected indigenous social, political, economic, and religious institutions. Oceania: Study of the economy, society, religion, art, and ideology of Pacific Island cultures from precolonial times to the present. Caribbean: The history and contemporary situation of diverse cultures of the Caribbean are examined using ethnography, music, and film. The mixture of cultural roots from Africa, Europe, and Asia are investigated and the dynamic and fluid nature of these cultures is stressed. Race as an experience of oppression and resistance is discussed. 4 cr. 500W is writing intensive.

**501. World Prehistory**

A) North America; B) Mesoamerica; C) South America; D) Near East; E) Other. The development of prehistoric culture in various areas of the world. Offered in the following sections as staff is available and student needs dictate. North America: Archaeology of the Indians north of Mexico from earliest evidence of settlement to European contact. Diversity of cultures from ecological and evolutionary perspectives. Emphasis on the Eastern Woodlands, the Plains, and the Southwest. Mesoamerica: Cultural development from earliest cultures through the Spanish conquest. Emphasis on origins of agriculture and rise of Olmec, Teotihuacán, Mayan, Toltec, and Aztec civilizations. Stress on factors critical to the development of complex societies. South America: Cultural development from earliest migrations through Inca Empire. Focus on major regions of South America. Consideration of Intermediate



Area, Amazon Basin, and Central Andes as core regions for foundations of civilization. Near East: From earliest cultures to the development of agriculture and settled village life. Examines the processes that gave rise to the world's first civilizations. 4 cr.

**511. Core Concepts in Anthropology**

This course introduces students to the core concepts and paradigms of contemporary anthropology. Students will learn how anthropology approaches the study of family, kinship, community, gender, economic relationships, political systems, religion, social change and globalization. Ethnographic material from a variety of cultures will illustrate the concepts of social structure and the cultural construction of categories such as race and ethnicity. Foundation course required of anthropology majors in first year of declaring their major. Writing intensive. 4 cr.

**#512. Introduction to World Ethnography**

Primarily for major and minors, but open to all students. Historical and geographic factors, types of social and economic organization, and problems involved in the comparative study of human societies and institutions. Analysis of selected peoples in the major ethnographic areas 4 cr.

**514. Method and Theory in Archaeology**

Basic method and theory; techniques in recovering and interpreting data; laboratory exercises in ceramic and lithic analysis. Critical evaluation of archaeological literature. Prereq: ANTH 412 or permission. 4 cr.

**#515. Anthropology and Contemporary Issues**

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. 4 cr.

**516. Kinship and Social Organization**

The significance of kin and non-kin relations in human societies. Topics include the origins and evolution of human society, variations in the form and functions of marriage, family, and kin-based groups and selected non-kin relationships. Primary focus will be on non-industrial societies. Prereq: ANTH 411 or permission. 4 cr.

**517. Critical Reading and Writing in Anthropology**

Basic skills of reading, writing, and analysis essential to the study of anthropology. Focus on learning to recognize, compare, and evaluate critically the central arguments of several major books drawn from different subfields and orientations in anthropology. Small class size for extensive discussion and feedback. Prereq: ANTH 411 or 412;/or permission. Writing intensive. 4 cr.

**#520. Anthropology of Migration**

The question of immigration, an issue of great concern throughout the world, is addressed along with the movement of people as a historical, economic, and cultural process. Life experiences of people in motion are examined. Using case studies, past and present migrations are compared. The racial, ethnic, and national identities of migrants are explored. Distinctions between immigrants, refugees, sojourners, internal and international migration, and legal and undocumented migrants, as well as the history and current status of attacks on immigrants are critiqued. While most of the course material is drawn from the U.S. experience, the perspective on migration is global. 4 cr.

**597. Special Topics**

Occasional and experimental offerings on an entry level. May be repeated for different topics. 4 cr.

**601. Topics in Popular Culture**

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. 4 cr.

**610. Medical Anthropology: Illness and Healing**

How we as humans define sickness and health, our theories of who or what made us ill, our approach to biological processes from birth to death and our search for cures have varied through history and from culture to culture. This course provides an overview of illness and healing beliefs and practices in different cultures both around the world and in the United States. The course examines the practices and belief systems of healers, voodoo priestesses, midwives, Taoist priests, psychiatrists and medical doctors through the same analytical lens. 4 cr.

**614. Economy, Culture, and Society**

This course explores the different ways that humans have earned their livelihood, from foraging and agriculture to industrial capitalism. Emphasis is placed on the social and cultural correlates of different economic strategies, with particular attention to the consequences of the spread of capitalism. Consideration is given to issues of equality, gender, sustainability, and the utility and limits of a "globalization" perspective. Prereq: ANTH 411 and ANTH 511, or permission. Writing intensive. 4 cr.

**616. Religion, Culture, and Society**

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. Writing intensive. 4 cr.

**617. Religion, Culture, and Conflict in South Asia**

Explores connections between religion and violent conflict in South Asia. Includes overviews of three great religious traditions of the region. Buddhism, Hinduism, and Islam. and how they are realized in the daily lives of South Asian practitioners. Ethnographic case studies of religious violence, coupled with readings in contemporary theory, to understand how and why violence is produced by considering not only religious belief and practice but also such factors as colonialism, postcolonial politics, the social processes of contemporary Diasporas, economic structure and change, and international religious movements. Prereq: at least sophomore standing. Anthropology or religious studies background recommended. (Also offered as RS 617.) Writing intensive. 4 cr.

**618. Political Anthropology**

Political processes and structures in no industrial societies. Major topics: centralization of power and authority, legal systems, and warfare. Prereq: ANTH 411 or permission. 4 cr.

**625. Female, Male, and Society**

Critical, cross-cultural study of sex-related behavior in historical as well as contemporary perspective. Draws on anthropological, social-psychological, and sociological literature. (Also offered as SOC 625.) 4 cr.

**627. Urbanization in Africa**

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. 4 cr.

**650. Discovery Guatemala, Archaeology Semester Abroad**

Field and laboratory methods in archaeology. Emphasis on excavation techniques and data analysis as related to project research design. Includes practical experience in lab as well as field. Prereq: permission. Special fee. 12 cr.

**670. Language and Culture**

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. 4 cr.

**680. Globalization, Development, and Poverty**

This course considers the phenomenon of globalization, a term that has come into use since the 1980s to describe the ever-intensifying networks of cross-border human interaction which increasingly tie the world together. Tracing the relationship between the increasing interconnectedness of the world, the processes of economic development and change, and world poverty, the course demonstrates that the consequences of globalization are neither the same nor positive in every country. Through the use of case studies of different development processes, students gain an understanding of why and how globalization is creating differential effects in different parts of the world. This course is the first course of a suggested two course sequence, ANTH 680 and ANTH 780. 4 cr.

**685. Gender, Sexuality and HIV/AIDS in Sub-Saharan Africa**

AIDS is spreading rapidly in sub-Saharan Africa. Course explores the factors that are behind this rapid transmission, including poverty, gender inequality, culture and sexuality. Writing intensive. 4 cr.

**690. Ethnographic Field Research**

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. Writing intensive. 4 cr.

**697. Special Topics**

Occasional or experimental offerings. May be repeated for different topics. Prereq: ANTH 411 or permission. Writing intensive. 4 cr.

**#698. Folklore and Folklife**

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.) 4 cr.

**699. Senior Thesis**

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. 4 or 8 cr.

**700. Internship**

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. 1 to 4 cr.

**701. History of Anthropological Theory**

Reading and discussion of the works of major theoreticians of American, British, and French schools. Selections from the works of Spencer, Morgan, Tylor, Boas, Kroeber, Lowie, Steward, White, Durkheim, Mauss, Levi-Strauss, Malinowski, Radcliffe-Brown, Evan-Pritchard, and others are treated in terms of their contributions to the historical development of anthropology and their relevance to contemporary debates in anthropological theory. Prereq: ANTH 511. 4 cr.

**702. Issues in Contemporary Anthropological Theory**

Explores such recent directions in the discipline as cognitive/symbolic anthropology, cultural materialism, evolutionary theory, gender studies, interpretive anthropology, political economy, practice theory, and structuralism. Prereq: ANTH 701 or permission. 4 cr.

**705. Topics in Mesoamerican Anthropology**

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 Teotihuacán 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. 4 cr.

**#710. Youth, Culture, and Society in Comparative Perspective**

This course examines lifestyles, social identities, and subcultures of youth in a variety of sociocultural and historical settings. Students will develop an understanding of the conditions that foster the formation of social identity and the emergence of age-based subcultures. The course explores the relationship between individual and social identity, and between youth subcultures and dominant cultural systems. (Also listed as EDUC 711.) 4 cr.

**#715. Global Warring**

Examines warfare in societies with and without the state. It explores different theoretical perspectives concerning war, rejecting biological approaches in favor of the one that stresses logics of power. This latter position suggests that human societies have their cultural, economic, and political institutions; that these when inter-connected are structures of power called complexes; and that the 'logics' of complexes—how they act—explain war. Specifically, it is argued that a "military-capitalist" complex evolved during the making of the modern state, one of whose logics led to global warring in the interests of powerful capitalist actors and their allies in political and cultural institutions. Prereq: ANTH 411 or 511, and at least two other courses in social sciences or history or by permission of professor. 4 cr.

**720. Roots and Routes: Migration and Globalization**

Migrations are changing the nature of national identities, cultures, and concepts of citizenship. Many migrants live their lives across borders, keeping their homeland identities while becoming significant actors in their new lands. At the same time, people who are the descendants of immigrants are exploring their family genealogies and discovering their roots. In this course we ask why migration is a global phenomenon, who is moving, and why. The course compares the new migrations and life experiences of migrants to the migration of the previous few centuries as a way of highlighting the nature of contemporary migration and globalization. We link migration to disparities of wealth and power within and between states. Prereq: sophomore level, ANTH 411 or an introductory-level course in social science or history. 4 cr.

**760. Race in Global Perspectives**

The concept of race developed to justify European Colonialism. Race, because it is a relationship of power, has emerged as a form of transnational identification which unites people in common struggle for social justice. Using history, ethnography, novels, and films, this advanced seminar looks at the development and deployment of concepts of race in different situations of inequality around the world. Possible topics include the black Atlantic, Pan-Africanism, First People identity, whiteness, orientalism, *mestisaje*, and anthropological treatments of Jewish identity. Prereq: INCO 450 or ANTH 450; introduction to race, culture, and power. Writing intensive. 4 cr.

**770. Culture, Personality, and Society**

Examines narratives of the sinister—stories about witches, demons, vampires, extraterrestrials, and so on—that are told as if true, and the cultural, political, and economic contexts of their production. Variants of the sinister are compared cross-culturally and trans-historically. Links between a recent worldwide upsurge in narratives of the sinister and the processes of globalization and modernity are emphasized. Operates on a seminar format; open only to juniors and seniors. (Also listed as RS 770). 4 cr.

**780. Anthropology of Globalization**

The central question of the Anthropology of Globalization is the following: "What is happening to the life ways of people and identities around the world as a result of contemporary globalization and why?" To answer this question we begin the course by exploring the global processes behind images of untouched cultures presented through tourism. We explore contemporary commodification of culture. This course develops a definition of glo-

balization by examining the relationship between contemporary and past periods and processes of globalization, reviewing the ways in which cultures and identities were constructed through processes of globalization. We include in our exploration changing values, social relationships, racial, ethnic, and national identities, gender constructions, and the nature of social protest. Juniors and seniors only. (Students are encouraged to first complete ANTH 680, Globalization, Development, and Poverty.) Writing intensive. 4 cr.

**795, 796. Reading and Research**

A) Cultural/Social Anthropology; B) Anthropological Linguistics; C) Archaeology; D) Physical Anthropology. Prereq: 12 credits of anthropology; permission. 1 to 8 cr.

**797. Advanced Topics**

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 412 (as appropriate)/ or permission. 4 cr.

---

**Art & Art History (ARTS)**

(For program description, see page 30.)

**444. Mona Lisa to Romeo and Juliet: An Introduction to Renaissance Culture**

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. 4 cr.

**455. Introduction to Architecture**

Study of architectural graphics, design theories, form determinants, and the architect in society. Includes case study projects. Lab. 4 cr.

**480. Introduction to Art History**

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 Fallingwater, Georgia O'Keeffe's abstractions, ukiyo-e prints, and Benin sculpture. Writing intensive. 4 cr.



**487/487H. Themes and Images in Art**

Examination of one or two central ideas embodied in the imagery of painting, sculpture, architecture, and other arts across a wide cultural spectrum. Stress on the interconnection between visual forms and the symbolic and philosophical concepts they express. Papers and essay examinations are required. A) Classicism and its Discontents; B) Nature and Culture in Art; C) Primitivism and Modern Art; D) Major Mythic Images of Women; E) Symbols of Innocence and Experience in the New World; F) Abstraction and Ideology; H) Portrait, Self, and Society. Descriptions of sections available in the Art and Art History Department Office. No more than one section of the course may be taken for credit. Writing intensive. 4 cr.

**501. Ceramics**

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. 4 cr.

**525. Woodworking**

Theory and application of basic woodworking principles; design concepts, primarily utilitarian, applied to shaping a mass, constructing volumetric and line/plane forms; use of a complete range of hand, portable powered, and stationary powered tools. Special fee. Lab. 4 cr.

**532/532H. Introductory Drawing**

Students deal primarily with observational perspective problems (still life, architectural interiors, landscape, etc.), utilizing a full range of drawing materials. Lab. 4 cr.

**536. Introduction to Printmaking: Intaglio**

Study of intaglio printmaking techniques, including etching, dry point, and engraving. Prereq: ARTS 532 or permission. Special fee. Lab. 4 cr.

**537. Introduction to Printmaking:****Lithography**

Study of lithographic processes on stone and aluminum plate. Prereq: ARTS 532 or permission. Special fee. Lab. 4 cr.

**544. Water Media I**

Transparent and opaque water color. Prereq: ARTS 546. Lab. 4 cr.

**546. Introductory Painting**

Use of the still life and the figure. Color, value, composition, and some art history. Slide lectures. Prereq: ARTS 532. Lab. 4 cr.

**551. Photography**

Introduction to theory and practice of black and white photography as an expressive medium. Students provide their own cameras. Prereq: any studio art course or permission. Lab. Special fee. 4 cr.

**567. Introductory Sculpture**

Theory and practice of designing three-dimensional compositions using a series of progressive assignments to develop a practical understanding of visual elements, including line, form, space, mass, and plane. Special fee. Lab. 4 cr.

**570. Art of the Ancient World**

Architecture, sculpture, and painting in the ancient Mediterranean world. Following an analysis of Paleolithic cave painting, the course surveys the beginnings of Western art and civilization in Egypt, Mesopotamia, and Minoan Crete. Detailed examination of archaic and classical forms and ideas in Greek art; the course ends with the transformation and decline of classical ideas in imperial Rome. 4 cr.

**571. Art of the Middle Ages**

Architecture, sculpture, and painting in medieval Europe. Beginning with Early Christian art, the course examines the interplay between classical traditions and the more abstract forms and ideas that emerged at the end of the Roman Empire and then flourished in Byzantine and early medieval art. Special attention to the development of the Romanesque and Gothic forms and meanings in the high medieval civilization of the 12th and 13th centuries. 4 cr.

**572. Art of the Age of Humanism**

European painting, sculpture, and architecture from the 15th to the 17th centuries. The course focuses on the revolutionary character of early Renaissance art in Italy and the Netherlands and the heroic age of High Renaissance classicism that followed around 1500. Examines the subsequent crisis of 16th-century Mannerism and realism, and the ruptures and continuities underlying the diverse forms and meanings of Baroque art in the following century. 4 cr.

**573. Art of the Modern World**

Painting, sculpture, and architecture in Europe and America from the French Revolution to the present. Surveys the rapidly changing currents and countercurrents in modern art, including Neo-classicism and Romanticism, Realism and Impressionism, the Cubist revolution, and various forms of 20th century abstraction. In addition to the individual artists and movements, discussion of the cultural upheavals that have driven modernism's pervasive sense of crisis and pursuit of the "new." 4 cr.

**574. Architectural History**

A survey of the chief and representative buildings from the entire history of architecture. Analysis of buildings with regard to 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. Writing intensive. 4 cr.

**580. History of Art to 1400**

A chronologically and geographically broad introduction to the history of art and architecture and to the discipline of art history. The first semester of the two-semester sequence ranges from the Ancient World to the Renaissance. Writing intensive. 4 cr.

**581. History of Art from 1400 to the Present**

A chronologically and geographically broad introduction to the history of art and architecture and to the discipline of art history. The second semester of the two-semester sequence ranges from the Renaissance to the present. ARTS 580 is recommended as preparation for, but is not a formal prerequisite for 581. Writing intensive. 4 cr.

**585. History of Islamic Art**

This course examines the main monuments and issues in the history of Islamic art. It is intended as a general introduction to the field and no prior knowledge is required. Although the course focuses on the period between the rise of Islam and the Mongol invasions, students will be encouraged to explore later periods of Islamic art in their papers. Particular attention will be paid to patronage, form, and legislation of pilgrimage sites, and other forms of sacred architecture. (Also offered as HIST 600.) 4 cr.

**598. Sophomore Seminar**

Encourages experimentation by integrating verbal and plastic understandings through readings, discussions, studio work. Field trips. Prereq: two art history courses and two studio arts courses. 4 cr.

**600. Internship**

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. 1 to 4 cr.

**601. Ceramics Workshop**

Application of new ceramic materials and techniques, with emphasis on ideas and their expression through form and content. Experimentation encouraged. May be repeated for a maximum of 12 credits. Prereq: ARTS 501. Special fee. Lab. 4 cr.

**608. Arts and American Society: Women****Writers and Artists, 1850-Present**

Team-taught course studying the impact of gender definitions on the lives and works of selected American artists. Considers lesser-known figures such as Fannie Fern, Lilly Martin Spencer, and Mary Hallock Foote, as well as better-known artists such as Willa Cather and Georgia O'Keeffe. Prereq: permission or one of the following: WS 401, HIST 566, ENGL 585, 586, 685, 785, or a 600-level art history course. (Also offered as AMST 608, ENGL 608, HIST 608, and HUMA 608.) Studio art majors who take this course for major credit will not receive major credit for ARTS 610. Writing intensive. 4 cr.

**625. Wood/Furniture Design Workshop**

Design and construction of the major furniture forms, using a broad range of techniques (including lamination, bending, and molding) to execute a series of concept areas relevant to furniture. May be repeated for a maximum of 12 credits. Prereq: ARTS 525. Special fee. Lab. 4 cr.

**632. Intermediate Drawing**

Focuses on three major topics: 1) linear perspective, 2) anatomical and/or structural aspects of the human figure, and 3) special materials (painterly and/or mixed media). Outside assignments encourage original thinking about image making. Prereq: ARTS 532. Lab. 4 cr.

**633. Life Drawing**

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 632. Lab. 4 cr.

**636. Printmaking Workshop**

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. 4 cr.

**645. Water Media II**

Continuation of ARTS 544; introduction to other water-based media. Prereq: ARTS 544. Lab. 4 cr.

**646. Intermediate Painting**

More complex issues of the visual language. Still life and the figure continue as dominant subject matter. Slide lectures. May be repeated for a maximum of 8 credits. Prereq: ARTS 546. Lab. 4 cr.

**651. Photography Workshop**

Individualized projects involving creative methods, including color, manipulative, and documentary techniques. Students provide their own cameras. Prereq: ARTS 551. May be repeated for a maximum of 12 credits. Lab. Special fee. 4 cr.

**654. 17th and 18th Century American Architecture**

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. 4 cr.

**655. Early Modern Architecture: Revolution to World War I**

Chief architectural styles and significant buildings in Europe and America from the visionary Neoclassicists of the late eighteenth century and the revival styles of the Victorian era to the birth and proliferation of the skyscraper. A study of the religious, public, commercial, and domestic architecture and of town planning during the rise of the modern nation-state and market capitalism. Typical works include the University of Virginia campus, the Houses of Parliament, the Eiffel Tower, the Chicago skyscraper, and Prairie House of Frank Lloyd Wright. Field trips. Prereq: one 400- or 500-level art history course. Writing intensive. 4 cr.

**656. Contemporary Architecture: The Buildings of Our Times**

Chief architectural styles and significant buildings in Europe and America from the International Style and Frank Lloyd Wright to the rise of post-modernism. A study of 20th century religious, public, commercial, and domestic architecture and of town planning that emphasizes the important formal, technological, and theoretical developments of high modernism and its aftermath. Typical works include the Bauhaus, Wright's *Fallingwater*, Le Corbusier's visionary town plans, the Air Force Academy, and Frank Gehry's Guggenheim Museum in Bilbao. Field trips. Prereq: one 400- or 500-level art history course. Writing intensive. 4 cr.

**667. Sculpture Workshop**

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. 4 cr.

**#673. Egypt and Nubia: Art, Architecture, and Rediscovery**

An examination of the art and architecture of Egypt and Nubia from the ancient, Christian, and Islamic periods to the modern era. Specific topics include: Egyptian religion and the major funerary complexes of the pharaohs; art and culture in Nubia; Egypt under the Ptolemies and the Romans, Christian monastic reform and the Copts; the spread of Islam under the Fatimids and Mamluks; travelers and archaeologists in the nineteenth century. Through field trips, the course will take advantage of the extensive collection of Egyptian art at the Museum

of Fine Arts in Boston, as well as the collections of Coptic and Islamic art at the Harvard University Art Museums in Cambridge, Mass. Writing intensive. 4 cr.

**674. Greek Art**

Greek art and architecture from the Bronze Age civilizations of Minoan Crete and Mycenaean Greece to the late classical period of the 4th century B.C. Emphasis on the interplay of narrative and abstraction in the development of a distinctively Greek aesthetic consciousness, on the forms of art and thought in the Archaic Period, and on the flowering of the classical style in the 5th century B.C. Prereq: one 400- or 500-level art history course. Writing intensive. 4 cr.

**675. Roman Art**

Art and architecture in the ancient Mediterranean world from Alexander the Great to the fall of the Roman Empire. Emphasis on the interplay between the Greek and Etruscan traditions between public and private in Roman life and art, and the breakdown of classical ideals in the late empire. Prereq: one 400- or 500-level art history course. Writing intensive. 4 cr.

**#676. History of Illuminated Manuscripts**

During the Middle Ages manuscripts were the primary locus of the painting tradition. After a consideration of the development of the manuscript book and our method of study, this course will consider the major works of manuscript illumination and their painted cycles of miniatures. Such important works as the Book of Kells, the Winchester Bible, the Psalter of St. Louis, and the Tres Riches Heures of Jean de Berry are considered in their cultural and historical contexts. Prereq: one 400- or 500-level art history course. Writing intensive. 4 cr.

**677. Early Medieval Art**

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. 4 cr.

**678. Romanesque and Gothic Art**

The culmination of medieval artistic development through examination of major architectural monuments and their sculptural programs, as well as important centers of manuscript illumination. The period from the year 1000 A.D. through the beginnings of the Renaissance in the early 15th century will be stressed. Prereq: one 400- or 500-level art history course. Writing intensive. 4 cr.

**679. Northern Renaissance Art I**

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. 4 cr.

**680. Northern Renaissance Art II**

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. 4 cr.

**681. Early Renaissance Art in Italy**

Painting, sculpture, and architecture in Italy during the 14th and 15th centuries. The emergence of Renaissance style in the art of such masters as Giotto, Masaccio, Donatello, Bellini, and Piero della Francesca. Attention is also given to the broad cultural developments to which they belong. Prereq: one 400- or 500-level art history course. Writing intensive. 4 cr.

**682. High Renaissance and Mannerist Art in Italy**

Continuation of ARTS 681. Primary focus on the formation of High Renaissance classicism in the art of Leonardo, Michelangelo, Raphael, Bramante, and Titian. Attention is also given to the subsequent crisis of the classical ideal in 16th-century mannerism. Prereq: one 400- or 500-level art history course. Writing intensive. 4 cr.

**683. Baroque Art in Southern Europe**

Painting, sculpture, and architecture in Italy, France, and Spain during the 17th century. Emphasis on the diverse and innovative character of art in this period of crisis between the Renaissance and the modern era. Intensive analysis of the works of such major masters as Bernini, Caravaggio, Poussin, and Velazquez. Prereq: one 400- or 500-level art history course. Writing intensive. 4 cr.

**684. Baroque Art in Northern Europe**

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. 4 cr.

**685. Graphic Art of the Renaissance and Baroque Periods**

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, Michelangelo, Bruegel, and Rembrandt, as well as drawings of the period. Prereq: one 400- or 500-level art history course. Writing intensive. 4 cr.

**#686. Neo-Classicism to Romanticism**

European painting and sculpture in its socio-political context, with emphasis on the relation of idea to image, from David and the French Revolution to the romantic landscapes of Friedrich and Runge, and the romantic-classic debate involving Delacroix and Ingres. Prereq: one 400- or 500-level art history course. Writing intensive. 4 cr.

**687. Realism and Impressionism**

Focus on the political, cultural, and physical changes in Paris in the second half of the 19th century and their relation to Impressionism. Work of Courbet, Millet, Monet, Manet, Degas, Cassatt, Morisot, Renoir, Cezanne, van Gogh, Seurat, and others examined in the context of the rise of landscape painting and the establishment of the



avant-garde in the visual arts. Concentration on the great collections of the Harvard University Art Museums and the Boston Museum Fine Arts. Prereq: one 400- or 500-level art history course. Writing intensive. 4 cr.

#### 688. 20th Century Art I

An examination of European and American art from symbolism to surrealism. Focuses on art and theory from the 1890s to World War II in relation to the political, social, and scientific upheavals of the era. Particular emphasis will be placed on Gauguin in the South Seas, Rodin and modernist sculpture, Matisse and expressionism, Picasso and cubism, Kandinsky and the Russian constructivists, Hoch and dada photomontage, O'Keefe and American modernism, and Dali and Freud. Prereq: one 400- or 500-level art history course. Writing intensive. 4 cr.

#### 689. 20th Century Art II

Examines abstract expressionism as a framework for analyzing art since World War II. Focus on "Action Painting" and Color Field Painting, minimalism and conceptual art, pop art, earthworks and sited sculpture, new image painting, post-modernism, and related critical theory. Prereq: one 400- or 500-level art history course. Writing intensive. 4 cr.

#### 690. Women Artists of the 19th and 20th Centuries

Examination of the works of women artists of the past two centuries. After considering current scholarship related to some of the theoretical issues involved in studying art by women, the works of women artists from the Middle Ages through the early 19th century will be surveyed briefly. Focus will then shift to works by women artists of the past 150 years and their relationship to and impact on major movements in modern art. Prereq: one art history and another appropriate course. Writing intensive. 4 cr.

#### #691. A History of Venetian Art

The artistic culture of Venice from Byzantine times through Tiepolo and Canaletto. Course emphasis will be on Renaissance Venice, including topics such as the reclining female nude, the courtesan portrait, and the origins of landscape painting. Artists to be studied include Bellini, Giorgione, Titian, and Palladio. Prereq: one 400- or 500-level art history course. Writing intensive. 4 cr.

#### 692. History of Photography

History of the photograph from its origins in the aesthetic and technological context of the early 19th century to the present. Lectures and discussions on such topics as the impact of early photography on painting, 19th-century landscape and travel photography, pictorialism, abstract photography, the photograph as metaphor, photojournalism and the interpretation of war, and postmodernism and photography. Critical reading of texts by Beaudelaire, Benjamin, Barthes, Sontag, and Sekula. Prereq: one 400- or 500-level art history course. Writing intensive. 4 cr.

#### 693. American Art

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. 4 cr.

#### 695. Special Problems in the Visual Arts

Topics and prerequisites to be announced before registration. May be repeated with permission of the instructor. Lab. 4 cr.

#### 695I. Problems in Visual Arts/Italy

Part of the ITAL 685/686 study abroad program held in Italy. 4 cr.

#### 697. Topics in Asian Art

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. Prereq: one 400- or 500-level art history course or permission of the instructor. Writing intensive. 4 cr.

#### 699. Museum Studies

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. 4 cr.

#### 700H. Honors Seminar

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. 4 or 8 cr.

#### #725. Wood Multiples

Development and construction of prototype furniture designs intended for more than one-of-a-kind production; jig and production strategies. (Offered concurrent to I.W.F.-sponsored biennial National Student Furniture Design Competition.) Prereq: ARTS 625 (4 credits.). Lab. Special fee. 4 cr.

#### 732. Advanced Drawing

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 633. Lab. 4 cr.

#### 746. Advanced Painting

Development of a higher degree of technical skill to handle more advanced conceptual problems. Class assignments may be more individually directed. May be repeated for a maximum of 12 credits. Prereq: ARTS 646(8 credits). 4 cr.

#### 767. Bronze Casting

Practice of designing, building, and maintaining a working sculpture foundry. Emphasis on a thorough understanding of the lost-wax investment casting process, including pattern making, mold making, wax working, investing, casting, chasing, and patination. Prereq: ARTS 667. (8 credits). Special fee. Lab. (Not offered every year.) 4 cr.

#### #784. Dutch Genre Painting

An intensive study of Dutch genre painting in the 17th century, focusing especially on the art of Vermeer and his contemporaries in the third quarter of the century. In addition to individual artists and their works, attention will be paid to aspects of their social background such as the emergence of privacy and the nuclear family, to parallels with the early novel, and to general themes governing realism as an artistic mode. Prereq: one 400- or 500-level art history course and instructor's permission. Writing intensive. 4 cr.

#### 791. Art Education (Elementary)

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. 4 cr.

#### 792. Art Education (Secondary)

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. 4 cr.

#### 795. Methods of Art History

Essential bibliography and the methodology of research; the variety of approaches to art historical scholarship. Readings, discussion, and projects in connoisseurship, iconography, and other art historical methods. Open to advanced students with a strong art history background. Required for art history majors. It is strongly recommended that students take this course in their junior year. Prereq: (for non-art history majors): permission. (Usually offered fall semester only.) Writing intensive. 4 cr.

#### 796. Independent Study in the Visual Arts

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. 1 to 8 cr.

#### 798. Seminar/Senior Thesis

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. 4 to 8 cr.

#### 799. Seminar in Art History

Topics and prerequisites to be announced before registration. May be repeated with permission of instructor. Writing intensive. 4 cr.

## Biochemistry (BCHM)

(For program description, see page 88.)

### 600/600W. Field Experience

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. 1 to 4 cr. 600W is writing intensive.

### 658. General Biochemistry

A comprehensive, introductory course emphasizing the cellular metabolism and the structure and function of proteins, nucleic acids, carbohydrates, and lipids. Prereq: BIOL 411, CHEM 545-546, CHEM 547-548, or CHEM 651-652. Coreq: BCHM 659 (except BCHM majors who are encouraged to take BCHM 755). 3 cr.

### 659. General Biochemistry Laboratory

Structured laboratory experiments that provide training in analytical and preparative techniques fundamental to modern biochemistry and molecular biology. Coreq: BCHM 658 (except for BCHM majors who are encouraged to take BCHM 755 instead of BCHM 659). Special fee. 2 cr.

### 702/702W. Endocrinology

Biochemical and molecular structure and function of vertebrate endocrine systems. Influence of endocrine system on the physiology of vertebrates, with special reference to mammals. Current investigations of the endocrine system as a regulator and integrator of body functions including such systems as growth, reproduction, metabolism, differentiation, and behavior. (Also offered as ANSC 702.) Prereq: BCHM 658 or 751; or permission. Special fee. 4 cr. 702W is writing intensive.

### 711. Genomics and Bioinformatics

The 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 experience with a range of bioinformatics approaches—the computer applications used in genome analysis. Prereq: BIOL 604. (Also offered as GEN 711.) Lab. 4 cr.

### 750. Physical Biochemistry

Structure, interactions, and physical-chemical properties of biomolecules. Thermodynamic, kinetic, and spectroscopic methods for the study of proteins and nucleic acids. Prereq: 2 semesters organic chemistry, 1 semester of calculus; or permission. 3 cr.

### 751. Principles of Biochemistry

In-depth survey of biochemistry: macromolecular structure; structure and function of proteins, nucleic acids, carbohydrates, and lipids. Prereq: CHEM 657-658 or CHEM 651-652 or CHEM 545 and 546 and BCHM 658-659; or permission. 4 cr.

### 752. Principles of Biochemistry

Continuation of in-depth survey of biochemistry: metabolism of amino acids, nucleotides, carbohydrates and lipids; macromolecules synthesis and regulation; molecular biology of the eukaryotic cell. Prereq: BCHM 751 or permission. 4 cr.

### 754. Laboratory in Biochemistry and Molecular Biology of Nucleic Acids

Application of modern techniques to the analysis of biomolecules, with an emphasis on nucleic ac-

ids; includes DNA isolation and analysis, cloning, sequencing, and analysis of gene products. Prereq: BCHM 658/659; 751; or permission. (Also offered as PBIO 754 and GEN 754.) Special fee. Writing intensive. 5 cr.

### 755. Laboratory in Biochemistry and Molecular Biology

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. (Majors anticipating taking BCHM 799 should take this course in their junior year.) Prereq: BCHM 751-752; or permission. BCHM 752 may be taken concurrently with BCHM 755. Special fee. Writing intensive. 5 cr.

### 763. Biochemistry of Cancer

Molecular mechanisms of viral and chemical carcinogenesis; role of oncogenes in normal cell growth, development, and differentiation. Biochemical basis of cancer chemotherapy. Prereq: BCHM 658 or 751; or permission. 3 cr.

### 766. Environmental Genomics

Environmental genomics uses high throughput genomic-scale technologies to investigate ecological and evolutionary theory, to provide a more complete understanding of how organisms respond to environmental change at the molecular genetic level. Course covers an array of systems involved in this emerging field, with the central aim of understanding the effects of environmental change on genome structure, gene expression, and adaptive evolutionary change. Information is derived from the primary literature in the field and covers practical and technical concepts as well as the underlying theoretical basis for the major research themes. Prereq: BIOL 604; or permission. (Also offered as GEN 766.) 4 cr.

### 771. Molecular Genetics

Structure, organization, replication dynamics, and expression of genetic information in eukaryotes. Focus on molecular genetic mechanisms of gene expression and its control; molecular genetic methods; molecular genetic control of cell division and differentiation during development. Prereq: BIOL 604; or permission. (Also offered as GEN 771.) 4 cr.

### #782. Developmental Genetics

The molecular genetic basis of metazoan development. Focuses on how genes direct the process of development and how this problem is analyzed in model organisms using molecular genetic approaches. Topics include: control of cell division, maternal factors, cell-cell interactions, and differential gene expression. Prereq: BIOL 604; BCHM 658 or 751. (Also offered as GEN 782.) Not offered every year. 3 cr.

### 790. Current Topics in Biomedicine

The dramatic advances in molecular biology and biochemistry during the last two decades have led to explosive growth in the accumulation of biomedical knowledge. To “discover” the literature is an essential element of training in any molecular discipline in biology. The first phase of the course will cover the use of literature search tools, and how to read scientific papers, write a review and make presentations effectively. The bulk of the time will be spent on current topics in biomedicine selected by the class. With guidance from the instructor, the class will derive reading lists, discuss the literature, and then write short essays on each topic. Participants will also prepare a “term” project for audiovisual presentation to the class in the

final two weeks. Prereq: BIOL 605 or instructor permission. Writing intensive. 4 cr.

### 794. Protein Structure and Function

Analysis of how the three-dimensional architecture of soluble and membrane proteins contributes to their biochemical function. Topics include methods for determining the structure of proteins, protein folding, protein targeting, and mechanisms of enzyme catalysis. Computer resources will be used for protein modeling and structural prediction. Prereq: BCHM 658 or 751. 4 cr.

### 795/795W. Investigations

Independent study in various areas including but not limited to: genetics, signal transduction, gene regulation, molecular evolution, biochemistry of cancer, biophysics of macromolecules, endocrinology, and glycobiology. May include readings, laboratory work, organized seminars and conferences. Prereq: permission. Not more than 4 total credit hours can be applied to BCHM or major electives. 1 to 4 cr.

### 799, 799H. Senior Thesis

Research in biochemistry and molecular biology for senior majors. Topics may include: developmental genetics; signal transduction; gene regulation; molecular evolution; biochemistry of cancer; biophysics of macromolecules; endocrinology; glycobiology. May be repeated to a maximum of 4 credits. Prereq: BCHM 659 or 755; permission. Writing intensive. 1 to 4 cr.

## Biology (BIOL)

(For program description, see page 89.)

### 400. Professional Perspectives on Biology

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. 1 cr.

### 401. Topics

Introduction to specific areas of study within biological sciences. Provides an avenue to explore recent excitements in biological sciences, and fundamental questions about how living organisms function and adapt to different environments; introduction to contemporary research in various biological sciences. Several concurrent sections organized around themes; lecture/discussion. Cr/F. 1 cr.

### 404. Biotechnology and Society

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). 4 cr.

### 411/411H. Principles of Biology I

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. 4 cr.



**412/412H. Principles of Biology II**

The biology of organisms, including survey of kingdoms, behavior, evolution, and ecology. Required for majors in the biological sciences. Special fee. Lab. 4 cr.

**415. Watershed Watch**

Project Watershed Watch brings together several highly successful areas of excellence at UNH: capabilities in satellite remote sensing and geographic information systems, forest ecology, limnology and microbial ecology. Watershed Watch will recruit up to 40 sophomores whose majors are currently undeclared to study watershed interactions and relate them to established methods of monitoring the quality of forest, lakes, and streams. Students will work along side faculty in an authentic, experience-based, and hands-on learning environment. Prereq: instructor approval. 2 cr.

**416. Watershed Watch. Research Experience**

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 adviser 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. 2 cr.

**420. Introduction to Forensic Sciences**

This course is an introductory survey course in Forensic Sciences. The focus will be 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. 4 cr.

**444. Emergence of Life in the Universe**

How did life begin? Is there life on other planets? Can "synthetic" life be created in the laboratory? An informed exploration of questions and theories about the origin and nature of life, the mechanisms of evolution and diversification, the possibilities of past and future dissemination of life in the universe, and the growing power of human beings to understand and influence these phenomena, including ethical issues. Writing intensive. 4 cr.

**528. Applied Biostatistics I**

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; EREC 525; HHS 540; MATH 639; MATH 644; PSYC 402; SOC 502. 4 cr.

**541. General Ecology**

Physical and biological factors affecting distribution, abundance, and adaptations of organisms. Population, community, and ecosystem structure and function. Prereq: BIOL 411-412 or equivalent. Special fee. Lab. Writing intensive. 4 cr.

**600/600W. Field Experience**

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. 1 to 4 cr. 600W is writing intensive.

**601. Biology of Plants**

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, 412 or ZOOL 412. 4 cr.

**#602. Project Lake Watch**

Project Lake Watch brings together several highly successful areas of excellence at UNH: capabilities in satellite remote sensing and geographic information systems, microbial ecology, limnology, and the long-term monitoring of NH lakes by volunteer citizens. Project Lake Watch will recruit 10 sophomores from all colleges to become outreach teachers of geospatial technologies, relating these to established methods of monitoring NH lake water quality. These students will experience active, hands-on learning and will then disperse the newer technologies to participating volunteers in the NH Lakes Lay Monitoring Program. IA (continuous grading) course. 3 or 5 cr.

**#603. Seminar/Project Lake Watch**

Project Lake Seminar is a forum for maintaining academic focus and cohesiveness among program participants throughout the academic year. In addition to weekly meetings in which current developments in lake remote sensing will be considered, students will also use this forum to plan summer academic activities, carry out outreach teaching with volunteer lake monitors and prepare scientific presentation for a national meeting. Prereq: BIOL 602, permission. 3 cr.

**604. Principles of Genetics**

Chemical structure of genetic material, Mendelism, gene recombination, and chromosome mapping. Mutation, gene expression and regulation, recombinant DNA. Quantitative inheritance and population genetics. Prereq: BIOL 411 and 412; CHEM 403 and 404. College math or statistics suggested. Offered each semester. Special fee. 4 cr.

**605. Eukaryotic Cell and Developmental Biology**

Cell and developmental biology of eukaryotic animals and plants. General topics include the structure and function of major cellular compartments, an analysis of intracellular dynamics, mechanisms of intercellular communication, and mechanisms for elaborating and integrating multicellular animals and plants. Special topics include mitogenesis, cell motility, oncogenesis, control of gene expression, and pattern formation. Prereq: BIOL 411 and 412; CHEM 403 and 404. Special fee. Lab. 4 cr.

**695, 696. Biology Teaching Practices**

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 8 credits. 1 to 4 cr.

**711. Applied Biostatistics II**

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. Special fee. 4 cr.

**795/795W. Independent Investigations**

Topics may include teaching practicum in a biological science supervised by a biology faculty member (permission required); research practicum in a biological science supervised by a biology faculty member (permission required); or special topics of current interest in biology. Lecture-discussion format. Prereq: 12 credits of biology or permission. May be repeated to 4 credits. 1 to 4 cr. 795W is writing intensive.

**799. Honors Senior Thesis**

Independent research requiring a written proposal, a thesis, and a presentation of research results to an audience of faculty and/or students. Intended for biology majors completing biology honors-in-major requirements. Contact biology program coordinator prior to senior year to arrange supervision and obtain permission. 2 consecutive semesters (4 credit minimum total). Writing intensive. 2 to 8 cr.

---

**Chemical Engineering (CHE)**

(For program description, see page 55.)

**410. Energy and Environment**

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. Prereq: good background in high school chemistry. 4 cr.

**501. Introduction to Chemical Engineering I**  
Systems of units; material balances and chemical reactions; gas laws; phase phenomena. 3 cr.

**502. Introduction to Chemical Engineering II**  
Energy and material balances for systems with and without chemical reactions; design case studies. 3 cr.

**601. Fluid Mechanics and Unit Operations**  
Continuity, momentum, and energy equations; laminar and turbulent flow in pipes; rheology. Applications to flow in porous media, filtration, and fluidization. 3 cr.

**602. Heat Transfer and Unit Operations**  
Thermal properties of materials, steady-state and transient conduction and convection; radiation; applications to heat exchangers and process equipment. 3 cr.



**603. Applied Mathematics for Chemical Engineers**

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. Prereq: knowledge of scientific computer programming. Lab. 4 cr.

**604. Chemical Engineering Thermodynamics**

Volumetric and phase behavior of ideal and real gases and liquids; cycles; steady-flow processes; chemical equilibrium. Lab. 4 cr.

**605. Mass Transfer and Stagewise Operations**

Diffusion in gases, liquids, and solids; design and analysis of distillation, absorption, adsorption, extraction, and other stagewise equipment and operations. 3 cr.

**606. Chemical Engineering Kinetics**

Use of laboratory data to design commercial reactors. Continuous, batch, plug-flow, and stirred-tank reactors for homogeneous and catalytic multiphase reactions. 3 cr.

**608. Chemical Engineering Design**

Introduction to cost engineering. Application of acquired skills to design of chemical processes. Individual major design project required. Safety for industrial processes. Lab. (Also offered as ENE 608.) Writing intensive. 4 cr.

**612. Chemical Engineering Laboratory I**

Selected experiments in fluid mechanics, heat transfer, and unit operations. Writing intensive. 3 cr.

**613. Chemical Engineering Laboratory II**

Selected experiments in mass transfer, stagewise operations, thermodynamics, and kinetics. Writing intensive. 3 cr.

**695. Chemical Engineering Project**

Independent research problems carried out under faculty supervision. 1 to 4 cr.

**696. Independent Study**

Prereq: permission of the adviser and department chairperson; granted only to students having superior scholastic achievement. 1 to 4 cr.

**#701. Introduction to Polymer Engineering**

Principles of polymer chemistry, polymerization kinetics, polymer rheology, and material characteristics. Design and analysis of polymer reactors, extruders, molding machines, and other forming operations. Lab. 4 cr.

**705. Natural and Synthetic Fossil Fuels**

Study of U.S. and foreign reserves of coal, oil, and natural gas. Petroleum processing and refining. Coal, oil shale, and tar sand. Gasification and liquefaction of coal. Lab. 4 cr.

**712. Introduction to Nuclear Engineering**

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. 4 cr.

**#744. Corrosion**

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. 4 cr.

**752. Process Dynamics and Control**

Dynamic behavior of chemical engineering processes described by differential equations; feedback control concepts and techniques; stability analysis. Lab. (Also listed as ENE 752.) 4 cr.

**761. Biochemical Engineering**

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. 4 cr.

**762. Biomedical Engineering**

Transport phenomena and chemical reactions in physiological systems. Formulation and interactions of biomaterials. Artificial kidney, vascular prosthesis, drug delivery, protein and cell adhesion. Introduction to tissue engineering. Lab. 4 cr.

---

**Chemistry (CHEM)**

(For program description, see page 56.)

**400. Freshman Seminar**

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. Cr/F. 1 cr.

**403. General Chemistry**

Fundamental laws and concepts applied to nonmetals, metals, and their compounds. For students who plan to take further chemistry courses. Required for chemistry majors. Previous chemistry recommended. Knowledge of algebra, exponentials, and logarithms required. Special fee. Lab. Cannot be taken for credit if credit received for CHEM 401, 405, or 409. 4 cr.

**404/404H. General Chemistry**

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. Cannot be taken for credit if credit received for CHEM 402. 4 cr.

**405. General Chemistry**

Basic principles; atomic structure, bonding, equilibria, and thermodynamics. Prereq: one year of high school chemistry, algebra, and knowledge of exponentials and logarithms. Cannot be taken for credit if credit received for CHEM 403-404. Required for chemical engineering, mechanical engineering, electrical and computer engineering, environmental engineering; industrial majors. Not applicable for credit for majors in chemistry or biochemistry. 4 cr.

**444. Element of Chemistry**

This course will deal with a single element for course participants to examine and discuss. We will explore the historical and social context of its discovery. We will consider why the element is potentially crucial to living beings, how it interacts with some other elements and our perception of the element. This will involve an overview of some chemical and biological concepts. This course cannot be counted towards the major. (Not offered every year.) 4 cr.

**444A. Fire and Ice**

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. 4 cr.

**496. Freshman Independent Study**

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.) 1 to 8 cr.

**501. Peer-led Team Learning in Chemistry**

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 404. 2 cr.

**502. Advanced Peer-led Team Leadership in Chemistry**

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. 1 cr.

**517. Quantitative Analysis**

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 405. Coreq: CHEM 518. Lab. 4 cr.

**518. Quantitative Analysis Laboratory**

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 405. Coreq: CHEM 517. Special fee. 1 cr.

**545. Organic Chemistry**

Introductory study of carbon compounds for those who desire a brief terminal course. Prereq: CHEM 404 or 405. Coreq: CHEM 546. Students receiving credit for CHEM 545 may not receive credit for CHEM 402, 547-548, or 651-652. 3 cr.

**546. Organic Chemistry Laboratory**

Special fee. Lab. 2 cr. Coreq: CHEM 545.

**547, 548. Organic Chemistry**

Principal classes of organic compounds, aliphatic and aromatic; class reactions and structural theory. Intended primarily for chemistry and biochemistry majors. Prereq: CHEM 404; 405;/or permission. Coreq: CHEM 549. Students receiving credit for CHEM 547-548 may not receive credit for either CHEM 545 or 651-652. 3 cr.

**549, 550. Organic Chemistry Laboratory**

Special fee. Lab. 2 cr. Coreq: CHEM 547

**574. Introduction to Inorganic Chemistry**

Elementary concepts including periodicity, descriptive chemistry of metals and nonmetals, and coordination compounds. Prereq: CHEM 404; 405;/or permission. 3 cr.

**651-652/652A. Organic Chemistry**

Principal classes of organic compounds, aliphatic and aromatic, class reactions and structural theory. Intended primarily for prehealing arts, biological science, and health science students. Prereq:



CHEM 404; 405;/or permission. Coreq: CHEM 653. Students receiving credit for CHEM 651-652 may not receive credit for either CHEM 545 or 547-548. 3 cr.

**653-654. Organic Chemistry Laboratory**  
Special fee. Lab. 2 cr. Coreq: CHEM 651.

**681. Physical Chemistry**

A one-semester survey course. Properties of matter, thermochemistry and thermodynamics, solutions, chemical equilibria, chemical kinetics. Prereq: CHEM 403 and 404, or CHEM 405. Coreq: CHEM 682. No credit earned if credit received for CHEM 683 and 685, or CHEM 684 and 686. 3 cr.

**682. Physical Chemistry Lab**

Properties of matter, thermochemistry and thermodynamics, solutions, chemical equilibria, chemical kinetics. Prereq: CHEM 403 and 404 or CHEM 405 with labs. Coreq: CHEM 681. Special fee. No credit earned if credit received for CHEM 683 and 685, or CHEM 684 and 686. 1 cr.

**683. Physical Chemistry I**

The properties of gases, liquids, and solids; thermochemistry and thermodynamics; solutions, chemical equilibria, reaction rates, conductance, and electromotive force. Prereq: CHEM 404 or 405; MATH 426. Pre- or Coreq: PHYS 402 or 407. Coreq: CHEM 685-686. 3 cr.

**684. Physical Chemistry II**

The properties of gases, liquids, and solids; thermochemistry and thermodynamics; solutions, chemical equilibria, reaction rates, conductance, and electromotive force. Prereq: CHEM 404 or 405; MATH 426. Pre- or Coreq: PHYS 402 or 407. Coreq: CHEM 685-686. 3 cr.

**685-686. Physical Chemistry Laboratory**

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 402. Coreq: CHEM 683-684. Special fee. 2 cr.

**696. Independent Study**

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. 1 to 4 cr.

**698. Seminar**

Student reports on topics of interest. Prereq: CHEM 548 or 652; CHEM 684. Writing intensive. 1 cr.

**699. Thesis**

Yearlong investigation in a selected topic, with background and experimental investigation. For chemistry majors who have completed CHEM 548, 684, and 762. Required for B.S. majors. Strongly recommended for B.A. chemistry majors. Prereq: 2.50 average and approval of department chairperson. Permission required. Lab. Two semesters of 4 credits each are required. Writing intensive. 4 cr.

**708. Spectroscopic Investigations of Organic Molecules**

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 spectroscopy. 1 to 4 cr.

**755. Advanced Organic Chemistry**

Methods of synthesis and determination of structure, including stereochemistry of complex organic compounds. Prereq: CHEM 548 or 652 or equivalent. Coreq for CHEM majors: 756. 3 cr.

**756. Advanced Organic Chemistry**

**Laboratory**

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. 2 or 3 cr.

**762. Instrumental Methods of Chemical Analysis**

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 517; CHEM 684 as a pre- or corequisite;/or permission. Coreq: 763. 3 cr.

**763. Instrumental Methods of Chemical Analysis Laboratory**

Experimental parameters, error analysis, and applications of the methods covered in CHEM 762. Coreq: CHEM 762. Special fee. 2 or 3 cr.

**774. Inorganic Chemistry**

Basic theoretical concepts and their applications to inorganic reactions and compounds. Prereq: organic chemistry; physical chemistry;/or permission. Coreq: CHEM 775. 3 cr.

**775. Inorganic Chemistry Laboratory**

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. Coreq: CHEM 774. Special fee. 2 cr.

**776. Physical Chemistry III**

Application of quantum theory to atomic electron structure, spectroscopy, and molecular structure. Prereq: CHEM 683-684. Special fee. Lab. 4 cr.

**795. Special Topics**

New or specialized topics not covered in regular course offerings. May be repeated to a maximum of 4 credits. Prereq: permission. 2 to 4 cr.

**Chinese (CHIN)**

**401, 402. Elementary Chinese**

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. 4 cr.

**#425. Introduction to Chinese Culture and Society**

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. 4 cr.

**503, 504. Intermediate Chinese**

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. 4 cr.

**521. Chinese Literature in Translation**

Representative works of master Chinese writers reflecting themes of 20th century China. Lu Hsun, Shen Ts'ung-Wen, Bei Dao, and others. Lectures, discussion, and readings in English. Special fee. 4 cr.

**795. Independent Study**

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. 1 to 4 cr.

**Civil Engineering (CIE)**

*(For program description, see page 57.)*

**402. Introduction to Civil Engineering**

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. 3 cr.

**505. Surveying and Mapping**

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. 4 cr.

**525. Statics for Civil Engineers**

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. Pre- or Coreq: MATH 426. 3 cr.

**526. Strength of Materials**

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: CIE 525 or ME 525. 3 cr.

**533. Project Engineering**

Techniques for financial analysis, and operation and management of engineering systems, engineering economics, material take-offs, estimating, scheduling, modeling physical systems, and decision-making. CIE/ENE major or permission. 3 cr.

**622. Engineering Materials**

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: CIE major or permission, CIE 526 or ME 526. Lab. Writing intensive. 4 cr.

#### 627. Dynamics

Particle and rigid body dynamics. Topics include dynamic equilibrium, work and energy relationships, momentum, impulse, and impact; rotational and translational interactions, and friction. Introduction to vibrations and their application to structural dynamics and geotechnical engineering. Prereq: CIE 525 or ME 525, or permission. 3 cr.

#### 642. Fluid Mechanics

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, hydro-power, groundwater flow, and settling of spheres. Prereq: PHYS 407, CIE/ENE Hydrology major; or permission. Lab. Writing intensive. 4 cr.

#### 665. Soil Mechanics

Soil classification and physical properties. Permeability, compressibility, consolidation, and shearing resistance are related to the behavior of soils subjected to various loading conditions. Prereq: CIE 622, 642, CIE/ENE major; or permission. Lab. 4 cr.

#### 681. Classical Structural Analysis

Analytical stress and deflection analysis of determinate and indeterminate structures under static and moving loads by classical methods. Prereq: CIE 526, CIE major; or permission. 3 cr.

#### 721. Pavement Design

Flexible and rigid pavements and bases for highways, airports, city streets, and industrial floors; pavement selection, construction methods, materials, specifications. Prereq: CIE 665 or permission. 3 cr.

#### 722. Properties and Production of Concrete

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: CIE 622 or permission. 3 cr.

#### 723. Bituminous Materials and Mixtures

Considerations of major types of bituminous materials, asphalt cements, cutback asphalts, asphalt emulsions, and tars; influence of chemical composition on physical properties; desirable aggregate characteristics for bituminous mixtures; construction techniques; current practices for determining optimum asphalt contents. Prereq: CIE 622 or permission. 3 cr.

#### 741. Open Channel Flow

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: CIE 642 or permission. 3 cr.

#### 745. Engineering Hydrology

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. 3 cr.

#### 750. Ecohydrology

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: CIE 745 or ESCI 705 or permission. 3 cr.

#### 754. Transportation Engineering and Planning

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. 3 cr.

#### 755. Design of Pressurized Water Transmission Systems

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: CIE 642 or permission. 4 cr.

#### 757. Coastal Engineering and Processes

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: CIE 642 or permission. 3 cr.

#### 758. Stormwater Management Designs

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: CIE 642 or permission. 4 cr.

#### 759. Stream Restoration

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: instream flow, dam removal, induced recharge, improvements to fish habitat, and channel stabilization. 3 cr.

#### 760. Foundation Design I

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: CIE 665 or permission. 4 cr.

#### 761. Foundation Design II

Advanced pile and pier design under vertical and lateral loads. Slope stability by circular and non-circular arc methods. Design of flexible bulkhead walls and mechanically stabilized walls. Excavation and dewatering. Soil and site improvement. Prereq: CIE 760 or permission. 3 cr.

#### 762. Introduction to Geotechnical Earthquake Engineering

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: CIE 760 or permission. 3 cr.

#### 766. Geo-Environmental Engineering

Soil composition and structure; hydrogeology; attenuation and contaminant transport; containment design including landfills, geosynthetics 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: CIE 665 or permission. 3 cr.

#### 774. Reinforced Concrete Design

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: CIE 622, 681; or permission. 4 cr.

#### 778. Issues in Engineering Practice and Management

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. 3 cr.

#### 782. Timber Design

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: CIE 681 or permission. 3 cr.

#### 783. Matrix Structural Analysis and Modeling

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: CIE 681 or permission. 3 cr.

#### 784. Introduction to Project Planning and Design

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 CIE 788, part two of this sequence. 1 cr.

#### 785. Introduction to Structural Vibrations

Dynamic analysis of single- and multi-degree-of-freedom systems. Simple beam and frame structures. Earthquake analysis and design. Prereq: CIE 783. 3 cr.



**786. Introduction to Finite Element Analysis**

Topics include basic matrix theory, Galerkin method, direct stiffness method, development of finite element theory, and modeling techniques, applications in solid mechanics, heat transfer, fluids, and dynamics using commercially available codes. Prereq: CIE 681, 783; or permission. 3 cr.

**787. Dynamics of Structures**

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: CIE 785 or permission. 3 cr.

**788. Project Planning and Design**

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: CIE 784. Writing intensive. 3 cr.

**791. Prestressed Concrete**

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: CIE 774 or permission. 3 cr.

**792. LRFD Bridge Design**

AASHTO LRFD Bridge Design Specifications using SI units. Design objectives, loads, load case analysis and selection, load distributions, static analysis, and design for axial loads, flexure, and shear. Design of slender columns, composite, beams, and plate girders. Prereq: CIE 774. Prereq Coreq: CIE 793 or permission. 3 cr.

**793. Structural Design in Steel**

Design of members and connections: tension and compression members, beams, and beam/columns, bolted and welded joints. Prereq: CIE 622, 681; or permission. 3 cr.

**795. Independent Study**

Seniors in good standing may pursue independent studies under faculty guidance. A written culminating report is required. Prereq: permission. 1 to 4 cr.

**796. Special Topics**

Advanced or specialized topics not normally covered in regular course offerings. May be repeated, but not in duplicate areas. Prereq: permission. 1 to 4 cr.

**799H. Senior Honors Thesis**

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 which may be used to fulfill a CIE non-design elective. 4 cr.

**Classics (CLAS)**

(For program description, see page 40.)

**400. Grammar for Students of Latin and Greek**

A one-semester review in English grammar from a traditional perspective provides a background in grammatical concepts for those students who have never studied a Classical language or who need review. Weekly meetings introduce topics; readings and assignments reinforce them. Enrollment is limited to students enrolled in LATN 401, 402, 501, 502, or GREK 401, 402. Course does not count toward Classics, Latin, or Greek major or minor requirements. May be repeated for up to 2 credits. Cr/F. 1 cr.

**401/401H. Classical Mythology**

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. 4 cr.

**402. Hellenic and Roman Institutions**

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. 4 cr.

**405. Introduction to Greek Civilization**

A broad historical exploration of Greek 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. 4 cr.

**406. Introduction to Roman Civilization**

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. 4 cr.

**411, 412. Elementary Hittite**

Elements of grammar, reading of simple prose. Special fee. 4 cr.

**413, 414. Elementary Sanskrit**

Elements of grammar, reading of simple prose. Special fee. 4 cr.

**421. Major Greek Authors in English**

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. 4 cr.

**422. Major Roman Authors in English**

Major classical authors such as Plautus, Terence, Cicero, Catallus, Virgil, Ovid, Seneca, Juvenal, and Tacitus in the context of their civilization, from which so much of our contemporary culture derives. For students unprepared to read Latin. Background for majors in English, philosophy, history, Latin, Greek, the arts, music, modern languages. Open to all students. Writing intensive. 4 cr.

**444. Individual and Society in the Ancient World**

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. 4 cr.

**500. Classical Mythology: Topics in World Literature**

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. 4 cr.

**506. Introduction to Comparative and Historical Linguistics**

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.) 4 cr.

**525. Greek and Latin Origins of Medical Terms**

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, predoctoral, preveterinary, nursing, medical technology, and other students in the biological and physical sciences. Open to all students. Special fee. 4 cr.

**550. Women in Antiquity**

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. 4 cr.

**595, 596. Topics**

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. 4 cr.

**694. Supervised Practicum**

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. Cr/F. 2 or 4 cr.

**695, 696. Special Studies**

Advanced work in classics. Research paper. Not open to freshmen and sophomores. 2 or 4 cr.

## Communication (CMN)

(For program description, see page 32.)

### 455/455H. Introduction to Mass Communication

Nature, development, and the effects of mass media. Overview of mass communication history and theory. 4 cr.

### 456/456H. Propaganda and Persuasion

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. 4 cr.

### 457. Introduction to Interpersonal Communication

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. 4 cr.

### 503. Introduction to Group Communication Processes

Introduction to the theoretical and empirical foundations of group communication processes in a variety of settings. Comparison of approaches to defining and understanding the pervasiveness, complexity, and diversity of group communication and multi-party interaction in the many spheres of social life. Students undertake hands-on observation, recording, transcription, and analysis of naturally occurring group communication in and out of class. Prereq: CMN 457 with C or better, or by permission. 4 cr.

### 504. Introduction to Argumentation

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. 4 cr.

### #505. Analysis of Popular Culture

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 455 with C or better, or by permission. 4 cr.

### 507. Introduction to Rhetorical Theory and Analysis

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. 4 cr.

### 515. Analysis of News

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. 4 cr.

### 519. Advertising as Social Communication

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. 4 cr.

### 530. Family Communication

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 457 with C or better, or by permission. 4 cr.

### 550. Cinema and Society

The art, history, technology, economics, and theory of moving images from the silent period to the present. Focus on film as a social practice. Examination of both classic Hollywood film and alternative cinema. Students cannot receive credit for both CMN 550 and ENGL 533. Prereq: CMN 455 with C or better, or by permission. Special fee. 4 cr.

### 557. Great Speakers and Speeches

Historical survey of masterpieces of oratory from the period of Demosthenes and Cicero through the golden age of American oratory with Lincoln and Webster, to the time of Martin Luther King, John Kennedy, and Ronald Reagan. Critical attention to the circumstances, talents, and rhetorical attributes that combine to make eloquent, persuasive discourse and effective public communication. Prereq: CMN 456 with C or better, or by permission. 4 cr.

### 567. Images of Gender in the Media

The symbolic construction of sexuality and gender in specific social, historical, and cultural settings. Examination of the power to define media images and the media's function as one element in the preservation of gender inequality. Prereq: CMN 455 with C or better, or by permission. 4 cr.

### 572. Language and Social Interaction

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. 4 cr.

### 575. Research Practicum

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, 456, 457, and permission. Cr/F. 1 to 4 cr.

### 583. Gender and Communication

Consideration of the construction of gender through various linguistic and non-linguistic interpersonal communication practices. Topics include linguistic marking of gender, socialization and communicative management of gender identity, cultural change and variation in the communicative construction of gender, the contestation of gender stereotypes through communication, and a critical examination of theoretical and empirical approaches to gender and communication. Prereq: CMN 457 with C or better, or by permission. 4 cr.

### 596. Special Topics in Media Studies

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. 4 cr.

### 597. Special Topics in Rhetorical Studies

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. 4 cr.

### 598. Special Topics in Interpersonal Studies

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. 4 cr.

### 599. Internship

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, 456, 457, or permission. Cr/F. 1 to 4 cr.

### 600. Public Speaking as a Civic Art

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, 456, 457, and 500-level rhetoric course; prereq for non-majors: junior or senior standing. Writing intensive. 4 cr.

### 602. Theories of Interpersonal Communication

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, 456, 457 and any CMN 500-level interpersonal studies course or permission. Writing intensive. 4 cr.

### 607. Persuasion in American Politics

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 deci-



sions, crisis management, political scandal, and the national identity. Prereq: CMN 455, 456, 457 and any 500-level rhetorical studies course or permission. Writing intensive. 4 cr.

### **615. Public Opinion and Mass Communication**

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, 456, 457 and any 500-level media studies course. Writing intensive. 4 cr.

### **630. Psychology of Communication**

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, 456, and 457 with C or better and any required 500-level interpersonal studies course with a C- or better, or by permission. Writing intensive. 4 cr.

### **632. Communication Theory**

Terminology, concepts, theoretical models, functions, levels, modes, and media in human communication. Prereq: CMN 455, 456, and 457 with C or better and any required 500-level CMN course with a C- or better (three required 500-level courses recommended) or by permission. Writing intensive. 4 cr.

### **640. Media, Culture, and Society**

Focuses on the construction of meaning in the interplay between social structure and cultural expression. Theory and analysis emphasize the ideological role of the media in the social struggle for meaning. Prereq: CMN 455, 456, 457 and any 500-level media studies course or permission. Writing intensive. 4 cr.

### **645. Rhetorical Criticism of Film**

Examine the rhetoric of narrative film, with an emphasis on an audience-centered criticism of American feature films, such as historical dramas, sci-fi films, road movies, and documentaries. Also examines how audiences experience films as both products and producers of social disorder. Prereq: CMN 455, 456, 457 and one 500-level Rhetoric course or permission. Writing intensive. 4 cr.

### **650. Critical Perspectives on Film**

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, 456, 457, 550, ENGL 533, or permission. Special fee. Writing intensive. May be repeated for credit. 4 cr.

### **656. Principles of Rhetorical Criticism**

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, 456, 457, and any 500-level rhetorical studies course (CMN 507 recommended). Writing intensive. 4 cr.

### **657. Public Address and the American Experience**

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 when topic varies. Prereq: CMN 455, 456, 457 and any 500-level rhetorical studies course or permission. Special fee. Writing intensive. 4 cr.

### **658. Media Analysis and Criticism**

Approaches and methodologies for media criticism. Analysis of sample studies. Students work on original media analysis projects. Prereq: CMN 455, 456, 457 and any two 500-level CMN (three 500-level courses recommended), or permission. Writing intensive. 4 cr.

### **666. Conversation Analysis**

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, 456, 457 and one 500-level interpersonal CMN course or permission. Writing intensive. 4 cr.

### **667. Ethnography of Communication**

Theoretical and hands-on consideration of interpersonal communication and language use as culturally situated practices of particular communities, through which human beings reflect, construct, maintain, pass down, and challenge the cultures of which they are a part. Students will learn how to interpret culturally situated interpersonal communication and language use by employing various ethnographic and discourse analytic methods of investigation. Prereq: CMN 455, 456, 457 and one 500-level interpersonal course or permission. Writing intensive. 4 cr.

### **#672. Theories of Language and Discourse**

Selection and critique of major theoretical orientations to the study of language and social interaction as well as of major methodologies for analyzing conversation and interaction in everyday and institutional settings. Prereq: CMN 455, 456, 457 with C or better and any required 500-level interpersonal studies course (CMN 572 recommended) with C- or better, or by permission. Writing intensive. 4 cr.

### **680. Perspectives on Culture and Communication**

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, 456, and 457 with C or better and any required 500-level interpersonal studies course with a C- or better, or by permission. Writing intensive. 4 cr.

### **696. Seminar in Media Studies**

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, 456, 457 and any 500-level media studies course or permission. Writing intensive. 4 cr.

### **697/697H. Seminar in Rhetorical Study**

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, 456, 457 and any 500-level rhetorical studies course or permission. Writing intensive. 4 cr.

### **698. Seminar Interpersonal Studies**

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, 456, 457 and any 500-level interpersonal studies course or permission. Writing intensive. 4 cr.

### **702. Seminar in Interpersonal Communication Theory**

In-depth concentration on a particular theoretical orientation in interpersonal communication. Original works are read. Theoretical orientation varies by semester. Prereq: CMN 455, 456, and 457 with C or better and three required 500-level CMN courses (at least one must be in interpersonal studies) with C- or better, or by permission. Writing intensive. 4 cr.

### **703. Seminar in Rhetorical Theory**

Focused study of problems in rhetorical theory construction through examination and criticism of selected theoretical frameworks used to explain or interpret rhetorical phenomena. Prereq: permission. Writing intensive. 4 cr.

### **772. Seminar in Media Theory**

Detailed analysis of major theories related to the interaction of communication technologies and society. Application to current examples in politics, advertising, and entertainment. Prereq: at least one 600-level course or permission. Writing intensive. 4 cr.

### **795/795W. Independent Study**

Advanced individual study in rhetoric, media, or interpersonal communication. Project to be developed with supervising instructor. May be repeated for credit. Prereq: permission. 1 to 4 cr.

### **796. Comm-Entary Journal**

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, 456, 457, or permission. Cr/F. 1 cr.

### **799H. Honors Thesis**

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. 4 cr.



## Communication Sciences & Disorders (COMM)

(For program description, see page 72.)

- 520. Survey of Communication Disorders**  
Causes, diagnosis, and treatment of speech, language, and hearing disorders. 4 cr.
- 521. Anatomy and Physiology of the Speech and Hearing Mechanisms**  
Anatomy, physiology, neurology, and function of the mechanisms for the production and perception of speech. 4 cr.
- 522. Acquisition of Language**  
Introduction to normal language acquisition; stages of children's developing language examined within a linguistic framework with attention paid to syntax, morphology, phonology, semantics, and pragmatics. Theories of language acquisition overviewed. 4 cr.
- 524. Clinical Phonetics**  
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. 4 cr.
- 533/533A. Elementary American Sign Language**  
Introduction to the vocabulary, finger spelling, grammatical processes, phonology, syntax, and semantics of American Sign Language. Emphasis on applying principles of sign language; psychosocial aspects of deafness, and the deaf person as bilingual; grammatical processes that modulate meaning of sign in discourse; development of receptive language skills. 4 cr.
- 536. Introduction to Deaf Studies**  
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. 4 cr.
- 537. Deaf Culture**  
This course examines deaf culture from a multidisciplinary perspective. The historical treatment of deaf individuals is explored within a sociological and cultural context as a backdrop to the emergence of deaf culture. Course content includes minority group dynamics, education of the deaf, the deaf community as a linguistic and cultural minority, and the importance of deaf culture. 4 cr.
- 630. Organic Pathologies**  
Neurological bases, diagnosis, and treatment of communication disorders; emphasis on motor speech disorders and aphasia. Prereq: permission. 4 cr.
- 631. Articulation and Language Disorders in Children**  
Research, diagnosis, and therapy procedures as applied to articulation and language disorders. 4 cr.
- 635. Professional Issues in Speech-Language Pathology**  
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. Writing intensive. 4 cr.

### 637. Multicultural Issues in Communication Disorders

The purpose of the course is to allow students to become informed about the complexity and the ways in which cultures differ. The students develop a comprehensive understanding of, cross cultural sensitivity to, and competence of one's own culture and the characteristics of the four major cultural groups in the United States. The students also develop intercultural skills for assessing and counseling individuals as mandated by our professional association policies and positions on language diversity in the clinical management of clients from diverse cultural and linguistic backgrounds. 4 cr.

### 660. Special Problems

Individual or group projects to enrich or expand theoretical knowledge and to afford an opportunity for applied experience. May be repeated to a maximum of 8 credits. Prereq: permission and arrangement with faculty. 2 to 8 cr.

### 704. Basic Audiology

Normal hearing process and pathologies of the auditory system. Hearing screening, pure-tone testing, and speech audiometry. Prereq: COMM 521 or permission. 4 cr.

### 705. Introduction to Auditory Perception and Aural Rehabilitation

Research, testing, and clinical procedures of auditory perception, applied to the communicatively impaired. Prereq: COMM 704; permission. 4 cr.

### 723. Observation Skills in Speech-Language Pathology

Guided observation experiences familiarize students with the clinical process; develop systematic observation skills; fulfill observation requirement of the American Speech-Language-Hearing Association (ASHA). Writing intensive. 2 cr.

### 733/733A. Intermediate American Sign Language

Emphasis on the advanced linguistic principles of American Sign Language including idioms slang and its place in the communication pattern of the deaf. Improvement of speed and accuracy in receptive and expressive skills for communicating with the deaf. Educational and vocational problems associated with deafness. Prereq: COMM 533 or its equivalent; juniors and seniors only. 4 cr.

### 734. American Sign Language III

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. 4 cr.

### 735. American Sign Language IV

Build 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. 4 cr.

### 736. Clinical Assistant

This course is designed for seniors who are majoring in Communication Sciences and Disorders (CS&D). This course offers an opportunity to gain pre-professional clinical experience by serving as an assistant to a graduate clinician who is participating in a practicum at the UNH Speech-Language-Hearing Center. Clinical assistants will be able to take an active part in the treatment of an individual with a communication delay, disorder or difference. The undergraduate's role in the clinical process will be contingent upon his or her level of training and assigned responsibilities. The supervising clinical faculty is responsible for overseeing the intervention program. Prereq: Seniors who are majoring in CS&D and have a GPA of 3.3 or above. Permission of the instructor is required. Enrollment is limited and varies each semester depending on the number of clients available. 2 cr.

### 738. Linguistics of American Sign Language

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 733. Elementary American Sign Language II Minimum grade of C. 4 cr.

### 739. Introduction to Aphasia in Adults

The course introduces the student to the relationship of brain and language and the resulting language processing problem following cerebral vascular accident (CVA). Differential diagnosis of language symptoms and treatment strategies are discussed and observed in clinical situations. Permission required. 4 cr.

### 740. Treatment of Adults with Acquired Brain Injury

This "hands-on" multidisciplinary 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. 4 cr.

### 775. Advanced Language Acquisition

Careful examination of theoretical perspectives and landmark studies provides the foundation for the exploration of advanced topics in language acquisition. Current approaches to child language research guide students to approach the course context from a scientific perspective. Prereq: COMM 522, permission. 4 cr.

### 777. Speech and Hearing Science

Physical, acoustical, and perceptual correlates of normal speech production and audition. Includes theoretical models with the generation, transmission, detection, and analysis of speech signals. 4 cr.

### 779. Deaf and Hard of Hearing Internship

The 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 533, COMM 536, and COMM 733; permission. Cr/F. 4 cr.



**795. Independent Study**

Individual or group projects involving directed study of an area of communication 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. 1 to 8 cr.

**798. Special Topics**

New or specialized topics not covered in regular course offerings. 1 to 4 cr.

---

## Community & Environmental Planning (CD)

(For program description, see page 91.)

**415. Community Development Perspectives**

Introduces the concepts of community development and issues that are facing contemporary communities as they undergo change. Focus on strengthening communities through a process of citizen participation and decision making which empowers citizens to direct and control change that affects their lives in the local community. Emphasis given to the roles and responsibilities of professional administrators and individual citizens in the dynamic process of community policy formulation, decision making, and administrative implementation. 4 cr.

**508. Applied Community Development**

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: CD 415 or permission. Lab 4 cr.

**614. Fundamentals of Planning**

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; CD 415;/or permission. (Offered every other year.) Writing intensive. 4 cr.

**672. New Hampshire Real Estate**

Course covers timely subjects in national and regional real estate: types of property ownership, easements, financing, contracts, appraisal, brokerage, property listing, commissions, fair housing, and property management. 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. 4 cr.

**710. Seminar**

Seminars arranged to students' needs and offered as demand warrants: in-depth treatment of area, including classic work. May be repeated. 2 to 4 cr.

**720. Community-Based Natural Resource Management: Lessons from the Field**

Guest lectures by extension agents and practitioners from a variety of natural resource-based fields, including: agriculture, forestry, marine resources, planning, and community/economic development. Theoretical and practical aspects of community outreach in the natural resources arena. Prereq: CD 415, EREC 411, NR 401 or permission from instructor. Participation in outreach project required. 3 cr.

**#741. Critical Issues in Solid Waste Management**

Overview of the basic issues in managing society's waste, focusing on municipal solid waste and sewage sludge or "biosolids." Issues such as recycling, source reduction, composting, incineration, land spreading, and land filling examined from different disciplines. Five basic modules: agronomy, economics, engineering and hydrology, planning and policy, and social/cultural/ethical issues. Guest speakers from state government, private sector firms, nonprofit and environmental groups, and the New Hampshire legislature featured selectively. Field trips to waste management sites, such as landfills, recycling centers, and composting operations. Prereq: EREC 411 or equivalent; BIOL 412 or equivalent;/or permission. (Also offered as RAM 841.) 2 cr.

**777. Topics in Community Planning**

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: CD 614 or permission. (Also listed as RAM 877.) (Offered every other year.) Writing intensive. 4 cr.

**793. Community Administration Internship**

Fieldwork in governmental agency or a local government unit for on-the-job skill development. Normally supervised by a qualified administrator in the organization with frequent consultation with a faculty sponsor. A written report is required. Internship may be part- or full-time with course credits assigned accordingly. Prereq: permission. Cr/F. 1 to 8 cr.

**794. Community Planning Internship**

Fieldwork in a public planning office or agency for on-the-job skill development. Normally supervised by a qualified planner in the planning organization with frequent consultation with a faculty sponsor. A written report is required. Internship may be part- or full-time with course credits assigned accordingly. Prereq: permission. Cr/F. 1 to 8 cr.

**795/795W, 796/796W. Investigations**

Special assignments in readings, investigations, or field problems, or teaching experience. May be repeated. Prereq: permission. 2 to 4 cr. 795W and 796W are writing intensive.

**797. Community Administration and Planning Seminar**

Selected topics in community administration and in community and regional planning. Focuses on current issues of major importance that are not usually covered in regular community administration to a maximum of 8 credits. Prereq: permission. Special fee. 1 to 4 cr.

---

## Computer Science (CS)

(For program description, see page 59.)

**400. Exploring Computer Science**

A gentle introduction to computer science, focusing on the Internet. Students are introduced to Web design, HTML authoring, and JavaScript programming. In addition, the field of computer science is surveyed. Ideal for students who want to explore what computer science is all about. Laboratory sessions provide hands-on experience. No previous experience with computers is required. 2 cr.

**401/401H. Computer Applications**

Use of computers to manage and analyze information across a variety of settings and disciplines. Introduces major categories of software for large and small computer systems and discusses the computer's role in today's society. No prior computer experience required. Significant hands-on work in campus clusters required. Not open to students who have completed DCE 491 or 492. Not open to CS majors. CEPS students should check with their major department for approval. 4 cr.

**402. Survey of Computer Science**

Explores the core concepts of computer science, including computer architecture, operating systems, relationship between hardware and software, communications and networks, and data representation. Programming languages and concepts, algorithm analysis, database systems, graphics and ethics will also be discussed. Not open to CS majors. 4 cr.

**403. Online Network Exploration**

Introductory course covering basic topics relating to the Internet. Subjects discussed include e-mail, newsgroups, mailing lists, file transfer, telnet, the World Wide Web, Web browsers, search engines, and hypertext markup language (HTML). A large portion of the course focuses on Web publishing. Security and privacy issues, and commerce and legal issues are also discussed. Students are expected to have no previous experience with HTML. They will acquire new skills as well as broad understanding of the technical possibilities of living and working in an online society and its implications. No credit if credit earned for CIS 405. 4 cr.

**405. Introduction to Applications Programming with Visual Basic**

Introduces the concepts and techniques of microcomputer windows programming. Students use the Visual Basic language to develop modular, event-driven programs/applications. Topics include: forms, properties, controls, variables, decision structures, and built-in and user-defined functions and subroutines. CEPS students should check with their major department for approval. Not open to CS majors. 4 cr.

**407. Introduction to Computer Programming with Java**

Introduces the concepts and techniques of computer programming, including basic data structures such as lists, stacks, and queues. The topics include control structures, file manipulation, recursion, and an introduction to graphic user interface design. Introduces object-oriented design and analysis, including class definition and use, inheritance, and polymorphism. Good programming style is stressed. Significant out-of-class programming required. Not open to students who have had CS 410, 412, 415, or the equivalent. 4 cr.



**410. Introduction to Scientific Programming**

Introduces the concepts and techniques of computer programming. Particular emphasis on computer programming as a problem-solving technique in science and engineering applications. The C language 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. Pre- or Coreq: MATH 425. 4 cr.

**415. Introduction to Computer Science I**

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. 4 cr.

**416. Introduction to Computer Science II**

See description for CS 415. 4 cr.

**502. Intermediate Web Design**

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. 4 cr.

**503. Introduction to Web Programming**

Introduces the concepts and techniques of client-side development for the World Wide Web. Students will be taught the basics of programming and how to apply that knowledge to enhance Web pages. Topics include variables, control structures, functions, events, objects, user feedback, form handling, and the Document Object Model. Significant out-of-class programming required. Prereq: CS 40 4 cr.

**504. Intermediate Web Development**

An intermediate-level examination of the theory and practice of developing applications for the World Wide Web. Students will learn practical techniques for designing and implementing Web applications, with a particular emphasis on server-side processing and data-driven Web sites. Working knowledge of XHTML, CSS, and some programming language is required. Prereq: CS 403 and programming course. 4 cr.

**505. Database Programming**

Introduces database programming in the micro-computer 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. 4 cr.

**506. Intermediate Applications Programming with Visual Basic**

Introduction to advanced Visual Basic data structures, focusing on the language's object oriented features. Topics include the creation of programmer-defined classes and objects, collections, user controls, exception handling, regular expressions, database programming, and Web forms. Prereq: CS 405. 4 cr.

**509. Network/System Administration**

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: CS 402 and a programming course, or permission of the instructor. 4 cr.

**515. Data Structures**

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. 4 cr.

**516. Introduction to Software Design and Development**

Principles of problem analysis and solution design applied to the development cycle of a software system (i.e., from system requirements specifications to design, implementation, and system test). Experience in understanding and debugging existing software systems. Prereq: CS 515. 4 cr.

**520. Assembly Language Programming and Machine Organization**

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 515. 4 cr.

**595. Computer Science Seminar**

Students read literature about computer sciences, make oral presentations about the literature to other members of the class, and discuss the issues raised in class. The literature includes both technical and non-technical topics about computer science, including social issues related to computing and ethics in the computer science profession. Prereq: CS 516. 2 cr.

**600. Internship**

Provides opportunity to apply academic experience in settings associated with future professional employment. A written proposal for the internship must be approved by the department chair. 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 to the student during the internship. A mid-semester report and a final report are required. Prereq: permission. Cr/F. 1 cr.

**620. Operating System Fundamentals**

Introduces operating system concepts and design. Job, process, and resource management; scheduling; file systems; interprocess communication. Prereq: CS 515 and CS 520 or ECE 612. 4 cr.

**645. Introduction to Formal Specification and Verification**

Mathematical reasoning can be applied to study the behavior of software systems, an approach that is particularly relevant to critical systems. This can be achieved through the description of those systems along with their properties in formally-defined, logically-based languages. Introduces techniques relevant to the application of formal specification and verification methods, including symbolic logic and proof techniques related to program correctness. Prereq: CS 516, MATH 531, MATH 532. 4 cr.

**659. Introduction to the Theory of Computation**

Review of sets, relations, and languages. Induction and diagonalization. Finite automata, context-free languages, pushdown automata. Basic complexity theory. Prereq: MATH 531 and 532; CS 515. 4 cr.

**671. Programming Language Concepts and Features**

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 nonimperative 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 516. 4 cr.

**696/696W. Independent Study**

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. 1 to 6 cr. 696W is writing intensive.

**712. Compiler Design**

Formal languages and formal techniques for syntax analysis and parsing; organization of the compiler and its data structures; problems presented by error recovery and code generation. Classical top-down and bottom-up techniques currently in widespread use, general discussion of LL(k) and LR(k) parsers; automatic methods of compiler generation and compiler compilers. Students required to define a simple, nontrivial programming language and to design and implement its compiler. Prereq: CS 520 and CS 671. 4 cr.

**719/719W. Object-Oriented Methodology**

Object-oriented system design and programming. Languages for object-oriented programming. Design intensive. Prereq: CS 671 or permission. 4 cr. 719W is writing intensive.

**720. Operating System Programming**

Detailed discussion of operating system concepts and features. Practical examples and exercises that utilize advanced operating system features, including interprocess 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 516 and CS 620. 4 cr.

**721. Operating System Kernel Design**

Design and implementation of an operating system kernel, using LINUX as an example. Detailed discussion of the data structures and algorithms used in the kernel to handle interrupts, schedule processes, manage memory, access files, deal with network protocols, and perform device-level I/O. Course is project-oriented, and requires the student to make modifications and additions to the LINUX kernel. Prereq: CS 720 or permission. 4 cr.

**724. Distributed Operating Systems**

Fundamental concepts, algorithms, and design principles that form the basis of distributed and multiprocessor operating systems. Architectural overview, design, and implementation methodology of several real distributed systems. Prereq: CS 516 and CS 620. 4 cr.

**725. Computer Networks**

Introduces local, metropolitan, and wide area networks using the standard OSI Reference Model as a framework. Introduces the Internet protocol suite and network tools and programming. Discusses various networking technologies. Prereq: CS 516 and CS 620. 4 cr.



**730/730W. Introduction to Artificial Intelligence**

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. 4 cr. 730W is writing intensive.

**760/760W. Introduction to Human-Computer Interaction**

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 516 and CS 620. 4 cr. 760W is writing intensive.

**765/765W. Introduction to Computational Linguistics**

Introduces computational analysis of natural language with a focus on semantic representations and the resolution of ambiguity. Provides an elementary working knowledge of linguistic and artificial intelligence analysis methods as motivated by examples of potential input texts. Topics include parsing, formal grammars, representation of knowledge and memory, inference, and interpretation of nonliteral language. Prereq: elementary knowledge of LISP or instructor's permission. 4 cr. 765W is writing intensive.

**767/767W. Interactive Data Visualization**

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. 4 cr. 767W is writing intensive.

**770/770W. Computer Graphics**

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. 4 cr. 770W is writing intensive.

**775. Database Systems**

Database analysis, design, and implementation. Focus on the relational model. Data description and manipulation languages, schema design and normalization, file and index organizations, data integrity and reliability. Usage of selected DBMS. Prereq: CS 671 and MATH 531. 4 cr.

**780. Topics**

Material not normally covered in regular course offerings. May be repeated for credit. 4 cr.

**Decision Sciences (DS)**

(For program description, see page 107.)

**#630. Quantitative Methods**

Introduces quantitative methods and how these methods serve as input to the decision-making process. The topics covered include linear programming problem foundation and solution, sensitivity analysis, network models, integer programming, goal programming, and forecasting. Prereq: WSBE majors only; all Group A courses and junior standing. 4 cr.

**#650. Operations Management**

Introduces planning and analysis of operational problems in the manufacturing and service sectors; strategy standards, capacity, inventory, scheduling, and planning and control systems. Prereq: WSBE majors only; all Group A courses and junior standing. 4 cr.

**698. Topics**

Special topics; may be repeated. Prereq: permission. 4 cr.

**741. Private Equity/Venture Capital**

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 601 and senior standing. 4 cr.

**742. Internship in Entrepreneurial and Management Practice**

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. (Also listed as MGT 742.) 4 cr.

**754. Resource Management**

Analysis and development of resource management planning and control systems. Topics include inventory management, material requirements planning, and capacity management. Prereq: ADMN 640 or permission. 4 cr.

**#755. Manufacturing Management**

Analysis and development of manufacturing management planning and control systems. Topics include production planning, master scheduling, distribution, and production activity control. Prereq: ADMN 640 or permission. 4 cr.

**773. Managing Information Across Enterprise**

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 multi-user, client/server environments. Prereq: senior standing. 4 cr.

**774. E-Business Strategies and Solutions**

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: senior standing. 4 cr.

**775. Corporate Project Experience**

Provides real-life experience in organizations. Work in groups on information systems 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. 4 cr.

**780. Systems Analysis and Design**

Gain appreciation and knowledge expected of a systems analyst; perform cost/benefit analysis of new systems, comparison of alternative means of system acquisition, such as commercial off-the-shelf software; gain experience in structured analysis techniques; understand important issues of project management. Prereq: senior standing. 4 cr.

**798. Topics**

Special topics; may be repeated. Prereq: permission. 4 cr.

**Earth Sciences (ESCI)**

(For program description, see page 60.)

**400. Freshman Field Seminar**

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. Cr/F. 1 cr.

**401. Principles of Geology**

The Earth, earth materials (rocks and minerals), landforms, and the processes that form them (volcanism, earthquakes, glaciation, etc.). Field trips. Special fee. Lab. Students may not receive credit for both ESCI 401 and ESCI 409. 4 cr.

**402. Earth History**

Introduces basic geological principles. Uses case studies to illustrate scientific methods used in reconstructing Earth'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, Pleistocene glaciation, and human origins. Special fee. Lab. 4 cr.

**405. Global Environmental Change**

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. Lab. 4 cr.

**409. Environmental Geology**

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. 4 cr.

**420. Our Solar System**

Exploration of the solar system with emphasis on the physical and chemical processes relevant to planetary formation and evolution. 4 cr.



**501. Introduction to Oceanography**

Physical, chemical, geological, and biological processes in the sea. Special fee. Lab. 4 cr.

**512. Principles of Mineralogy**

Natural history of the solid state; introductory crystallography, diffraction, and structure of minerals. Silicate minerals; their chemical and physical properties, origins, occurrences, and uses. Nonsilicates. Prereq: CHEM 401, 403, or 405. Field trips. Special fee. Lab. 4 cr.

**514. Introduction to Climate**

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 (Milankovich) cycles, deep ocean circulation, and biological feedback. How past climate is measured. Prereq: one introductory course in Earth Sciences or permission. 3 cr.

**530. Field Methods**

Standard geological field-mapping techniques, including pace and compass and plane table and alidade; bedrock and surficial mapping on topographic and aerial photographic bases in local areas; one 3- to 4-day exercise in a selected area of the Northern Appalachian Mountains. Prereq: ESCI 401 or 409; 402. Special fee. Writing intensive. 4 cr.

**534. Techniques in Environmental Sciences**

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. 2 cr.

**561. Surficial Processes**

Processes leading to the development of landforms, chemical and mechanical weathering of earth-surface materials and erosion and transport in colluvial, fluvial, glacial, and coastal systems. Field trips. Prereq: ESCI 401 or permission. Special fee. Lab. 4 cr.

**595, 596. Introductory Investigations**

Special topics by means of lectures, conferences, assigned readings, and/or field or laboratory work in the areas of geology, hydrology, or oceanography. 1 to 4 cr.

**614. Optical Mineralogy and Petrography**

Description and classification of igneous, sedimentary, and metamorphic rocks in hand specimen and thin section; optical mineralogy. Prereq: ESCI 512. Special fee. Lab. 4 cr.

**631. Structural Geology**

Structural units of the Earth's crust and mechanics of their formation. Prereq: ESCI 530. Special fee. Lab and fieldwork. 4 cr.

**652. Paleontology**

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. 4 cr.

**654. Fate and Transport in the Environment**

Introduces the basic processes controlling the migration and transformation of chemicals in surface water, groundwater, and the atmosphere; basic models of advection, dispersion, retardation, and attenuation. Prereq: CHEM 404, MATH 426. 4 cr.

**658. Principles of Earth, Ocean, and Atmospheric Dynamics**

Introduces the basic elements of kinematics and dynamics, relevant to processes important in earth, ocean, and atmospheric sciences. Reviews particle dynamics and introduces continuum mechanics of the solid earth, hydrologic, and environmental fluid systems. Includes biweekly laboratories and homework problem recitation sessions. Prereq: MATH 426, PHYS 407. 4 cr.

**#703. Fluvial Hydrology**

Mechanics of natural open-channel flows: forces, the continuity and energy principles, velocity distributions, flow resistance, fluvial erosion and sediment transport, channel form, computation of flow profiles, weirs, hydraulic jumps, and stream-flow routing. Lab and field exercises. Prereq: one year each of calculus and physics. Special fee. 4 cr.

**705. Principles of Hydrology**

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: MATH 425 (or MATH 424) and PHYS 402. Special fee. Lab. Writing intensive. 4 cr.

**710. Groundwater Hydrology**

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 chemical quality. Laboratory exercises involve use of fluid, electrical, and digital computer models to illustrate key concepts. Prereq: ESCI 705 or permission. Special fee. Lab. 4 cr.

**715. Global Atmospheric Chemistry**

Introduction to the principles of atmospheric chemistry and their relationship to biogeochemical cycles, climate, and global change. Focus is on understanding the basic physical and chemical processes that determine the trace gas distribution in the global troposphere. An introduction to atmospheric vertical structure and global circulation dynamics provides the foundation. Then chemical cycles of important C, S, N molecules are examined, including their possible perturbation by human activities. Basic photochemical processes are outlined, particularly with respect to reactive nitrogen, hydrocarbons, and the production/destruction of ozone. Prereq: one year chemistry. 3 cr.

**716. Atmospheric Aerosol and Precipitation Chemistry**

Describes and examines the processes determining the chemical and physical characteristics of atmospheric aerosol particles and precipitation. Important foci include the role of aerosol particles in the long-range transport and deposition of geochemical materials, optical properties of these particles and their impact on the global radiative balance, cloud microphysical processes relevant to both radiative effects and precipitation scavenging, and heterogeneous reactions at the solid-liquid, solid-gas, and liquid-gas interfaces in the atmosphere. Major segments of the course are devoted to the removal of gases and particles from the atmosphere by wet and dry deposition processes. Focuses on processes active in the troposphere, but important differences between the troposphere and stratosphere, radiative effects of stratospheric aerosol particles, and exchange between the troposphere and stratosphere are addressed. Prereq: one year college chemistry or permission. 3 cr.

**717. Macro-scale Hydrology I**

Focus on the numerous roles of water in the Earth system. Topics include the global water cycle, impacts of the greenhouse effect and other anthropogenic disturbances, hydrologic modeling, soil-vegetation-atmosphere transfer schemes, water quality, GIS and water-related remote sensing tools, global freshwater resources. Course is organized around formal lectures, in-class discussion, student presentations, class projects. Prereq: ESCI 705 or permission. (Offered alternate years.) 4 cr.

**718. Macro-Scale Hydrology II**

A continuation of ESCI 717. Students and instructor jointly select a research topic in macro-scale hydrology to be analyzed in-depth during the course of the semester. A primary goal is the preparation of a manuscript for publication in a refereed scientific journal. Extensive library research, reading of recent and relevant scientific literature, technical analysis and writing. Prereq: ESCI 717. (Offered alternate years.) 4 cr.

**#725. Igneous Petrology**

The evolution of igneous rocks as determined from field, petrographic, chemical, experimental, and theoretical studies. Application of thermodynamics to igneous petrogenesis. Physical properties of magmas. Prereq: mineralogy; petrography; adequate background in calculus, chemistry, and physics. Field trips. Special fee. Lab. (Offered in alternate years with ESCI 726.) Writing intensive. 4 cr.

**726. Metamorphic Petrology**

The metamorphism of pelitic, mafic, and calc silicate rocks as determined from field, petrographic, mineral chemistry, experimental, and theoretical studies. Closed- and open-system reactions, multisystems, reaction space. Calculation of pressure-temperature time paths. Prereq: mineralogy; petrography; adequate background in calculus, chemistry, and physics. Field trips. Special fee. Lab. (Offered in alternate years with ESCI 725.) Writing intensive. 4 cr.

**732. Regional Geology and Advanced Structure**

Readings, discussion, and field/lab exercises in the tectonic analysis of mountain systems. Emphasis on the northern Appalachian Orogen. Application of modern structural analysis. Field excursion. Prereq: ESCI 631 or permission. Special fee. 4 cr.

**734. Applied Geophysics**

Gravity, magnetic, seismic, and electrical methods of investigating subsurface geology. Fieldwork and use of computers in data analysis. Prereq: ESCI 401; one year of calculus; one year of college physics; or permission. Special fee. Lab. Writing intensive. 4 cr.

**741. Geochemistry**

Thermodynamics applied to geological processes; geochemical differentiation of the earth; the principles and processes that control the distribution and migration of elements in geological environments; stable and radiogenic isotopes in geologic processes. Prereq: ESCI 512 or permission. Writing intensive. 4 cr.

**745. Isotope Geochemistry**

Discussion of element abundance and isotope formation; radioactive decay as applied to geologic systems, detailed investigation of K-Ar, Rb-Sr, U-Pb, and Sm-Nd systems, and geologic-oceanographic applications of stable isotopes. Lab involves mass spectrometric and chemical techniques of isotopic analysis. Course includes the completion of a laboratory project. Prereq: ESCI 741; or permission. Special fee. Lab. 4 cr.



**746. Analytical Geochemistry**

Theory, instrumentation, and applications of analytical methods in geochemistry. Prereq: one year of chemistry or geochemistry;/or permission. Special fee. Lab. 4 cr.

**747. Aqueous Geochemistry**

Processes that determine the geochemical characteristics of water bodies. Emphasis on the geochemical continuum of terrestrial water and its geochemical evolution. Topics include the influence of cyclic salts, the nature of weathering reactions, the  $\text{CO}_2$ - $\text{CaCO}_3$  system, the formation and dissolution of salts and authigenic mineral formulation. Prereq: one year of chemistry or geochemistry;/or permission. Lab. 4 cr.

**750. Biological Oceanography**

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 ZOOL 750.) Special fee. Lab. (Not offered every year.) 4 cr.

**752. Chemical Oceanography**

Water structure, chemical composition and equilibrium models, gas exchange, biological effects on chemistry, trace metals, and analytical methods. Prereq: permission. Optional 1 credit lab (see ESCI 752L). 3 cr.

**752L. Chemical Oceanography Lab**

Optional lab for ESCI 752. Includes short cruise aboard R/V Gulf Challenger. Coreq: ESCI 752. Special fee. 1 cr.

**754. Sedimentology**

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 402 or 501, and 512; or permission. Special fee. Lab and field trips. 4 cr.

**758. Introductory Physical Oceanography**

Descriptive treatment of atmosphere-ocean interaction; general wind-driven and thermo-haline ocean circulation; waves and tides; continental shelf and nearshore processes; instrumentation and methods used in ocean research. Simplified conceptual models demonstrate the important principles. Prereq: college physics; ESCI 501;/or permission 3 cr.

**759. Geological Oceanography**

Major geological features and processes of the ocean floor; geological and geophysical methods; plate tectonics. Prereq: two semesters each of calculus, physics, and geology;/or permission. Lab. Writing intensive. 4 cr.

**762. Glacial Geology**

Survey of glacial processes and glacier dynamics with emphasis on understanding the physics of glaciers, glacial geologic processes, and interpretation of glacial deposits and landscapes. The course includes discussion of the role of glaciers and ice sheets in the Earth's climate system, analysis of glaciological and glacial-geologic data, short field exercises, and one mandatory field trip that explores the glacial landscapes of New England. Prereq: ESCI 561 or permission. Special fee. Lab. Writing intensive. 4 cr.

**764. Data Analysis in Earth System Science**

An overview of paleoclimate indicators for the last one million years in the context of global teleconnections (atmosphere-lithosphere-hydrosphere-cryosphere) and mathematical tools developed to interpret and link the different records of climate change. Prereq: one year calculus, one year chemistry, basic statistics;/or permission. 4 cr.

**765. Paleoclimatology**

Review of past changes in Earth's climate system with emphasis on the nature and causes of climate variability during the Quaternary period (the last ~1.8 million years, a time interval dominated by cycles of global glaciation). Includes evidence for climate change, techniques used to reconstruct paleoclimate records, and proposed mechanisms of global climate change. Course incorporates discussion of recent scientific papers from the primary literature. Writing intensive. 3 cr.

**766. Volcanology**

Reviews the present state of knowledge about volcanoes. Lecture topics include the generation and properties of magma, tectonic setting of volcanism, eruption styles, volcanic landforms and products, monitoring of active volcanoes, volcanic hazards and mitigation, and volcanism on other planets. Labs involve hand-sample observation, topographic map interpretation, analysis of geophysical-volcanological data, and two short field trips. Lectures and labs are supplemented by slides and videos. Because volcanology is a rapidly developing field of active research, the course will incorporate discussions of emerging scientific papers from the primary literature. Class participation will involve student-led summaries of the Weekly Volcanic Activity Report from the Global Volcanism Program/U.S. Geological Survey. Prereq: one year of calculus and one ESCI course or permission. Special fee. 4 cr.

**770. Fundamentals of Ocean Mapping**

Introduces the principles and practice of hydrography and ocean mapping. Methods for the measurement and definition of the configuration of the bottoms and adjacent land areas of oceans, lakes, rivers, estuaries, harbors and other water areas, and the tides or water levels and currents that occur in those bodies of water. Prereq: PHYS 407-408. (Also listed as OE 770.) Lab. 4 cr.

**771. Geodesy and Positioning for Ocean Mapping**

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.) 3 cr.

**795, 796. Topics**

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. 1 to 4 cr.

**797. Colloquium**

Presentation of recent research in the earth sciences by guest speakers and department faculty. May be taken four times. Cr/F.

**799. Senior Thesis**

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. Two-semester sequence; IA (continuous course) grade given at end of first semester. May be repeated to a maximum of 4 credits. Cr/F. 1 to 4 cr.

---

**Economics (ECON)**

(For program description, see page 105.)

**401/401H. Principles of Economics (Macro)**

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. No credit for students who have had ECN 411. 4 cr.

**402/402H. Principles of Economics (Micro)**

Functions of the 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. Not open to students who have had EREC 411. No credit for students who have had ECN 412. 4 cr.

**515. Economic History of the United States**

U.S. economy from colonial times to the present. Models of economic development applied to the U.S. How social, political, technological, and cultural factors shape economy; development and influence of economic institutions. Prereq: ECON 401 or 402;/or permission. 4 cr.

**605/605W. Intermediate Microeconomic Analysis**

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. 4 cr. 605W is writing intensive.

**607. Ecological Economics**

Analysis of efficiency, equity, and growth issues in the economy and their links to environmental quality and natural resources availability. Case studies of global warming, world hunger, etc. Prereq: ECON 401 and 402. Writing intensive. 4 cr.

**611. Intermediate Macroeconomic Analysis**

Macroeconomic measurement, theory, and public policy determination. Prereq: ECON 401 and 402. 4 cr.

**615. History of Economic Thought**

Examination and critical appraisal of the work of major economists, including the work of contemporary economists, and major schools of economists, particularly with reference to the applicability of their theories to current economic problems. Prereq: ECON 401 and 402. Writing intensive. 4 cr.

**635. Money and Banking**

Study of interest rates, financial markets, financial institutions, monetary institutions, the supply of money, the demand for money, monetary theory, and monetary policy. Prereq: ECON 401 and 402. 4 cr.

**641. Public Economics**

Alternative prescriptions and explanations concerning the role of government in contemporary market economies. General principles of public expenditure analysis. Selected case studies of public spending programs, e.g., welfare, defense, education. Analysis of various federal, state, and local taxes. Prereq: ECON 401; 605;/or permission. 4 cr.

**642. Health Economics**

Theoretical and empirical analysis of the U.S. health care delivery sector. Topics include health insurance markets and their effects on patient demand, uninsured populations and their access to health care services, breakdowns in the principal/agent relationship between patient and providers, competition in the medical sector, technology, pharmaceuticals and the scope and effect of government involvement in the delivery of health care. Prereq: ECON 402. (Also listed as HMP 642.) 4 cr.

**645. International Economics**

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, macroeconomic adjustment mechanisms and trade policy, among others. Prereq: ECON 401 and 402. 4 cr.

**651. Governmental Regulation of Business**

Mergers, competition, monopoly, and the regulated industries. Prereq: ECON 402. 4 cr.

**653. Law and Economics**

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. 4 cr.

**656. Labor Economics**

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. 4 cr.

**658. Organizational Economics and Architecture**

Focuses on issues surrounding the need for coordination in an economy based on the division of labor. The role and function of the market, firm, and other coordinating mechanisms such as the Internet are analyzed in order to understand the role they play in facilitating economic activity. Prereq: ECON 402. Writing intensive. 4 cr.

**668. Economic Development**

Theories of development/underdevelopment. Trade, growth, and self-reliance. The role of agriculture (land tenure, food crisis, Green Revolution). World Bank policy, industrialization strategies. Role of the state. Prereq: ECON 401; ECON 402;/or permission. Writing intensive. 4 cr.

**669. Women and Economic Development**

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. Prereq: permission. Writing intensive. 4 cr.

**680. Economics of Electronic Commerce**

Introduces the new opportunities and challenges posed by the transformation of the Internet into an electronic marketplace. Focus on electronic commerce: the creation and exchange of value between economic agents in an open digital marketplace. 4 cr.

**685, 686. Study Abroad**

Open to students studying abroad in the discipline as approved by the economics program director. Cr/F. 1 to 16 cr.

**695/695W. Independent Study**

Individual research projects that are student designed. Initial sponsorship of an economics faculty member must be obtained, and approval of WSBE adviser and dean. For juniors and seniors in high standing. Up to 4 credits may be used as a major elective. 2 to 12 cr. 695W is writing intensive.

**696. Supervised Student Teaching Experience**

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. 1 to 8 cr.

**698. Topics**

Special topics. May be repeated. Prereq: permission. Writing intensive. 4 cr.

**707. Economic Growth and Environmental Quality**

Analysis of the interrelationships among economic growth, technological change, population increase, natural resource use, and environmental quality. Application of alternative theoretical approaches drawn from the social and natural sciences. Focus on specific environmental problems, e.g., affluence and waste disposal problems, and loss of biodiversity. Prereq: ECON 605; 611;/or permission. 4 cr.

**725. Mathematical Economics**

Principal mathematical techniques and their application in economics. Topics covered: matrix algebra, derivatives, unconstrained and constrained optimization, linear and nonlinear programming, game theory, elements of integral calculus. Prereq: permission. 4 cr.

**726. Introduction to Econometrics**

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: DS 420 or equivalent. 4 cr.

**736. Seminar in Monetary Theory and Policy**

Contemporary developments in monetary theory and the evaluation of policy measures. Prereq: ECON 635. Writing intensive. 4 cr.

**741. Introduction to Public Policy**

Explores the basic issues of public sector economics and emphasizes the use of economic theory in predicting the effects of public policy on individual behavior and the overall economy. Specific topics include market failures, collective decision making, cost/benefit analysis, and an evaluation of tax and transfer programs. Writing intensive. 4 cr.

**746. International Finance**

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. 4 cr.

**747. Multinational Enterprises**

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. 4 cr.

**#756. Labor Economics**

Recent developments in labor market analysis and public policies related to contemporary labor issues. Labor supply, the structure and stratification of labor markets, economic discrimination, unemployment and poverty, inflation, and wage-price controls. Prereq: ECON 656. 4 cr.

**768. Seminar in Economic Development**

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. Prereq: permission. 4 cr.

**775. Applied Research Skills for Economists**

Capstone course for students enrolled in B.S. in economics. Uses analytical and problem-solving skills plus data-analysis and computer skills from earlier classes to study and analyze the U.S. economy, sector by sector. Topics will include time-series and simultaneous-equations models. Research paper combines theory and data-analysis skills. Prereq: ECON 605, 611, 726; MATH 424A or equivalent. Writing intensive. 4 cr.

**795. Internship**

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. 1 to 16 cr.

**798. Economic Problems**

Special topics; may be repeated. Prereq: permission of adviser and instructor. Writing intensive. 2 or 4 cr.

**799. Honors Thesis**

Supervised research leading to the completion of an honors thesis; required for graduation from the honors program in economics. Prereq: permission of director of undergraduate programs and department chair. Writing intensive. 4 to 8 cr.



## Education (EDUC)

(For program description, see page 32.)

### 440. Concepts of Career Exploration

Examines the four major roles of people (family members, students, workers, and users of leisure time) and how these roles apply to 1) achieving a balanced life, 2) exploring individual areas for improvement, 3) relating present and future classes to entering the world of work, and 4) developing flexibility for changes that may occur in the future. Special fee. 4 cr.

### 444. Learning to Learn

The central issue in this seminar is the nature of learning. What does it mean to learn? To be a learner? What role does learning play in students' own lives. Both in and out of school? Students consider the roles of the environment, the teacher, and the learner in thinking about what it means to learn. Through readings, discussions, classroom activities, investigations and observations students develop their own beliefs and understandings about what it means to learn. Students in the course explore specific topics related to learning, including the nature of intelligence and motivation, and the roles of attention, memory and context in learning. They consider both formal and informal learning environments as well as structures that support or impede learning. Students work together in groups to solve problems and present information to others. They use reflection as a tool for learning and increase their understanding of themselves as learners. Writing intensive. 4 cr.

### 444A. Reflective Learning: Creativity, Motivation and Learning Style

Course addresses the roles of the environment, the teacher, and the learner in thinking about what it means to learn. Specific topics related to learning, including the nature of creativity, intelligence and motivation, and the roles of attention, memory, culture and context in learning are covered. Students work reflectively as well as together in groups to solve problems, present information to each other, and address each other's questions. Writing intensive. 4 cr.

### 500. Exploring Teaching

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. Prereq: permission. Cr/F. 4 cr.

### 506. Service Learning Experiences in Literacy

Supports students engaged in school-based literacy tutoring as service learning experiences. Explores tutoring methods in literacy, community/school service, and contemporary issues in education. May be repeated to six credits, one credit per semester. Prereq: permission required. Cr/F. 1 cr.

### 507. Mentoring Adolescents

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. 2 cr.

### 630. Development of Food and Fiber in Third World Countries

The world food situation and the role of agriculture and education in development of third-world agrarian systems. Identifies constraints on food production, technology transfer, advantages and disadvantages of different agriculture systems, agricultural marketing, and career opportunities in international agriculture. 4 cr.

### 694. Courses in Supervised Teaching

Supervised Teaching of Music. Cr/F. Supervised Teaching of Adult and Occupational Education. Cr/F. Supervised Teaching of Mathematics. Cr/F. 8 cr.

### 694D. Courses in Supervised Teaching

Supervised teaching of Kinesiology. Cr/F. 4 cr.

### 700. Educational Structure and Change

Organization, structure, and function of American schools; historical, political, social and cross-cultural perspectives; nature and processes of change in education. A) Educational Structure and Change; B) Education in America: Backgrounds, Structure, and Function; C) Governance of American Schools; D) School and Cultural Change; E) Teacher and Cultural Change; F) Social Perspectives of Conflict in the Schools; G) Nature and Processes of Change in Education; H) What is an Elementary School?; I) Schooling for the Early Adolescent; J) Curriculum Structure and Change; K) Stress and Educational Organizations. Candidates teacher licensure must take either 4-credit course 700A, or 2 credits each of 700F and 700C. Prereq: for teacher licensure: EDUC 500 and junior status. Prereq: for students not seeking teacher licensure: instructor permission. Writing intensive. 2 or 4 cr.

### 701. Human Development and Learning: Educational Psychology

Child development through adolescence, learning theory, cognitive psychology, research in teaching and teacher effectiveness, cross-cultural variability, and evaluation—all applied to problems of classroom and individual teaching and learning. A) Human Development and Learning: Educational Psychology; B) Human Development: Educational Psychology; C) Human Learning: Educational Psychology; D) Developmental Basis of Learning and Emotional Problems; E) Learning Theory, Modification of Behavior, and Classroom Management; F) Cognitive and Moral Development; G) Evaluating Classroom Learning; H) Deliberate Psychological Education; I) Sex Role Learning and School Achievement; J) The Development of Thinking. Each semester 2-credit and 4-credit courses are offered. 2-credit courses emphasize either development or learning. Candidates for teacher licensure are required to have the 4-credit course (701A) or 2 credits each of 701B and 701C. Prerequisite for teacher licensure: EDUC 500 and junior status. Prerequisite for students not seeking teacher licensure: instructor permission and junior status. 701A has a special fee when taught in Manchester. Writing intensive. 2 or 4 cr.

### 703. Alternative Teaching Models

Basic teaching models, techniques of implementation, and relationships to curricula. A) Alternative Teaching Models; B) Curriculum Planning for Teachers; C) Alternative Strategies for Maintaining Classroom Control; D) Social Studies Methods for Middle and High School Teachers; F) Teaching Elementary School Science; G) Language Arts for Elementary Teachers; H) Experiential Curriculum; I) Children with Special Needs; Teaching

Strategies for the Classroom Teacher; K) Writing across the Curriculum; L) Learning and LOGO; M) Teaching Elementary School Social Studies. 2-credit and 4-credit courses are offered. Teacher education students should be aware of the specific course(s) required for their licensure area. EDUC 703F and M are required for elementary education candidates. EDUC 703D is required for social studies candidates. EDUC 791 is required for science candidates. For all other secondary education candidates, the appropriate methods course in the department of major is required. See the Schoolhouse Book for specific course listings. Prerequisite for teacher licensure: EDUC 500 and junior status. Prerequisite for students not seeking teacher licensure: instructor permission and junior status. 703F has a special fee when taught in Manchester. 2 or 4 cr.

### 705. Alternative Perspectives on the Nature of Education

Students formulate, develop, and evaluate their own educational principles, standards, and priorities. Alternative philosophies of education; contemporary issues. A) Contemporary Educational Perspectives; B) Controversial and Ethical Issues in Education; D) Concepts of Teaching: Differing Views; E) Curriculum Theory and Development; F) Readings on Educational Perspectives; G) Philosophy of Education; I) Education as a Form of Social Control; K) Schooling and the Rights of Children; L) Education, Inequality, and the Meritocracy; M) Readings and Philosophies of Outdoor Education; N) Alternative Perspectives on the Nature of Education; O) Classrooms: The Social Context; P) Teaching: The Social Context; Q) School and Society. 2-credit and 4-credit courses are offered. Candidates for teacher licensure must choose either 4-credit course 705A, 705B, or 705Q. Prerequisite for teacher licensure: EDUC 500 and junior status. Prerequisite for students not seeking teacher licensure: instructor permission and junior status. Writing intensive. 2 or 4 cr.

### 706. Introduction to Reading in the Elementary School

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. Prereq: EDUC 500 and junior status. 4 cr.

### 707. Teaching Reading through the Content Areas

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. 2 cr.

### 710A. Concepts of Adult and Occupational Education

Development of occupational education in the U.S.; socio-economic influences responsible for its establishment; federal and state requirements for secondary and postsecondary schools. Coordination of programs with general education and vocational fields. Focus on selected concepts relevant to adult education. Special attention on the adult as a learner, volunteer management, evaluation and accountability, experiential learning, and adult education. Required of all degree candidates in AOE concentrations. Writing intensive. 4 cr.

**710B. Microcommunications**

Organization, presentation, and evaluation of micro-lessons in a variety of educational settings. Preliminary experience and practice in communications. Variables of communicating under controlled conditions with videotaping for immediate feedback. Required for majors and minors. Special fee. Writing intensive. 4 cr.

**710C. Youth Organizations**

Organizational development (advising youth organizations, teaching parliamentary procedure, developing programs and activities, leadership). FFA/SAEP (Future Farmers of America/Supervised Agricultural Experience Programs, for high school youth). VICA (Vocational Industrial Clubs of America). 4-H (Cooperative Extension Youth Program). 4 cr.

**710E. Workshop in Adult and Occupational Education**

Modularized instruction of in-service education. Focus varies with the needs of the student. May be repeated for up to 8 credits. 1 to 4 cr.

**710F. Investigations**

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. 1 to 4 cr.

**710H. Field Experience**

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. 2 to 16 cr.

**717. Growing up Male in America**

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. 4 cr.

**720. Introduction to Computer Applications for Education**

Major issues related to classroom computer applications: historical development; computer functioning; methods of instruction, problem solving, educational software development and evaluation, psychological and sociological impact of the computer on children and learning. A practical approach is stressed. Lab. 4 cr.

**733. Introduction to the Teaching of Writing**

Development of writers, child to adult; ways to respond to writing; organization of the classroom for the teaching of writing. Persons taking the course need to have access to students to carry out course requirements. Prereq: permission. 4 cr.

**734. Children's Literature**

Interpretive and critical study of literature for children in preschool and elementary settings. Methods of using literature with children. 4 cr.

**735. Young Adult Literature**

Critical study of the fiction and nonfiction genres that constitute literature written for the adolescent reader. Emphasis on literary analysis of young adult literature and its pedagogical uses in middle/junior high/high school curriculum. 4 cr.

**741. Exploring Mathematics with Young Children**

A laboratory course offering those who teach young children mathematics, and who are interested in children's discovery learning and creative thinking, an opportunity to experience exploratory activities with concrete materials. Offers mathematical investigations through which one may develop the ability to provide children with a mathematically rich environment to become adept at asking problem-posing questions. 4 cr.

**750. Introduction to Exceptionality**

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. 4 cr.

**751A. Educating Exceptional Learners: Elementary**

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. 4 cr.

**751B. Educating Exceptional Learners: Secondary**

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. 4 cr.

**751C. Educating Exceptional Learners: Related Services**

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. 4 cr.

**752. Contemporary Issues in Learning Disabilities**

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. 4 cr.

**753. Contemporary Issues in Behavioral Disabilities**

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. 4 cr.

**754. Contemporary Issues in Developmental Disabilities**

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. 4 cr.

**755. Fostering Social Relationships for Students who Experience Significant Disabilities**

Focuses on the supports students with significant disabilities need in order to have a wide variety of satisfying social relationships. Students learn to identify and facilitate the factors essential to the development of friendships such as full inclusion; valued membership and belonging; shared experiences; an effective means of communication understood by everyone; and access to typical school, extracurricular, and community environments and activities. Additionally, students learn to identify and mitigate the barriers to friendships, such as low expectations; devaluing of differences; age-appropriate experiences; and educational practices, such as pull-out and separate special education programs. Students learn about appropriate relationship supports, especially relating to the facilitation of communicative interactions. 2 cr.

**760. Introduction to Young Children with Special Needs**

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. 4 cr.

**767. Students, Teachers, and the Law**

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.) 4 cr.

**776. Reading for Learners with Special Needs**

Techniques and procedures for teaching reading to learners with special needs. Emphasis on providing reading instruction in the least restrictive alternative. 4 cr.

**780. Belize/New Hampshire Teacher Program**

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. 4 cr.

**781. Introduction to Statistics: Inquiry, Analysis, and Decision Making**

An applied statistics course that covers introductory-level approaches to examining quantitative information. Students spend about half of class time in the computer lab analyzing real data from the behavioral and social sciences. An emphasis is placed on the role of statistics in making empirically-based policy decisions. 4 cr.

**785. Educational Assessment**

Theory and practice of educational evaluation; uses of test results in classroom teaching and student counseling; introductory statistical techniques. 4 cr.



**791. Methods of Teaching Secondary Science**

Application of theory and research findings in science education to classroom teaching with emphasis on inquiry learning, developmental levels of children, societal issues, integration of technology, critical evaluation of texts and materials for science teaching, and planning for instruction. Lab. 4 cr.

**795, 796. Independent Study**

Juniors and seniors only, with approval by appropriate faculty member. Neither course may be repeated. 2 or 4 cr.

**797. Seminar in Contemporary Educational Problems**

Issues and problems of special contemporary significance, usually on a subject of recent special study by faculty member(s). Prereq: permission. May be repeated for different topics. Special fee on topic: Picturing Writing, Fostering Literacy through Art. 1 to 4 cr.

---

## Electrical & Computer Engineering (ECE)

(For program description, see page 62.)

**401. Perspectives in Electrical and Computer Engineering**

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. Two lectures and one computer laboratory per week are required. No prerequisites. Lab. 4 cr.

**537. Introduction to Electrical Engineering**

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. Lab. Prereq: PHYS 408. Pre- or Coreq: MATH 527. 4 cr.

**541. Electric Circuits**

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. Prereq: MATH 426; Pre or Coreq: PHYS 408. Lab. 4 cr.

**543. Introduction to Digital Systems**

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 and discussion. 4 cr.

**544. Engineering Analysis**

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. 4 cr.

**548. Electronic Design I**

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. 4 cr.

**562. Computer Organization**

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; or permission. Lab. 4 cr.

**583. Designing with Programmable Logic**

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 543, ECE 562 or permission. Lab. 4 cr.

**603/603H. Electromagnetic Fields and Waves I**

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. Honors students will attend an additional one-hour meeting each week. Prereq: PHYS 408; ECE 544 or equivalent. 4 cr.

**617. Junior Laboratory I**

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. Coreq: ECE 633, ECE 651. Writing intensive. 4 cr.

**618. Junior Laboratory II**

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 603, 617. Writing intensive. 4 cr.

**633/633H. Signals and Systems I**

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 attend an additional one-hour meeting each week. Prereq: MATH 527 or equivalent. 3 cr.

**634. Signals and Systems II**

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 or permission. 3 cr.

**647. Random Processes and Signals in Engineering**

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 544. 3 cr.

**649. Embedded Microcomputer Based Design**

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 or permission. Lab. 4 cr.

**651. Electronic Design II**

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. 4 cr.

**668/668H. Fundamentals of Computer Engineering**

Software engineering principles and practices; computer-aided design and computer-aided engineering methodologies; sampled data systems; computer architecture comparisons and tradeoffs. Honors students engage in additional advanced project work. Prereq: ECE 562, PHYS 408 or permission. Electrical Engineering majors only. Lab. 4 cr.

**681. Teaching Experience**

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. 1 cr.

**704. Electromagnetic Fields and Waves II**

Loop antennas; aperture and cylindrical antennas; self and mutual impedance; receiving antennas and antenna arrays; bounded plane waves; rectangular and cylindrical waveguides; waveguide discontinuities and impedance matching; solid state microwave sources. Prereq: ECE 603 or equivalent. 4 cr.

**711. Digital Systems**

Principles and procedures related to the design and implementation of microprocessor-based embedded systems. Topics include microprocessor technologies; management of the development cycle; implementation methodologies such as printed circuit boards and system integration; design considerations related to manufacturing and testing of digital systems; and analysis implementation limitations related to electromagnetic noise, grounding/power schemes, timing, device packaging, and heat/power requirements. Students prototype a digital system using CAD tools, printed circuit board technology, and modern diagnostic/testing procedures and tools. Devices such as microprocessors, microcontrollers, network controllers, data/acquisition/processing units, application specific integrated circuits, and interface logic will be selected for the design projects. Projects reflect the advances in modern digital technologies. Prereq: ECE 668; or permission. Lab. 4 cr.

**714/714H. Introduction to Digital Signal Processing**

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. Honors students engage in additional advanced project work. Prereq: ECE 633; or permission. Lab. 4 cr.

**715. Introduction to VLSI**

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. Prereq: ECE 668 or permission. 4 cr.

**717. Introduction to Digital Image Processing**

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 pseudocolor processing; image restoration fundamentals; image compression techniques, image segmentation and use of descriptors for image representation and classification. Prereq: ECE 633; ECE 647 or permission. Lab. 4 cr.

**734/734H. Network Data Communications**

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. Honors students engage in additional advanced project work. Prereq: ECE 633, 667 or 668, or permission. 4 cr.

**745. Environmental Acoustics I: Air and Water**

Sound and vibration; simple harmonic oscillators; characteristics and measurements of sound sources and receivers; acoustic wave equation (1D, 2D, 3D); sound reflection, transmission, refraction, and absorption in various media; room acoustics; basic sonar equation. Prereq: PHYS 408; MATH 527; ECE 544 or permission. Lab. (Also listed as OE 745.) 4 cr.

**757. Fundamentals of Communication Systems**

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 or permission. Lab. 4 cr.

**758. Communication System Design**

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; or permission. Lab. 4 cr.

**760. Introduction to Fiber Optics**

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 or permission. Lab. 4 cr.

**772. Control Systems**

Development of advanced control system design concepts such as Nyquist analysis; lead-lag compensation; state feedback; parameter sensitivity; controllability; observability; introduction to nonlinear and modern control. Includes interactive computer-aided design and real-time digital control. Prereq: ECE 634 or permission. (Also offered as ME 772.) Lab. 4 cr.

**774. Introduction to Neural Networks**

Introduces theory and application of artificial neural networks. Single layer and multilayer feedforward and recurrent network architectures. Supervised, unsupervised, and reinforcement learning principles. Applications to control and signal processing. ECE majors or permission. 4 cr.

**775. Applications of Integrated Circuits**

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 nondigital integrated circuit devices. Prereq: ECE 651 or permission. Lab. 4 cr.

**777. Collaborative Engineering**

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. 4 cr.

**#781. Physical Instrumentation**

Analysis and design of instrumentation systems. Sensors, circuits, and devices for measurement and control. Elements of probability and statistics as applied to instrument design and data analysis. Transmission, display, storage, and processing of information. The design, implementation, testing, and evaluation of a relevant instrument system is an integral part of the course. Prereq: ECE 651 or permission. Lab. 4 cr.

**784. Biomedical Instrumentation**

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 or permission. Lab. 4 cr.

**785. Environmental Acoustics II: Air and Water**

General sonar equation: active, passive; sound generation, source level, directivity, calibration methods; sound propagation, rays and normal modes, acoustic waveguides; transmission loss, reverberation, scattering; ambient noise characteristics and measurements; sound reception and processing. Prereq: ECE 745/845 or OE 745/845. Lab. 4 cr.

**791/791H. Senior Project I**

Provides background for the capstone design experience. Topics include creativity, design methodology, specification development, total quality management, ethics, safety, reliability, aesthetics, and preparation for oral and written reports. Capstone project selection procedure. Honors students attend an additional meeting each week and engage in independent and advanced project work. Writing intensive. Cr/F. 2 cr.

**792/792H. Senior Project II**

Continuation of ECE 791. This course requires the completion of the capstone design experience. Honors students attend an additional meeting each week and engage in independent and advanced project work. Writing intensive. Cr/F. 2 cr.

**795. Electrical Engineering Projects**

Laboratory course. Students either join a department research project or engage in a project in an area of staff interest. Prereq: acceptance by staff member. 1 to 4 cr.

**795H. Senior Honors Project**

Independent analytical or laboratory study under the guidance of a faculty member. A written report is required. Prereq: senior ECE standing. 4 credits for one semester or 2 credits for each of two semesters with IA (continuous grading) given at the end of first semester. 2 or 4 cr.

**796. Special Topics**

New or specialized courses and/or independent study. Prereq: permission. 1 to 4 credits some sections may use credit/fail grading. 1 to 4 cr.



## Engineering Technology (ET)

(For program description, see page 136.)

### #645A. Instrumentation

4 cr.

## English (ENGL)

(For program description, see page 34.)

### 400. English as a Second Language

Improves the competence of foreign students in listening comprehension, speaking, reading, and writing. Recommended as preparation for ENGL 401. May be repeated up to a total of 16 credits. Writing intensive. Cr/F. 1 to 16 cr.

### 401/401H. First-Year Writing

Training to write more skillfully and to read with more appreciation and discernment. Frequent individual conferences for every student. Special fee. Writing intensive. 4 cr.

### 401A. First-Year Writing for English as a Second Language Students

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 problems 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. 4 cr.

### 403. Introduction to the Study of Literature

The art of thoughtfully enjoying various kinds of literature, the substance and language of literature and literary techniques. Writing intensive. 4 cr.

### #404. Writing Studio

Regular intensive work in small instructional group on writing skills, including grammar and usage. Designed to be taken in conjunction with writing-intensive courses, including First-year Writing. (May be repeated once.) Cr/F. 1 cr.

### 405/405H. Introduction to Linguistics

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.) 4 cr.

### 419/419H. Introduction to Literary Analysis

Critical analysis of fiction, poetry, and drama. 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. 4 cr.

### 444B. Secret Lives of Words

Using problem and inquiry-based pedagogy, this class delves into the ways in which new words are coined, how they become established or die, and how they change over their natural lives. Touching upon topics in philosophy (the nature of meaning), theoretical linguistics (morphology, sociolinguistics), and lexicography, introduces students to both the methods of text-based analysis and field-based research. Topics include word formation; the history

of vocabulary in English; the making of dictionaries; slang, jargon, and taboo language. Writing intensive. (Also listed as LING 444B.) 4 cr.

### 444C. College

The history, philosophy, and current state of higher education in the United States. Students develop their own perspectives on the value of college. Writing intensive. 4 cr.

### 444D. Irish Identity

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. 4 cr.

### 444E. Lions and Tigers and Books

Course asks students to consider their personal experience of the relationship between humans and animals in the light of theoretical investigations from the fields of biology, psychology, philosophy, literature, and the arts. Students read fundamental cultural texts (Darwin, Freud, the *Bible*) and great literary works (*Moby Dick*, "The Metamorphosis"), in combination influential contemporary works (Peter Singer, *Animal Liberation*) and popular nonfiction works that offer a multidisciplinary view of human history and identity. Appropriate for students with ambitions in scientific fields who maintain a strong interest in the liberal arts. Writing intensive. 4 cr.

### 501/501H. Introduction to Creative Nonfiction

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. 4 cr.

### 502/502H. Technical Writing

A writing course focusing on effective communication of technical information. Writing of various technical documents, such as business letters, proposals, reports, brochures and web pages. Special emphasis on document design usability, visual rhetoric, and the use of technology in writing. Special fee. Writing intensive. 4 cr.

### 503. Persuasive Writing

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. Special fee. Writing intensive. 4 cr.

### #511. Major Writers in English

In-depth study and discussion of a few American and/or British writers. Topics and approaches vary depending on instructors. Writing intensive. 4 cr.

### 513/513H. Survey of British Literature

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. *Beowulf* through 18th century. Writing intensive. 4 cr.

### 514/514H. Survey of British Literature

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. 1800 to the present. Writing intensive. 4 cr.

### 515/515H. Survey of American Literature

From the beginning of American literature to the Civil War. Writing intensive. 4 cr.

### 516/516H. Survey of American Literature

From the Civil War to the present. Writing intensive. 4 cr.

### 517/517H. Introduction to African American Literature and Culture

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. 4 cr.

### 518/518H. Bible as Literature

Literature of the Old and New Testaments and the Apocrypha, primarily in the King James version. Writing intensive. 4 cr.

### 521/521H. Nature Writers

Fiction, poetry, and nonfiction books on the natural environment. Such books as Thoreau's *Walden* or *Maine Woods*, Leopold's *Sand County Almanac*, Boston's *Outermost House*, Dillard's *Pilgrim at Tinker Creek*—books by naturalists who observe nature vividly and knowingly and who write out of their concern for the environment. Writing intensive. 4 cr.

### 522. American Literary Folklore

Folktales, songs, proverbs, beliefs, superstitions, and their use by such American authors as Irving, Hawthorne, Longfellow, Melville, Thoreau, Twain, Frost, and Faulkner; some emphasis on oral folk culture of New Hampshire. Writing intensive. 4 cr.

### 523. Madness in Literature

How various writers depict insanity, and how they approach the problem of determining what attitudes and what behaviors are truly insane. Emphasis on 19th- and 20th-century works, but works from earlier periods also considered. Euripides' *The Bacchae*, Shakespeare's *King Lear*, Cervantes's *Don Quixote*, Hoffman's *The Golden Pot*, Dostoevsky's *Note from the Underground*, Robbe-Grillet's *The Voyeur*, Nabokov's *Pale Fire*, and other texts. Writing intensive. 4 cr.

### #525. Popular Culture in America

Cultural expression in popular media. Verbal acts (best sellers, magazines, newspapers, speeches); some attention to television, film, comics, popular music. The multidisciplinary approach deals with historical context, cultural institutions, and distinction between "popular arts" and "great literature." Recurrent images, situations, and themes are investigated to see what values are celebrated and what fears revealed. Writing intensive. 4 cr.

### 533/533H/533W. Introduction to Film Studies

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. 4 cr. 533W is writing intensive.

**540. Introduction to Native American Studies**

Introduces the major critical and research methods in Native American literature, history, and culture. Course topics may include literary genres, historical periods, a focus on one particular tribe or culture area, art, and film. (Also offered as AMST 503.) 4 cr.

**555. Introduction to Irish Studies**

Introduces the history, literature, and politics of Modern Ireland from the perspective of the central problem in Irish culture: the legacy of both British and Gaelic traditions in the construction of Irish identity. Events covered include the Great Famine, the Irish Revival, and the "Troubles" in Northern Ireland. Authors studied may include Gaelic bards in translation, Swift, Goldsmith, Burke, Edgewood, Stoker, Wilde, Yeats, Joyce, Lady Gregory, Heaney, Friel, McCourt, and Ní Dhomhnaill. Writing intensive 4 cr.

**581/581H. Introduction to Postcolonial Literatures in English**

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. 4 cr.

**#585/585H. Introduction to Women in Literature**

Survey of images of women in literature. Context and approach vary depending on instructor. Writing intensive. 4 cr.

**#586/586H. Introduction to Women Writers**  
Survey of women writers. Content and approach vary depending on instructor. Writing intensive. 4 cr.

**595/595H. Literary Topics**

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. Writing intensive. 1 to 4 cr.

**600. English as a Second Language**

Designed for foreign graduate students in their first semester at UNH to give them English language skills necessary for effective graduate work at the university. Includes work on listening skills (understanding lectures, note-taking, etc.), reading skills, the writing of research papers, the making of oral reports, and general study skills, with work on grammar and pronunciation for those who need it. Credits may not be used to fulfill minimum degree requirements of a graduate program. Prereq: graduate students only. May be repeated for a maximum of 16 credits. Cr/F. 1 to 16 cr.

**605. Intermediate Linguistic Analysis**

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/LING 505, or permission. (Also offered as LING 605.) 4 cr.

**#607. American Character: Religion in American Thought and Life**

Interdisciplinary study of American religious experience and its relationship to other aspects of American culture, taught by a team of three specialists, each in a different discipline: American in-

tellectual and cultural history, American literature, and American church history. Central emphasis on several transforming themes of the 19th century and their effects upon the interplay of religion and society. (Also offered as HIST 607, HUMA 607, and RS 607.) Writing intensive. 4 cr.

**608. Arts and American Society: Women Writers and Artists, 1850-present**

Team-taught course studying the impact of gender definitions on the lives and works of selected American artists. Considers lesser-known figures such as Fannie Fern, Lilly Martin Spencer, and Mary Hallock Foote as well as better-known artists such as Willa Cather and Georgia O'Keeffe. Prereq: permission or one of the following: WS 401, HIST 566, ENGL 585, 586, 685, 785, or a 600-level art history course. (Also offered as ARTS 608, HIST 608, and HUMA 608.) Writing intensive. 4 cr.

**609. Ethnicity in America: The African American Experience in the 20th Century**

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. 4 cr.

**#610/610H. Regional Studies in America: New England Culture in Changing Times**

Team-taught course investigating some of the major contributions New England has made to American life. Focusing on three periods: the Puritan era, 1620-90; the Transcendental period, 1830-60; and the period of emerging industrialism in the late 19th century. (Also offered as ARTS 610, HIST 610, and HUMA 610.) Not for art studio major credit. Writing intensive. 4 cr.

**616. Studies in Film**

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. Prereq: ENGL 533, or CMN 550, or permission. Special fee. Writing intensive. 4 cr.

**618. Film Theory**

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. Prereq: ENGL 533 or CMN 550. 4 cr.

**619. Critical Approaches to Literature**

Selected methods of literary criticism applied to fiction, poetry, and/or drama with critical approaches varying from year to year. A follow-up of 519, course provides a second semester of training in critical reading and writing, and examining such major modern strategies as formalist, biographical, archetypal, psychological, sociological, historical, feminist, and structuralist criticism. Prereq: ENGL 519, 529, or equivalent. Writing intensive. 4 cr.

**620. Applied Experience**

English department majors 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 English major, and the employer must be an established organization approved by Career Services. Research and writing will be required in addition to the job experience. Registration requires permission of employer, faculty sponsor, major adviser, and department chairperson. This course does not count toward the English major. May be repeated with permission to a maximum of 8 credits. Cr/F. 1 to 4 cr.

**621. Newswriting**

Workshops to develop reporting and writing skills. Prereq: B or better in ENGL 501 or equivalent, and written permission of instructor. May be repeated for credit with approval of journalism director. Special fee. Writing intensive. 4 cr.

**622. Advanced Newswriting**

An intermediate-level workshop on alternative methods of newswriting and the basics of feature writing. Students develop reporting skills while experimenting with styles and forms beyond the inverted pyramid. Prereq: B or better in ENGL 621 and written permission of instructor. Special fee. Writing intensive. 4 cr.

**623. Essay Writing**

Intensive writing course emphasizing experimentation with a variety of essay forms. Also reading and discussion of contemporary essays. Prereq: B or better in ENGL 501 and written permission of instructor. May be repeated for credit with approval of journalism director. Special fee. Writing intensive. 4 cr.

**625, 626. Writing Fiction**

Workshop in the fundamental techniques of fiction writing. Students' work is critiqued by fellow students; individual conferences with instructor. May be repeated for credit with approval of the department chairperson. Prereq: ENGL 501 with a B or better, or equivalent. Written permission of instructor required for registration. Special fee. Writing intensive. 4 cr.

**627, 628. Writing Poetry**

Workshop in the fundamental techniques of poetry writing. Class discussion and criticism of poems written by students. Individual conferences with instructor. Prereq: ENGL 519 a B or better, or equivalent. Written permission of instructor required for registration. May be repeated for credit with the approval of the department chairperson. Special fee. Writing intensive. 4 cr.

**630. Poetry**

American and British poetry. Various poetic techniques and their demonstration. See course descriptions available in department office for further information. (Not offered each semester.) Writing intensive. 4 cr.

**631. Drama**

Nature and types of drama illustrated by major English, American, and (translated) European plays. How to read a play. Live and filmed performances studied as available. Writing intensive. 4 cr.

**632. Fiction**

Modern novels and/or short stories. The way in which fiction communicates its meanings; the tools and methods at the fiction writer's disposal, primarily as they function in individual works. See course descriptions available in department office for further information. (Not offered each semester.) Writing intensive. 4 cr.



**649. Studies in British Literature and Culture**

Special topics in British studies, varying from year to year. (Not offered every year.) Writing intensive. 4 cr.

**650. Studies in American Literature and Culture**

Special topics in American studies, varying from year to year. (Not offered every year.) Writing intensive. 4 cr.

**651. Comparative Literature**

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 4 cr.

**#652. Comparative Literature**

Comparative studies of major authors representative of important periods of world literary achievement. Renaissance to modern. Topics and approaches vary from semester to semester. Writing intensive. 4 cr.

**#655. Chaucer**

Study of Chaucer's earlier works in the context of their continental sources and analogues. All readings in translation. Writing intensive. 4 cr.

**657/657H. Shakespeare**

Ten major plays representative of the main periods of Shakespeare's career and the main types of drama which he wrote (tragedy, comedy, history). Live and filmed performances included as available. Restricted to undergraduates and designed for both English majors and students majoring in other fields. Writing intensive. 4 cr.

**680. Early British Drama**

A survey of the development of British drama from the Middle Ages to the closing of the theatres in 1642. 4 cr.

**681. Introduction to African Literatures in English**

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. 4 cr.

**685. Women's Literary Traditions**

Intensive study of themes, topics, and techniques in women's literature. topics vary from year to year. Writing intensive. 4 cr.

**#690. Introduction to African American Literature in America**

Selected prose, fiction, drama, and poetry. Individual works and historical-cultural background. Course varies from year to year. Writing intensive. 4 cr.

**693, 694. Special Topics in Literature**

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. 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. 4 cr.

**701. Advanced Writing of Fiction**

Workshop discussion of advanced writing problems and readings of student's fiction. Individual conferences with instructor. Prereq: 625, 626, or equivalent; written permission of instructor required for registration. May be repeated for credit with the approval of the department chairperson. Special fee. Writing intensive. 4 cr.

**703, 704. Advanced Nonfiction Writing**

Workshop course for students intending to write publishable magazine articles or nonfiction books. Equal stress on research and writing techniques. Prereq: B or better in ENGL 722 and written permission of instructor. May be repeated for credit with approval of journalism director. Special fee. Writing intensive. 4 cr.

**705. Advanced Writing of Poetry**

Workshop discussion of advanced writing problems and submitted poems. Individual conferences with instructor. Prereq: ENGL 627, 628, or equivalent; written permission of the instructor. May be repeated for credit with the approval of the department chairperson. Special fee. Writing intensive. 4 cr.

**707. Form and Theory of Fiction**

A writer's view of the forms, techniques, and theories of fiction. The novels, short stories, and works of criticism studied vary, depending on the instructor. Writing intensive 4 cr.

**708. Form and Theory of Nonfiction**

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. 4 cr.

**709. Form and Theory of Poetry**

A writer's view of the problems, traditions, and structures of poetry. Writing intensive. 4 cr.

**710. Teaching Writing**

Introduction to the various methods of teaching writing. Combines a review of theories, methods, and texts with direct observation of teaching practices. Writing intensive. 1 to 6 cr.

**711. Editing**

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. 4 cr.

**#713, 714. Literary Criticism**

Major critics from Plato to the present; the chief critical approaches to literature. (Not offered every year.) Writing intensive. 4 cr.

**715. Teaching English as a Second Language: Theory and Methods**

How linguistic, psychological, sociological, and neurological theory influence or even determine the choice methods of language teaching. Research on second language acquisition and bilingualism, language aptitude, and the cultural context of language acquisition. Introduction to standard and exotic methods of language teaching. Writing intensive. 4 cr.

**716. Curriculum, Materials and Assessment in English as a Second Language**

Study of the problems in designing an effective teaching program for various types of ESL students. Competence and aptitude testing; choosing and adapting materials for ESL classes. Writing intensive. 4 cr.

**717. World Englishes**

Study of the forms and functions of Englishes in various parts of the world and the linguistic, sociolinguistic, literary, pedagogical, and political implications of the worldwide spread of the language. Topics include language change, language policies, language and power, language and culture, language and identity, literary creativity, and linguistic imperialism. (Also listed as LING 717.) Writing intensive. 4 cr.

**718. English Linguistics and Literature**

Introduction to linguistics for students of literature. Includes a survey of the grammar of English (phonology, morphology, syntax, dialect variation, historical change) with applications to the analysis of the language of poetry and prose. (Not offered every year.) Writing intensive. 4 cr.

**719. Sociolinguistics Survey**

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: 505 or permission. 4 cr.

**720. Journalism Internship**

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. Special fee. Writing intensive. 1 to 16 cr.

**#721. Advanced Reporting**

Students learn advanced techniques for developing story ideas and acquiring information from people and documents. Discussion of legal and ethical issues facing reporters. Prereq: ENGL 621 and written permission. Special fee. Writing intensive. 4 cr.

**722. Feature Writing**

Students refine interviewing, reporting, and writing techniques. Emphasis on in-depth features. Prereq: B or better in ENGL 621 and 622, and written permission of instructor. Special fee. Writing intensive. 4 cr.

**723. Issues in Journalism**

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. 4 cr.

**725, 726. Seminar in English Teaching**

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. 4 cr.

**727. Issues in Second Language Writing**

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. 4 cr.

**728. Writing Consultation and Assessment**  
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 the course, each student undertakes a supervised practicum experience in the University Writing Center. Prereq: ENGL 501 or 503. Coreq: supervised practicum experience in the Writing Center. Writing intensive. 4 cr.

**729. Special Topics in Composition Studies**  
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 4 cr.

**#732. Folklore and Folklife**  
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. 4 cr.

**733. Special Studies in Film**  
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. 4 cr.

**738. Topics in Asian American Studies**  
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. 4 cr.

**739. American Indian Literature**  
Close study of traditional and/or contemporary American Indian literature and folklore with historical and cultural background. Writing intensive. 4 cr.

**740. Indigenous New England**  
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. Special fee. (Also offered as AMST 611.) 4 cr.

**741. Literature of Early America**  
Prose and poetry of the periods of exploration, colonization, early nationalism, Puritanism, Enlightenment. Individual works and historical-cultural background. (Not offered every year.) Writing intensive. 4 cr.

**742. American Literature, 1815-1865**  
Fiction, nonfiction, and poetry in the period of romanticism, transcendentalism, nationalism. Individual works and cultural background. (Not offered every year.) Writing intensive. 4 cr.

**743. American Literature, 1865-1915**  
Fiction, nonfiction, and poetry in the period of realism, naturalism, industrialism, big money. Individual works and background. Writing intensive. 4 cr.

**744. American Literature, 1915-1945**  
Fiction, poetry, and drama in the period of avant-garde and leftism, jazz age, and Depression. Individual works and cultural background. Writing intensive. 4 cr.

**745. Contemporary American Literature**  
A gathering of forms, figures, and movements since 1945. Individual works and cultural background. Writing intensive. 4 cr.

**746. Studies in American Drama**  
Topics vary from year to year. Examples: 20th-century American drama; contemporary playwrights; theatricality in American life. (Not offered every year.) Writing intensive. 4 cr.

**747. Studies in American Poetry**  
Topics vary from year to year. Examples: poets of the open road, Pound and his followers, major American poets, contemporary American poetry. (Not offered every year.) Writing intensive. 4 cr.

**748. Studies in American Fiction**  
Topics vary from year to year. Examples: the romance in America, the short story, realism and naturalism, the city novel, fiction of the thirties. Writing intensive. 4 cr.

**749. Major American Authors**  
Intensive study of two or three writers. Examples: Melville and Faulkner; Fuller, Emerson, and Thoreau; James and Wharton; Dickinson and Frost. Writing intensive. 4 cr.

**750. Special Studies in American Literature**  
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. Writing intensive. 4 cr.

**751. Medieval Epic and Romance**  
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. 4 cr.

**752. History of the English Language**  
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. 4 cr.

**753. Old English**  
Introduction to Old English language and literature through the reading of selected poetry and prose. 4 cr.

**754. Beowulf**  
A reading of the poem and an introduction to the scholarship. Prereq: ENGL 753. Writing intensive. 4 cr.

**#755. Chaucer**  
Troilus and Criseyde, in the context of medieval continental literature by Boccaccio and other influences. Writing intensive. 4 cr.

**756. Chaucer**  
*The Canterbury Tales* in its original language. Writing intensive. 4 cr.

**758. Shakespeare**  
A few plays studied intensively. Live and filmed performances included as available. Writing intensive. 4 cr.

**759. Milton**  
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. 4 cr.

**#763. Continental Backgrounds of the English Renaissance**  
Major philosophers, artists, and writers of the continental Renaissance (in translation): Petrarch, Ficino, Pico, Vives, Valla, Castiglione, Machiavelli, Luther, Calvin, Rabelais, Montaigne, Cervantes, Erasmus, and Thomas More, as representative of the early English Renaissance. (Not offered every year.) Writing intensive. 4 cr.

**764. Prose and Poetry of the Elizabethans**  
Shakespeare and his contemporaries. Major works, including Spenser's *Faerie Queene*, Sidney's *Astrophel and Stella*, and Shakespeare's Sonnets: their literary and intellectual backgrounds. (Not offered every year.) Writing intensive. 4 cr.

**#765. English Literature in the 17th Century**  
Major writers of the 17th century, including Donne, Johnson, Herbert, Bacon, and Hobbes. (Not offered every year.) Writing intensive. 4 cr.

**767. Literature of the Restoration and Early 18th Century**  
Poetry, drama, fiction, letters, journals, and essays from the period following the restoration of Charles II to the throne of England after the English Civil War. Works by such figures as John Dryden, Aphra Behn, Daniel Defoe, Jonathan Swift, Alexander Pope, and Lady Mary Wortley Montagu studied in the historical context. Examples from the colonial world and the continent (in translation) when appropriate. Writing intensive. 4 cr.

**768. Literature of the Later 18th Century**  
Poetry, drama, fiction, letters, journals, essays, and biography from the period that culminated in the American and French Revolutions. Works by such figures as Henry Fielding, Samuel Johnson, Frances Burney, Laurence Sterne, William Blake, and Mary Wollstonecraft studied in historical context. Examples from the colonial world and the continent (in translation) when appropriate. Writing intensive. 4 cr.

**769. English Romantic Period**  
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. 4 cr.

**#770. English Romantic Period**  
Major literary trends and authors, 1798 to 1832. Focus on poetry but attention also to prose works and critical theories. Byron, Shelley, Keats. (Not offered every year.) Writing intensive. 4 cr.

**771. English Victorian Period**  
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. 4 cr.



**#772. English Victorian Period**

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. 4 cr.

**773. British Literature of the 20th Century**

Poets and novelists of the modernist and postmodernist periods. W.B. Yeats, James Joyce, Virginia Woolf, E.M. Forster, D.H. Lawrence, and other modernists. Writing intensive. 4 cr.

**774. British Literature of the 20th Century**

Poets and novelists of the modernist and postmodernist periods. A selection of postmodernist or contemporary writers, such as William Golding, Doris Lessing, John Fowles, Philip Larkin, Seamus Heaney, Margaret Drabble, and others. Writing intensive. 4 cr.

**775. Irish Literature**

Survey from the beginnings to present; works in Irish (read in translation) such as *The Cattle Raid of Cooley*, medieval lyrics, and *Mad Sweeney*; and works in English from Swift to the present. 20th-century authors: Joyce, Yeats, Synge, O'Casey, Beckett, and Flann O'Brien. (Not offered every year.) 4 cr.

**777. Postcolonial Novel**

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. 4 cr.

**779. Linguistic Field Methods**

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/LING 505. (Also offered as LING 779.) Special fee. (Not offered every year.) Writing intensive. 4 cr.

**780. Drama of Shakespeare's Contemporaries**

Study of the drama of Renaissance England, emphasizing Tudor and Stuart drama. Special attention to dramatic forms, acting conventions, theatre architecture, women as patrons, writers, and subjects of drama, and the politics and social significance of theatre in the period. Writing intensive. 4 cr.

**781. English Drama, 1660-1800**

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 nondramatic spectacle, and the political and social significance of drama. Writing intensive. 4 cr.

**#782. Modern Drama**

Major English, American, and (translated) European plays of the modern period by such playwrights as Shaw, Ibsen, Chekhov, Strindberg, Pirandello, O'Neill, Brecht, Beckett, Williams, Miller, Pinter. Live and filmed performances studied as available. (Not offered every year.) Writing intensive. 4 cr.

**783. English Novel of the 18th Century**

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. 4 cr.

**784. English Novel of the 19th Century**

Representative novels from among Austen, Scott, Dickens, Thackeray, Emily Bronte, Charlotte Bronte, Trollope, George Eliot, Hardy, and Conrad. Writing intensive. 4 cr.

**785. Major Women Writers**

Intensive study of one or more women writers. Selections vary from year to year. Writing intensive. 4 cr.

**#786. 20th Century British Fiction**

Traces the development of the novel from the turn of the century to the present day. Representative novels by Lawrence, Joyce, Conrad, Woolf, West, Forester, Huxley, Waugh, Murdoch, Burgess, and Lessing. Writing intensive. 4 cr.

**787. English Major Seminar**

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. Prereq: a grade of B or better in ENGL 419, and permission. For details, see course description available in the department office. Writing intensive. 4 cr.

**788. Senior Honors**

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. 4 cr.

**790. Special Topics in Linguistics**

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. 4 cr.

**791. English Grammar**

Survey of the grammar of English (pronunciation, vocabulary, sentence structure, punctuation, dialect variation, historical change) with special attention to the distinction between descriptive and prescriptive grammar and to the problems students have with formal expository writing. Writing intensive. 4 cr.

**792. Teaching Secondary School English**

Methods of teaching language, composition, and literature in grades 7-12. Required of all students in the English teaching major. Open to others with permission. Writing intensive. 4 cr.

**793. Phonetics and Phonology**

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. 4 cr.

**794. Syntax and Semantic Theory**

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. Writing intensive. 4 cr.

**795. Independent Study**

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 16 credits. Writing intensive. 1 to 16 cr.

**797, 798. Special Studies in Literature**

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. 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. 2 to 6 cr.

---

## Environmental Engineering (ENE)

(For program description, see page 64.)

**400. Environmental Engineering Lectures I**

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. Cr/F. 1 cr.

**401. Environmental Engineering Lectures II**

Introduces the concept of integrated design and project planning and management in environmental engineering. Field trips to environmental engineering sites and projects. Prereq: ENE 400. Cr/F. 1 cr.

**520. Environmental Pollution and Protection: A Global Context**

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. 4 cr.

**521. Seminar**

Introduces the fundamentals of environmental and occupational health, water quality modeling, and atmospheric systems and air pollution control. Prereq: ENE 520, MATH 426, CHEM 404, PHYS 407. 1 cr.

**608. Industrial Process and Design**

Introduces cost engineering. Application of acquired skills to design of chemical processes. Individual major design project required. Safety for industrial processes. Lab. (Also offered as CHE 608.) Writing intensive. 4 cr.

**612. Unit Operations Laboratory I**

Selected experiments in fluid mechanics, heat transfer, and unit operations, with emphasis on environmental engineering. Writing intensive. 3 cr.

**613. Unit Operations Laboratory II**

Selected experiments in mass transfer, stagewise operations, thermodynamics, and kinetics with emphasis on environmental engineering. Writing intensive. 3 cr.

**645. Fundamental Aspects of Environmental Engineering**

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, CIE 642, ENE 520; or permission. Writing intensive 4 cr.

**696. Field Experience**

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. 1 cr.

**697. Internship**

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). 2 cr.

**709. Fundamentals of Air Pollution and Its Control**

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. Prereq: MATH 527; CHEM 404. Lab. 4 cr.

**740. Public Health Engineering**

Proper application of environmental engineering and sanitation principles in disease prevention and control is discussed. Special emphasis given to rural communities and areas of the world where communicable and related diseases have not yet been brought under control, and to what can happen in the more advanced countries when basic sanitary safeguards are relaxed. Topics covered: vector-borne diseases and control, safe water supply development and treatment, and on-site wastewater disposal systems. Prereq: MATH 425, ENE 520. 3 cr.

**742. Solid and Hazardous Waste Engineering**

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. Pre- or Coreq: ENE 645 or permission. 3 cr.

**743. Environmental Sampling and Analysis**

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 ENE 645 or permission. Lab. Writing intensive. 4 cr.

**744. Physicochemical Treatment Design**

Selection, design, and evaluation of advanced unit processes employed in physicochemical treatment of waters, wastewaters, and hazardous wastes. Discusses preparation of alternative designs and economic analysis. Emphasizes treatment schemes based on experimental laboratory or pilot studies. Prereq: ENE 645, 749 or permission. Lab. 4 cr.

**746. Bioenvironmental Engineering Design**

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: ENE 645 and ENE 756 or permission. Writing intensive. 4 cr.

**#747. Introduction to Marine Pollution and Control**

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: ENE 645 or permission. 3 cr.

**748. Solid and Hazardous Waste Design**

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: ENE 742 or permission. Writing intensive. 4 cr.

**749. Water Chemistry**

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. 4 cr.

**752. Process Dynamics and Control**

Dynamic behavior of chemical engineering processes described by differential equations, feedback control concepts and techniques, stability analysis, application in pollution control. Lab. (Also listed as CHE 752.) 4 cr.

**756. Environmental Engineering Microbiology**

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: ENE 520 and CIE 642 or permission. Lab. Writing intensive. 4 cr.

**772. Physicochemical Processes for Water and Air Quality Control**

Origin and characterization of pollutants. Controls, including filtration, sedimentation, coagulation and flocculation, absorption and adsorption. Applied fluid mechanics, mass transfer, and kinetics. Thermal pollution, chemical treatment, oil spills on water, and aeration. Lab. 4 cr.

**788. Project Planning and Design**

Student groups formed in multidisciplinary design teams to prepare a design plan for a large-scale environmental engineering system including consideration of budgetary constraints, regulatory requirements, and environmental impacts. Each team prepares a final written report and gives a formal presentation. Prereq: senior environmental engineering major or permission. Writing intensive. 4 cr.

**795. Independent Study**

A limited number of qualified seniors is permitted to pursue independent studies under ENE faculty guidance. Seniors write terminal thesis reporting the results of their investigations. May be repeated. Prereq: permission of ENE faculty member involved. 1 to 4 cr.

**797. Special Topics**

Advanced or specialized topics not normally covered in the regular course offerings. May be repeated but not in duplicate areas. Prereq: permission. 1 to 4 cr.

**799H. Senior Honors Thesis**

Students in the honors program in environmental 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 an ENE non-design elective. 4 cr.

---

## Environmental & Resource Economics (EREC)

(For program description, see page 93.)

**#403. World Resources**

Overview of status of the world's environmental and natural resources and factors, including social values, customs and preferences, social, cultural and political institutions, population growth, economic growth and development, and government policies that influence people's use of those resources. Emphasizes a global perspective and economic and social dimensions of natural resource use. 4 cr.

**409. Catastrophe and Terrorism**

Impacts of terrorism and natural and non-natural catastrophes on infrastructure, public and private policy, and the economy. Analysis of case studies and research data is emphasized. Invited speakers complement lectures and assignments. 4 cr.

**411. Environmental and Resource Economics Perspectives**

Microeconomic theory and analysis in resource management and use decisions. Survey of signifi-



cant resource problems from an economic perspective and the application of economic analysis. Cannot be taken for credit after ECON 402 or equivalent. Special fee. 4 cr.

#### **501. Agriculture and Natural Resource Product Marketing**

Structure, organization, strategies and performance of the business sector in agriculture, forestry, and other local natural resource-based industries; commodity marketing systems; demand estimation, pricing policies, consumer characteristics, and related topics. Prereq: EREC 411 or equivalent; or permission. (Offered every other semester.) 4 cr.

#### **504. Business Management for Natural Resource Firms**

Planning, operation, and control of natural resource-based firms with direct application to agriculture, aquaculture, forestry, and recreational businesses. Emphasis on decision making, problem solving, and operational strategies. Prereq: EREC 411 or equivalent. Lab. 4 cr.

#### **525. Statistical Methods and Applications**

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 639; MATH 644; PSYC 402; SOC 502. 4 cr.

#### **572. Introduction to Natural Resource Economics**

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. 4 cr.

#### **595/595W, 596/596W. Problems in Natural and Agricultural Resources**

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. 2 to 4 cr. 595W and 596W are writing intensive.

#### **600/600W. Field Experience**

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. 1 to 4 cr. 600W is writing intensive.

#### **606. Land Economics Perspectives: Uses, Policies, and Taxes**

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, trans-

fers, valuation, and taxation. Prereq: EREC 411 or equivalent or permission. Special fee. 4 cr.

#### **#608. Environmental Economics for Non-Economists**

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. 4 cr.

#### **611. Marine Resource Economics**

Economic overview of the marine environment; interactions/conflicts surrounding this multiple-use resource. Economics of fisheries, marine recreation, offshore facilities, aquaculture, waste disposal. Prereq: EREC 411 or equivalent or permission. (Offered every other semester.) 4 cr.

#### **627. Community Economics**

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. 4 cr.

#### **633. Economics of Travel and Tourism**

Provides an understanding of both the microeconomic and macroeconomic aspects of travel and tourism. Using economics as a theory base, the course attempts to identify what is significant or special about travel and tourism compared with other activities. Special attention is given to issues such as resource immobility, capacity constraints, seasonality, and consumers' inability to experience the product before purchase. Prereq: EREC 411 or equivalent. (Also offered as TOUR 633.) 4 cr.

#### **#676. Economics of Water Use and Quality Management**

Economics of water use; role of government and policy agencies, water supply and demand, economic impact of water and water quality standards, alternatives in quality management, externalities, and methods of evaluation. Prereq: elementary biological or physical science (or NR 504); EREC 411 or equivalent. 4 cr.

#### **708. Environmental Economics**

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. 4 cr.

#### **710. Seminar**

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. 2 to 4 cr.

#### **715. Linear Programming and Quantitative Models**

Solving applied economic problems using linear and nonlinear techniques with emphasis on problem specification and interpretation of model results. Unit of analysis includes individuals, firms, or communities as they address contemporary problems dealing with resource allocation, product distribution, and whole-firm organization. Computer applications on both mainframe and personal computers utilized for managerial decision making. Project required. Prereq: permission. Writing intensive. 4 cr.

#### **756. Rural and Regional Economic Development**

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. 4 cr.

#### **775. Research Methods**

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. 4 cr.

#### **795/795W. Investigations**

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. 2 to 4 cr. 795W is writing intensive.

#### **799. Honors Senior Thesis**

Students develop and conduct individual research projects related to applied resource economics under the direction of a senior thesis committee. The resulting written thesis is defended in an oral presentation before departmental faculty and students. Prereq: permission, majors only, senior standing. Writing intensive. 4 cr.

---

## **European Cultural Studies (ECS)**

(For program description, see page 36.)

#### **400. Europe**

Introduction to the European Cultural Studies major. Outlines the general patterns of change and explores some of the local themes and variations in different parts of Europe. Students become aware of the social, political, literary, artistic and cultural issues that contributed to Europe's identity formation. Special fee. 4 cr.

#### **500. Proseminar**

The Proseminar aims to expose students to a variety of approaches in the Cultural Studies field, drawing on different disciplines and focusing on representative themes within cultural studies. 4 cr.

**550. Critical Methods in Cultural Studies**

Critical analysis of works in Cultural Studies. Focus on major texts, evaluation of secondary texts, research writing, criticism. Required of all ECS majors. (Also listed as HUMA 500.) 4 cr.

**798. Thesis Research**

Part of a two-semester capstone experience for the ECS major. Students work with their advisers and peers to formulate their topic, consider appropriate approaches, locate relevant resources, and prepare a bibliography for a thesis paper on a topic related to European Cultural Studies. During the course of the semester, students meet regularly with their adviser to discuss research materials. If time permits, students also plan the outline of the thesis. 1 cr.

**799. Senior Thesis**

Part of a two-course capstone experience for the ECS major. Students work with their advisers and peers to formulate their topic and write a major research paper, between 25 and 50 pages long, on a topic related to European Cultural Studies. During the course of the semester, students meet regularly with their adviser to discuss the outline and rough draft of the thesis, and to go over revisions to the paper. The course culminates in the defense of the thesis before a committee of three ECS faculty members. If student schedules permit it, we also hold meetings of all seniors who are currently writing an ECS thesis so that students may exchange ideas and offer peer feedback to each other. Pre- or Coreq: ECS 798. Writing intensive. 3 to 4 cr.

---

**Family Studies (FS)**

(For program description, see page 73.)

**444. We Don't All Play the Violin: Stories and Stereotypes of Asians in America**

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 reactions to the presence of Asians, how stereotypes by both Asians and Americans were developed, and their impact on family members. Writing intensive. 4 cr.

**525/525H. Human Development**

Developmental information from conception through death; theoretical perspectives and research methods in human development; emphasis on student's communication and analytical skills. 4 cr.

**545. Family Relations**

Theories and research relating to the family and its role in individual development. 4 cr.

**553. Personal and Family Finance for Family Life Professionals**

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. 4 cr.

**623. Developmental Perspectives on Infancy and Early Childhood**

Integrative view of the developing child from

conception through childhood within the family context. Prereq: FS 525. 4 cr.

**624. Developmental Perspectives on Adolescence and Early Adulthood**

Developmental information from pubescence through early adulthood; the concept of identity and influences on identity formation. 4 cr.

**635. Teaching and Learning in Early Childhood Settings**

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: FS 525, FS 623; permission. Special fee. 4 cr.

**641. Parenting Across the Life Span**

Examination of parent-child relations across a range of developmental time periods and situations. Explores issues affecting parent-child relationships. Prereq: FS 525, 545; permission. 4 cr.

**653. Family Economics**

Exploration of family economics and well being; public policy and family structure influences on the economic well being of families. Prereq: FS 545. Writing intensive. 4 cr.

**695. Independent Study**

Scholarly project in the area of child, family, and consumer studies. Regular conferences with supervising faculty required. Prereq: approval of departmental faculty. 1 to 6 cr.

**697. Special Topics**

Focused examination of a particular theoretical, methodological, or policy issue. May be repeated. Prereq: permission. Writing intensive. 1 to 6 cr.

**707. Practicum**

Supervised in-depth experience in teaching, research, or advocacy in a professional setting to increase the student's understanding of children, families, or consumer issues. A) Child, B) Family, C) Consumer Studies. Prereq: FS major; permission. Cr/F. 1 to 6 cr.

**708. Nursery Program Internship**

Supervised internship in the UNH Child Study and Development Center part-time nursery programs with children 2-5 years of age. 1) 2-3 year-olds Intern, 2) Preschool Intern. In the role of Assistant Teacher, weekly three hours per credit on site engaged in planning, documentation, teaching, and assessment. For section 1) 2-3 year-olds intern, must be taken concurrently with FS 709A. Child Development Internship Seminar (1cr) unless completed previously. Prereq: FS 525; FS 623; FS 635; and permission. Materials fee. Cr/F: may be repeated up to a total of 8 credits. Special fee. 3 to 6 cr.

**709. Advanced Child Development Practicum**

Supervised positions within the UNH Child Study and Development Center child care programs: A) videotape assistant, B) assessment assistant, C) infant assistant, D) toddler assistant, E) assistant for three- to five-year-olds, F) kindergarten assistant, G) health issues assistant. May be repeated up to a total of 8 credits. Prereq: FS 525; 623; 635; or permission. Special fee. Cr/F. 1 to 6 cr.

**709A. Child Development Internship Seminar**

On-site weekly one hour seminar for in-depth reflection and analysis of internship experience with young children at the UNH Child Study and Development Center. Reading and projects re-

quired. Must be taken concurrently with either FS 708 or FS 709B internships. Cr/F; may be repeated up to a total of 2 credits. Special fee. 1 cr.

**709B. Child Development Internship**

Supervised internship in the UNH Child Study and Development Center full-day programs with children infancy-6 years of age: 1) infant/toddler intern, 2) preschool intern and 3) kindergarten intern. Weekly three hours per credit on-site engaged in planning, documentation, teaching, and assessment. Must be taken concurrently with FS 709A. Child Development Internship Seminar (1 cr) unless completed previously. Prereq: FS 525; FS 623; FS 635; and permission. Materials fee. Cr/F; may be repeated up to a total of 8 credits. Special fee. 3 to 6 cr.

**710. Community Internship**

Supervised position in community early childhood settings. A) infant-toddler assistant; B) preschool-child care assistant; C) kindergarten assistant; D) child life. May be repeated up to a total of 8 credits. Prereq: permission. Cr/F. 1 to 12 cr.

**712. Child Advocacy and Family Policy Internship**

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: FS major; senior status; FS 525; 545; 28 credit hours of family studies coursework; permission. Coreq: FS 714. May be taken for 4 to 8 credits. Cr/F. 4 to 8 cr.

**714. Seminar for Child Advocacy and Family Policy Interns**

This biweekly seminar focuses on issues of concern to child advocacy and family policy internship students, and develops students' professional skills. Prereq: FS major, senior status; permission. Coreq: FS 712. (Spring semester, possibly Summer.) 2 cr.

**733. Supervising Programs for Young Children**

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. 4 cr.

**734. Curriculum for Young Children**

Designing and implementing developmentally appropriate activities for young children; assessing the effectiveness of activities; evaluating materials and equipment. Prereq: FS 525; 623; 635. (Spring semester only.) Writing intensive. 4 cr.

**743. Families, Schools, and Community**

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. 4 cr.

**746. Human Sexuality**

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. 4 cr.



**750. Contemporary Issues in Adolescent Development**

Focuses on contemporary adolescents and their development within the contexts of families, schools, and the larger community. The course familiarizes students with major theoretical perspectives regarding adolescent development and provides an overview of current research on critical issues facing adolescents, their parents, and professionals who work with adolescents. Problems and risks will be addressed, but the major emphasis will be on maximizing strengths and opportunities. 4 cr.

**757. Race, Class, Gender, and Families**

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; permission. Writing intensive. 4 cr.

**760. Family Programs and Policies**

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: FS 545; permission. Writing intensive. 4 cr.

**771. Observation and Assessment of Young Children**

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: FS 525; 623; 635. (Fall semester only.) 4 cr.

**772. International Approaches to Child Advocacy**

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; permission. Writing intensive. 4 cr.

**773. International Perspectives on Children and Families**

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. 4 cr.

**776. Children, Adolescents and the Law**

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: FS 525, 545 and FS 623 or 624; permission of instructor. 4 cr.

**782. Family Internship**

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: FS major; senior status; FS 525; 545; 20 credit hours of family studies course work; permission. Pre- or Coreq: FS 760. Coreq: FS 792. IA (continuous grading). Cr/F. 6 cr.

**785, 786. Seminar for Student Teachers**

Supplements the student teaching experience and effects a transition to the profession of teaching for those students admitted to the early childhood certification option. 2 cr.

**788. Student Teaching Young Children**

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. Prereq: FS major; FS 525; 545; 623; 635; 733; 734; 743; EDUC 706; KIN 675; MATH 601; THDA 520; permission. Coreq: FS 785-786. (Spring semester only.) Special fee. Cr/F. 8 cr.

**792. Family Internship Seminar**

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: FS major; admission to family internship program; permission. Coreq: FS 782. (Fall and spring semester.) IA (continuous grading). Writing intensive. 2 cr.

**794. Families and the Law**

Exploration of laws effecting families and the interaction of family members with each other and with society. Prereq: FS 545. Writing intensive. 4 cr.

**797. Advanced Special Topics**

Highly focused examination of a particular theoretical, methodological, or policy issue. Prereq: permission. Writing intensive. 1 to 6 cr.

**799. Honors Senior Thesis**

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. 2 to 4 cr.

---

## French (FREN)

(For program description, see page 40.)

**401-402. Elementary French**

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. 402 cannot be taken separately except with permission of instructor. Special fee. 4 cr.

**403. Review of French**

Conducted in French. The course emphasizes the active use of French through speaking, listening, reading, writing, labs, and films while providing a review of basic grammars. 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. 4 cr.

**425. Introduction to French Studies**

Taught in English. Designed for students interested in exploring the history, literature, and culture of France and other French-speaking countries. Learning by means of guest speakers, and multimedia. Prepares for FREN 401-402. Does not satisfy B.A. foreign language requirement, but does satisfy the general education requirement(s) for foreign culture and the prerequisite for the French studies minor. Special fee. (Offered spring semesters and occasional summer semesters.) Writing intensive. 4 cr.

**426. Introduction to Francophone Studies**

Taught in English. Explores the history, literature, and cultures of francophone countries in Europe, Africa, North America, or the Caribbean. Lecture, discussion, guest speakers, and multimedia. Satisfies the general education requirement for foreign culture and counts toward the French Studies minor. Francophone regions will vary from year to year. Special fee. Writing intensive. 4 cr.

**500. Selected Topics in World Literature**

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. Cr/F. Writing intensive. 4 cr.

**503/503H, 504/504H. Intermediate French**

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. 4 cr.

**522. French Drama in Translation**

Taught in English, major works of comedy, tragedy, and drama. Moliere and Racine to the present day. Not for major credit. Special fee. (Not offered every year.) 4 cr.

**525. Introduction to French Civilization and Culture**

Taught in English. French civilization from a variety of perspectives and topics. Includes historical, geographical, and artistic expressions of French culture. Not for major credit. May be repeated for credit barring duplication of materials. Special fee. (Not offered every year.) Writing intensive. 4 cr.

**526. Introduction to Francophone Cultures**

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. 4 cr.

**527. Francophone Cinema**

Introduction to major francophone film texts. Through cinema, the course explores the cultures, societies, histories, and politics of francophone countries in Europe, Africa, North America, and the Caribbean. Students examine filmmakers, genres, periods, and movements. Lecture, discussion, and guest speakers. Francophone region varies from year to year. Taught in English. Special fee. 4 cr.

**582. Study Abroad in Paris**

Study with the University of Delaware program in Paris, France. For students who have completed FREN 503 with a grade of B- or better. Students take one language course (equivalent to FREN

503 or 504) and courses taught in English (topics include Art History, History, Literature, and Political Science). Special fee. Prereq: FREN 501 or FREN 503. Cr/F. 1 to 16 cr.

**585. Intermediate Language Study in France**  
Equivalent to FREN 403, requires four weeks of intensive study of French language and culture at the Centre International d'Études des Langues (CIEL) in Brest, France. Prereq: FREN 501 or French 4 in a U.S. high school, with a grade of C+ or better and permission. Special UNH administrative fee and DCE registration fee. Student responsible for personal and travel expenses, and tuition costs in France. Special fee. (Offered summers only.) 4 cr.

**586. Intermediate Language Study in France**  
Equivalent to FREN 504, requires four weeks of intensive study of French language and culture at the Centre International d'Études des Langues (CIEL) in Brest, France. Prereq: FREN 503 or 585 with a grade of C+ or better and permission. Special UNH administrative fee and DCE registration fee. Student responsible for personal and travel expenses and tuition costs in France. Special fee. (Offered summers only.) 4 cr.

**595. French Practicum**  
Practical use of French language or cultural skills outside the classroom through special projects. May be repeated up to 4 credits. Prereq: Permission. Cr/F. 2 cr.

**631, 632. Advanced French Conversation and Composition**

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 various media. Students develop phonetics and oral/aural skills in lab and class. Prereq: C or better in FREN 504. Required for majors. Special fee. Writing intensive. 4 cr.

**651/651H, 652/652H. Readings in French Literature**

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 Coreq: FREN 631-632. Required for majors. Special fee. Writing intensive. 4 cr.

**675. Topics in French Civilization**

Topics drawn from all aspects and periods of French civilization. Prereq: FREN 631, 632, and 651 or 652. May be repeated for credit barring duplication of materials. Special fee. (Not offered every year.) Writing intensive. 4 cr.

**676. Topics in Francophone Culture**

Topics drawn from all aspects and periods of French civilization. Prereq: FREN 631, 632 and 651 or 652. May be repeated for credit barring duplication of materials. Special fee. (Not offered every year.) Writing intensive. 4 cr.

**677. France in the European Union**

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 631-632. Coreq: FREN 651 or 652. (Not offered every year.) Writing intensive. 4 cr.

**682. Study Abroad in Paris**

Study with the University of Delaware program in Paris, France. For students who have completed FREN 504 or 631 with a grade of B- or better.

Students take one language course (equivalent to FREN 631 or 632) and courses taught in English (topics include Art History, History, Literature, and Political Science). Special fee. Prereq: FREN 504 or FREN 631. Cr/F. 1 to 16 cr.

**683, 684. Advanced Language Study in France**

Equivalent to FREN 631, this course requires four weeks of intensive study of French language at the Centre International d'Études des Langues (CIEL) in Brest France. Prereq: FREN 504 with a grade of C or better and permission. Special UNH administrative fee and DCE registration fee. Student responsible for personal and travel expenses and tuition costs in France. Special fee. (Offered summers only.) 4 cr.

**690. Study Abroad in Dijon France**

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 631-632 and FREN 651 or 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 652 for majors. Special fee. Cr/F. 16 cr.

**695. Special Advanced Language Study in France**

Four weeks of intensive language study at the Centre International d'Études des Langues (CIEL) in Brest, France. Prereq: FREN 631 and 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 CIEL. (Offered summer only.) Special fee. 4 cr.

**762. 17th Century French Literature**

Prereq: FREN 651 and 652 or equivalent. Special fee. (Offered fall semester in alternate years.) Writing intensive. 4 cr.

**765. 18th Century French Literature**

Prereq: FREN 651 and 652 or equivalent. Special fee. (Offered spring semester in alternate years.) Writing intensive. 4 cr.

**775. 19th Century French Literature**

Prereq: FREN 651 and 652 or equivalent. Special fee. (Offered fall semester in alternate years.) Writing intensive. 4 cr.

**782. 20th Century French Literature**

Prereq: FREN 651 and 652 or equivalent. Special fee. (Offered spring semester in alternate years.) Writing intensive. 4 cr.

**785. Topics in Francophone Literatures**

Readings in French literatures from outside of France (e.g., Québec, Africa, the Caribbean). Taught in French. Prereq: FREN 651 and 652. Special fee. (Not offered every year.) Writing intensive. 4 cr.

**790. Advanced Language and Style**

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. 4 cr.

**795, 796. Special Studies in French Language and Literature**

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. (Not offered every year.) 1 to 4 cr.

**798. Seminar in French Literature**

Topics chosen by the instructor. May be repeated for credit barring duplication of material. Prereq: FREN 651, 652; permission. (Not offered every year.) 4 cr.

**799. Honors Senior Thesis**

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. 2 cr.

---

## Genetics (GEN)

(For program description, see page 85.)

**705. Population Genetics**

An exploration of the forces affecting the frequency and distribution of allelic variation in natural populations. The relative role of mutation, selection, random drift and inbreeding and structuring genetic variation. Quantification of the genetic structure of populations. Prereq: BIOL 604. (Also offered as ZOO 705.) Special fee. Lab. (Not offered every year.) 4 cr.

**706. Human Genetics**

The genetic basis of human traits and diseases. New understanding added by molecular genetic approaches. Human genome project, gene therapy. Discussion of genetic components of quantitative and behavioral traits in human evolution. (Not offered every year.) Prereq: BIOL 604 or ANSC 612. (Also offered as ANSC 706.) 3 cr.

**711. Genomics and Bioinformatics**

The 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: BIOL 604. (Also offered as BCHM 711 and MICR 711.) Lab. 4 cr.

**715. Molecular Evolution**

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: BIOL 604. Some knowledge of statistics is recommended. (Also offered as ZOO 715.) Special fee. Lab. (Not offered every year.) 4 cr.

**723. Quantitative Genetics**

Analysis of continuous variation in populations simultaneously segregating at multiple loci. Genetic and nongenetic factors and the complex interactions between them. Models and methods of analysis, for both theoretical and practical applications.



Prereq: BIOL 604; BIOL 528 strongly suggested. (Also offered ZOO 723.) Special fee. Lab. (Not offered every year.) 4 cr.

### 753. Cytogenetics

Chromosome structure, function, and evolution. Eukaryotic genome organization. Theory of, and laboratory techniques for, cytogenetic analysis in plants and animals. Prereq: BIOL 604. Special fee. Lab. (Also offered as P BIO 753. Not offered every year.) 4 cr.

### 754. Laboratory in Biochemistry and Molecular Biology of Nucleic Acids

Application of modern techniques to the analysis of biomolecules, with an emphasis on nucleic acids; includes DNA isolation and analysis, cloning, sequencing, and analysis of gene products. No credit if credit has been received for MICRO 704. Prereq: BCHM 658/659; 751, or permission. (Also offered as BCHM 754 and P BIO 754.) Special fee. Not offered every year. Writing intensive. 5 cr.

### 766. Environmental Genomics

The field of environmental genomics uses existing and developing high throughput genomic-scale technologies to investigate ecological and evolutionary theory, and so provides a more complete understanding of how organisms respond to level. Course covers an array of systems involved in this emerging field, with the central aim of understanding the effects of environmental change on genome structure, gene expression, and adaptive evolutionary change. Information is derived from the primary literature in the field and covers practical and technical concepts as well as the underlying theoretical basis for the major research themes. Prereq: BIOL 604. (Also offered as BCHM 766.) 4 cr.

### 771. Molecular Genetics

Structure, organization, replication, dynamics, and expression of genetic information in eukaryotes. Focus on molecular genetic mechanisms of gene expression and its control; molecular genetics methods; molecular genetic control of cell division and differentiation during development. Prereq: BCHM 658 or 751; BIOL 604; or permission. (Also offered as BCHM 771.) 4 cr.

### 772. Evolutionary Genetics of Plants

Mechanisms of genetic change in plant evolution, domestication, breeding, and genetic engineering. Topics include Darwinian theory; speciation and hybridization; origins and co-evolution of nuclear and organelle genomes; gene and genome evolution; transposable elements, chromosome rearrangements, polyploidy. Lab: DNA techniques, sequence analysis programs, phylogenetic trees. Special fee. Prereq: BIOL 604 or equivalent; P BIO 412 or BIOL 411/412 or equivalent. (Also offered as P BIO 772.) 4 cr.

### 774. Plant Biotechnology and Genetic Engineering

Plant transformation and regeneration, gene isolation and identification, structure and regulation of plant genes, current applications of plant genetic engineering, environmental and social implications. Prereq: BIOL 604 or permission. (Also offered as P BIO 774.) 3 cr.

### 775. Plant Biotechnology and Genetic Engineering Lab

Techniques for genetic transformation and selection of plants, analysis of foreign gene expression, and plant cell and tissue culture. Coreq: P BIO or GEN 774. (Also offered as P BIO 775.) Special fee. (Not offered every year.) 2 cr.

### #782. Developmental Genetics

The molecular genetic basis of metazoan development. Focuses on how genes direct the process and how this problem is analyzed in model organisms using molecular genetic approaches. Topics include control of cell division, maternal factors, cell-cell interactions, and differential gene expression. Prereq: BIOL 604; BCHM 658 or 751. (Also offered as BCHM 782. Not offered every year.) 3 cr.

### 795/795W. Investigations

Independent study/research in various areas of genetics. A) Transmission Genetics, B) Molecular Genetics, C) Population and Quantitative Genetics. Prereq: permission. May be repeated to a maximum of 4 credits. 1 to 4 cr.

## Geography (GEOG)

(For program description, see page 36.)

### 401/401H. Regional Geography of the Western World

Major culture areas of the 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 the opportunities and solved the problems existing in the major regions occupied by Western culture: Europe, Russia, the Americas, and Australia and New Zealand. 4 cr.

### 402/402H. Regional Geography of the Non-Western World

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. 4 cr.

### 473. Elements of Weather

Basic principles of weather phenomena and the physical processes underlying these phenomena. Emphasis on weather patterns of New England. Lab. 4 cr.

### 514. Geography of the United States and Canada

Historical and regional geography of Canada and the U.S. Geographical diversity of the two countries; the development of distinctive culture regions; physical setting, resource base, settlement, population growth, economic development. Contemporary issues and problems. The particular relationship between the two countries. 4 cr.

### 540. Geography of the Middle East

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. (Not offered every year.) 4 cr.

### 541. Geography of Japan

Examination of Japan's environmental setting, historical geographic evolution, distinctive cultural geographic patterns, population and settlement characteristics, internal spatial differentiation, economic growth, political geographic structure, and global importance. (Not offered every year.) Writing intensive. 4 cr.

### 570. Climatology

General survey of climate classification and the geographical distribution of climate types, interpretation and applications of climate data, climate change over geologic time, and issues of global warming. (Not offered every year.) Prereq: GEOG 473 or ESCI 405. 4 cr.

### 572. Physical Geography

Basic principles underlying the study of landforms. Emphasis is placed on their spatial distribution and the processes that shape the landscape. Special fee. (Not offered every year.) 4 cr.

### 573. Biogeography

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. 4 cr.

### 581. Human Geography

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. 4 cr.

### 582. Economic Geography

Investigates the manner in which resources and space have been organized for the production of goods and services: agriculture, the extractive industries, manufacturing, and the tertiary sector. Empirical studies, theories of location, and location models. Major contemporary problems and issues in agriculture and food supply, energy sources, industrial readjustment, and the global economy. (Not offered every year.) Writing intensive. 4 cr.

### 583. Urban Geography

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.) 4 cr.

### 584. Political Geography

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. 4 cr.

### 586. Historical Geography of North America

An introduction to major themes, important scholars, and commonly used research techniques in historical geography. Course is reading and research oriented. Focus will be on North America. (Also listed as HIST 512.) Writing intensive. 4 cr.

### 587. Place and Popular Culture

Explores the role geography plays in popular culture—such as in literature, motion pictures, television, music, the news media, and advertising—and the ways in which popular culture shapes people's perceptions about places. Writing intensive. 4 cr.

### #610. Geography of New England

The distinctive physical setting of New England, its settlement and development during the past three centuries, and the present-day problems and opportunities of the region. One Saturday field excursion near end of term. Special fee. (Not offered every year.) 4 cr.

**658. Introduction to Geographic Information Systems**

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. Permission. (Also offered as NR 658.) 4 cr.

**673. Environmental Geography**

Survey of the interactions between humans and earth's physical environments. Attention focused on the geographical distribution of environmental problems. Topics include resource utilization, economic factors, population growth, food supplies, and air and water pollution. (Not offered every year.) Writing intensive. 4 cr.

**685. Geography of Population and Development**

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. 4 cr.

**686. World Economy and Globalization**

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. 4 cr.

**757. Photo Interpretation and Photogrammetry**

Practical and conceptual presentation of techniques for using remote sensing, specifically aerial photographs, in natural resources. Includes photo measures of scale, area, parallax and object heights; flight planning; photo geometry; an introduction to the electromagnetic spectrum; and photo interpretation and mapping. Concludes with an introduction to digital remote sensing including multispectral scanners, radar, and thermal imagery and a brief discussion of geographic information systems (GIS). Applications to forestry, wildlife, land-use planning, earth sciences, soils, hydrology, and engineering. Prereq: algebra. Special fee. Lab. (Also listed as NR 757.) 4 cr.

**759. Digital Image Processing for Natural Resources**

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.) 4 cr.

**760. Geographic Information Systems in Natural Resources**

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.) 4 cr.

**795. Special Project**

Readings, library, archival, and fieldwork. Primarily for geography seniors. Prereq: permission. Writing intensive. 2 or 4 cr.

**796. Special Topics**

Special Topics in Geography: A) Climatology, B) Environmental Geography, C) Urban Geography, D) Political Geography, E) Population Geography, F) Economic Geography, G) Cultural Geography. Prereq: permission. 4 cr.

**797. Seminar**

Exploration of geography as a research discipline. Definition and investigation of research problems. Primarily for geography seniors. 2 cr.

---

**German (GERM)**

(For program description, see page 41.)

**401-402. Elementary German**

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. 4 cr.

**500. Selected Topics in World Literature**

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. 4 cr.

**503-504. Intermediate German**

Review of grammar; practice in oral and written expression; readings and cultural material. Prereq: GERM 401-402 or equivalent. Labs. Special fee. 4 cr.

**#521. Major German Authors in English**

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. 4 cr.

**#523. Women and German Film**

Acquaints students with major German film texts. Asks gender-specific questions about German film history, male and female film makers, the construction of sexuality through film images and narrative, and the impact of feminism. In English. Special fee. 4 cr.

**524/524H. Special Topics in German Film**

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. 4 cr.

**525/525H. Introduction to German Culture and Civilization**

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. 4 cr.

**585. Rosenheim Summer Program: A Review of German**

Provides an intensive, three-week review of the basic vocabulary and grammatical structures of the German language. While the reading, listening and writing skills will be practiced, this course emphasizes the speaking of the language in everyday, real-life situations. Conducted during the summer in Rosenheim, Germany. Special fee. Prereq: one year of college, elementary German or equivalent; permission. 4 cr.

**595. Internship**

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. 2 to 4 cr.

**601. Introduction to German Literature**

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. 4 cr.

**#630/630H. German Narrative Forms**

Textual studies based on works from one of the following prose genres: novel; novella; autobiography; fairy tale; short prose (short story, parable, documentary prose, feuilleton). Focuses on the nature and characteristics of the genre, thematic and stylistic features of each text, and the diverse cultural, political, gender, or national perspectives that generate these forms. Special fee. 4 cr.

**631/631H/631W. Advanced Communications Skills I**

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. 4 cr.

**632. Advanced Communications Skills II**

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. 4 cr.

**#640. German Drama**

Selected masterpieces of the German theatre from the 18th century to the present, including reception and performance history. Course may vary in emphasis from classical German tragedy and comedy to more modern forms such as didactic and documentary plays, tragicomedy, and farce. Special fee. Writing intensive. 4 cr.

**645/645H. Contemporary German Literature**

Literary trends in the German-speaking countries since 1945. Analysis and interpretation of works by major authors. Special fee. Writing intensive. 4 cr.



**685, 686. Study Abroad**

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. 16 cr.

**721/#721H. German Culture and Civilization**

Historical, social, artistic, and folkloristic developments in German-speaking countries from the beginning to the present. Prereq: GERM 525 or permission of instructor. Special fee. 4 cr.

**728/728H. Modern German Literature**

Major literary movements from 1872 to 1945. Reading and analysis of selected works. Special fee. Writing intensive. 4 cr.

**795/795H, 796. Independent Study**

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. 1 to 4 cr.

**797. Special Studies in German Language and Literature**

Selected topics in language, culture, and literature. 2 or 4 cr.

**798. Special Studies in German Language and Literature**

Selected topics in language, culture, and literature. Special fee. 2 or 4 cr.

**Gerontology (GERO)**

(For program description, see page 111.)

**#600. Introduction to Gerontology**

Introduction to the study of normal aging and to the applied practice of service to the elderly. Primarily for minors but open to other students. Writing intensive. 4 cr.

**795. Independent Study**

Practical experience with elderly populations under supervision of designated faculty. 4 cr.

**Greek (GREK)**

(For program description, see page 41.)

**401-402. Elementary Classical Greek**

Grammar, simple composition, and translation. For students without previous training in Greek. Special fee. 4 cr.

**403-404. Elementary Modern Greek**

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. 4 cr.

**503-504. Intermediate Classical Greek**

Readings from Xenophon, Plato, Herodotus, Euripides, and the New Testament. Prereq: GREK 402. Special fee. 4 cr.

**505-506. Intermediate Modern Greek**

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. 4 cr.

**595, 596. Directed Reading in Greek**

Independent study of a classical, Byzantine, or modern Greek author. May be repeated. Prereq: GREK 503-506, or equivalent. Special fee. 2 or 4 cr.

**#631, #632. Greek Prose Composition**

Review of Attic Greek grammar, study of Greek prose style, English to Greek translation. Prereq: permission. Special fee. 4 cr.

**635-636. Third-Year Modern Greek**

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 505-506; or 595-596 (if approved) with a grade of C or better. Special fee. 4 cr.

**751, #752. Homer and the Archaic Period**

Readings from the Iliad, the Odyssey, the Homeric hymns, Hesiod, Pindar, and the lyric poets. Prereq: permission. Special fee. 4 cr.

**753, 754. Advanced Study in Athenian Literature**

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. 4 cr.

**795, 796. Special Studies**

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. 4 cr.

**Health & Human Services**

(For program description, see page 72.)

**444. The Right to be Disabled in the Extreme Makeover Society**

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. 4 cr.

**450. Making Babies: Technology, Nature, and Social Context**

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. 4 cr.

**#510. AIDS: Health, Ethics, and Social Agenda**

AIDS has become one of the most important health issues of our time. This course explores the medical, policy, financial, and ethical issues raised by society's efforts to respond to this "crisis." Writing intensive. 4 cr.

**540. Statistics for Health and Human Service Professionals**

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 639, 644; PSYC 402; SOC 502. Special fee. 4 cr.

**698. Special Topics**

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. Cr/F. 1 to 4 cr.

**740. Collaborative Services for Children with Special Needs**

Teachers and therapists need to collaborate to provide quality services for children and youth when working in a school setting. Designed for students in any professional area who plan to work with children, this course focuses on team development to plan integrated education and related services for children with a variety of special needs including autism/PDD, ADHD, learning disability, cerebral palsy, speech and language disorders, and multiple disabilities. Students will learn team development skills, how to collaborate with other professionals to write an IEP and provide services, and how to address needs frequently seen in common pediatric conditions. Prereq: junior level or above. 4 cr.

**798. Special Topics**

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. 1 to 4 cr.

## Health Management & Policy (HMP)

(For program description, see page 75.)

### 400. Exploring Health: Doing Well by Doing Good

Acquaints students with the administrative roles, functions, settings, and professional expectations of health management professionals. Provides an overview of health care organizations and services. Students visit selected health care organizations and talk with professionals. 2 cr.

### 401/401H/401W. United States Health Care Systems

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. 401W is writing intensive. 4 cr.

### 402. Health Management and Policy Critical Issues

The roles, functions, settings, and professional expectations of Health Management Professionals. Explores key topic areas of health management and policy, including financing the health care system, the public health system, and function, the political process, as well as current areas of interest. Prereq: HMP 401 major or permission. 4 cr.

### 430. Alternative Medicine and Health

An overview of several systems of medicine and health that employ a framework different from industrialized Western medicine for understanding the nature and causes of disease and approaches to treatment. To better understand the validity or legitimacy of alternative systems, we will also examine current research on the outcomes, effectiveness and efficacy of the various systems. 4 cr.

### 444. From Frankenstein to Dolly, and Beyond

This course is an interdisciplinary introductory course designed specifically for first year students. It seeks to stimulate and support student inquiry and exploration of social and ethical issues associated with scientific research and advances, the value-laden questions that they often precipitate, and their impact on individuals, population groups, and society at large. (Also listed as MICR 444.) 4 cr.

### 501/501H. Epidemiology and Community Medicine

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. 4 cr.

### 505. Public Health: History and Practice

Blends a broad overview of the historical development of public health with important areas of contemporary public health practice. Traces the history and practices of public health from classical times, through the Middle Ages, the Renaissance, and European Enlightenment. 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. 4 cr.

### 569. Human Behavior and the Public Health

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. 4 cr.

### 570. Social Marketing

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. Writing intensive. 4 cr.

### 600. Special Topics

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. 1 to 4 cr.

### 621. Pre-practicum Seminar

Preparation for field practicum experience, orientation to experiential learning and competency development. Prereq: major. 2 cr.

### 622A-C. Field Practicum

Experiential learning in a health care organization; application of theories to practice. Planned learning objectives are accomplished through three distinct components. Supervision by agency personnel. Prereq: junior major; permission. Cr/F. 622A, Field Practicum Organizational Analysis: analysis of assigned health care agency, from external and internal viewpoints. Coreq: 622B; 622C. Cr/F. 622B, Field Practicum Management Skills Development: development of the basic quantitative and interpersonal skills required for a health services manager. Coreq: 622A; 622C. Cr/F. 622C, Field Practicum Project Analysis: demonstration of knowledge and analysis of specific problem-solving skills required during internship. Coreq: 622A; 622B. Cr/F. 1 cr.

### 624. Post Practicum Seminar

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. 2 cr.

### 630. Health Issues Seminar I

Discussion of current issues in the field of health management, health policy and public health. Prereq: major or permission. 1 cr.

### 631. Health Issues Seminar II

Discussion of current issues in the fields of health management, health policy and public health. Prereq: major or permission. 1 cr.

### 642. Health Economics

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. Prereq: ECON 402. (Also listed as ECON 642.) 4 cr.

### 702. Quantitative Methods in Epidemiology

Builds on previous material in epidemiology and statistics to develop quantitative skills in epidemiology. Includes measures of disease frequency, comparative measures of disease frequency, effects estimation and confidence intervals, contingency table analysis, logistic regression and survival analysis. Students identify appropriate uses for these methods, calculate them by hand using statistical software as appropriate, and interpret statistics. A data set is used for practice calculations and to produce a final project. Prereq: HMP 501. Special fee. 4 cr.

### 710. Financial Management for Clinicians

Basics of health care financial management and cost accounting. Includes cost concepts and product costing, budgeting, and variance analysis with emphasis at the departmental level. Contains basic accounting principles: use of ratio analysis to examine balance sheets and revenue and expense statements. Explores capital project analysis and health care reimbursement. Prereq: HMP 401 or equivalent; permission. 4 cr.

### 711. Health Systems Research I

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. 4 cr.

### 712. Health Systems Research II

Introduces students to decision science and applies decision making to health systems. Teaches the techniques of health care management, epidemiological analysis, and policy analysis as they relate to the decision making process. There is a lab section with applied exercises. Prereq: HMP 711. Lab. 4 cr.

### 721. Managing Health Care Organizations

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. 4 cr.

### 723. Health Planning

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. 4 cr.

### 734. Health Law

Concepts and principles of law as these affect medical and administrative decision making in health care institutions and the ability to discern issues that warrant advice and/or assistance of legal counsel. Topics include corporations and antitrust, property law, patients' rights under law, and malpractice. Prereq: major or permission. 4 cr.



**740. Health Care Financial Management**

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. Lab. 4 cr.

**742. Strategic Management for Health Care Organizations**

Application of managerial methods involving financial, marketing, and operational analysis to health management. Case studies. Prereq: major or permission; HMP 740. Lab. Special fee. 4 cr.

**744. Ethical Issues in Health Management and Medicine**

Ethical theories and decision-making models; patients' rights and professional responsibilities; social justice and resource allocation; critical issues facing clinicians, managers, and health policy makers; managerial versus medical care conflicts. Prereq: major or permission. Writing intensive. 4 cr.

**746. Health Policy**

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. 4 cr.

**748. Health Policy Analysis**

Public policy outputs analyzed for effectiveness, efficiency, and equity, focusing on public policies in the United States. Prereq: major or permission. Lab. Special fee. 4 cr.

**#755. Long Term Care Management and Policy**

Analyzes significant contemporary management and public policy issues associated with the aging population and the continuum of long-term care in the U.S. Emphasizes costs associated with and approaches to financing, accessibility, delivery, and quality of home-based, community-based, and institution-based health care services. Prereq: major or permission. 4 cr.

**796. Independent Study**

In-depth study with faculty supervision. Prereq: permission of major adviser and faculty in the area concerned. 2 to 4 cr.

**798H. Honors Project/Research Design**

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. 2 cr.

**799H. Honors Project/Research**

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. 4 cr.

**History (HIST)**

(For program description, see page 37.)

**405/405H/405W. History of Early America**

America from the early age of European discovery to the mid-19th century. Emphasizes the interaction of European, Native American, and African peoples; on the separation of the English colonies from Great Britain; and on the establishment and early history of the United States. Not open to majors or minors who elected HIST 410. 405W is writing intensive. 4 cr.

**406/406H/406W. History of the Modern United States**

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. Not open to majors or minors who elected HIST 410. 406W is writing intensive. 4 cr.

**410/410H. Historical Survey of American Civilization**

Topical survey, within broad chronological divisions, of the development of American civilization since 1600. Not open to majors or minors who have elected HIST 405 or 406. Writing intensive. 4 cr.

**421. World History to the 16th Century**

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. 4 cr.

**422/422H. World History in the Modern Era**

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. 4 cr.

**425/425H/425W. Foreign Cultures**

Introduces the culture of a particular nation or region; preparation for experiencing a foreign culture. Consult department for listing of topics. 425W is writing intensive. 4 cr.

**435/435H/435W, 436/436H/436W. Western Civilization**

The classical origins and evolution of European civilization through the Renaissance, Reformation, and voyages of discovery. The rise of Europe to global supremacy in the 19th century and its transformation in the 20th century. 435W and 436W are writing intensive. 4 cr.

**444. Through Their Eyes: The American Civil War from Primary Sources**

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. 4 cr.

**444A. When is War the Answer**

Examines a series of foreign policy crises that might have led, and in some cases did lead, to war between the United States and some foreign foe. Using diplomatic documents, a basic diplomatic history text book, and a range of secondary sources, we will

examine several times when the United States came to the brink of war, and we will ask when and why the nation has chosen to resolve its foreign policy problems with force. Topics include neutrality during the early Napoleonic wars, the War of 1812, the War with Mexico in 1846 and the avoided war with Britain of the same year, the Spanish-American War, both World Wars, Cuba and Vietnam, and the two Iraq wars. Students are able to connect decisions about war with larger trends and developments in U.S. history. In the end, they have refined their understanding of when the nation has chosen to use force as well as their ability to apply that knowledge to future crises. Focus on policy making rather than the impact of war itself, although naturally historical lessons about war shape decision making. Writing intensive. 4 cr.

**444B. Revolutions Across the Atlantic**

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. 4 cr.

**444C. World War Propaganda in Britain and the United States**

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. 4 cr.

**444D. Slavery and Society in Pre-Colonial Africa**

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. 4 cr.

**483. History of World Religions**

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. This initial survey of world religions prepares students for HIST 484. Writing intensive. 4 cr.

#### **484. Patterns in World Religions**

Introduces the comparison of religions and religious patterns. Examines cross-cultural themes like sacred places, sacred books, and sainthood. Through readings, students become acquainted with methods used in the historical study of religions. Primary and secondary readings encompass a wide variety of religious practices and ideas in Hinduism, Buddhism, Christianity, Islam, Judaism, as well as tribal religions. Ethnographic films supplement readings and lectures. Some classes may be adjusted to accommodate guest lecturers in medieval European history. Prereq: HIST 483 recommended. Writing intensive. 4 cr.

#### **497/497H/497W. Explorations in Historical Perspectives**

Seminar for freshmen and sophomores. 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. 497W is writing intensive. 4 cr.

#### **500. Introduction to Historical Thinking**

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. 4 cr.

#### **501. Medieval Military History**

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. 4 cr.

#### **502. Latin Readings in Medieval History**

Provides students with an opportunity to read medieval sources in their original language. Helps students with a background in Latin improve their reading ability, and exposes them to the challenges of conducting historical research in a foreign language. Latin readings taken from many of the major medieval narrative sources from the fifth through the fourteenth century. Prereq: LATN 402 or equivalent. 1 cr.

#### **503. Soviet Dreamers, Despots, and Dissidents**

Through the study of individual biographies and writings of male and female Russian revolutionaries, Soviet leaders, and prominent dissidents, course examines the question of how the combination of Russian culture and Marxism created both cruel despotism and profound advocacy for social justice and universal human rights. Lecture

and discussion. Response papers and essay exams. Readings include revolutionary texts, laws, biographies, novels, films, and scholarly articles about 20th century Russia/USSR. Writing intensive. 4 cr.

#### **#505. African American History**

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. Colonial America to the Civil War. Writing intensive. 4 cr.

#### **506. African American History**

See description for HIST 506. Reconstruction to the present. Writing intensive. 4 cr.

#### **507. Native Peoples of the Americas**

Indian societies of the American continents, their reactions to, and interaction with, the Europeans who invaded and conquered them. Emphasis on North America. 4 cr.

#### **509. Law in American Life**

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). 4 cr.

#### **511. History of New Hampshire**

From presettlement times to the present, emphasizing the use of locally available materials and sources. Writing intensive. 4 cr.

#### **512. Historical Geography of North America**

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 586.) 4 cr.

#### **521. Origins of Modern Science**

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. 4 cr.

#### **#522. Science in the Modern World**

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. 4 cr.

#### **531. Americas: Introduction to Latin America and the Caribbean**

The thirty-three countries of the region are important trading partners and resource suppliers for the United States. Examines the history, culture, politics, economics, social structures, and the international relationships of this region. Ranges from the macro-level discussion of economics, to personal and family issues, to key moments in history, to aspects of local and transnational cultures. Individual community and country examples illustrate larger processes affecting the whole region. Stereotypes and generalizations challenged by stressing the human face of national development, military rule, democratization, migration, urbanization, color, class, identity, women's roles, religion, popular culture, sovereignty, revolution, and the impact of migrants from the region on the United States. 4 cr.

#### **532. Modern Latin America**

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. 4 cr.

#### **537. Espionage and History**

Introduces the history and politics of espionage and intelligence organizations in modern times. 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. 4 cr.

#### **540. Foundations of Medieval History: 300-1300 CE**

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. 4 cr.

#### **559, 560. History of Great Britain**

History of Great Britain from the earliest times to the present; from social, constitutional, economic, political, and intellectual perspectives. Designed for history students as well as those interested in literature, Western political and social systems, American studies, education, and prelaw. 4 cr.

#### **563. Introduction to Russian Culture and Civilization**

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. 4 cr.

#### **565. Women in Modern Europe**

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. 4 cr.

#### **566. Women in American History**

Key changes in women's roles in the past three centuries with an emphasis on the peculiarities of the American setting. How, for example, were women's lives affected by the frontier; the intersection of Europe, African, and Native American cultures; religious diversity; the problem of defining citizenship in a democratic republic? Students will sample recent scholarship in women's history and study a wide variety of documents produced by women. 4 cr.

#### **567. History of Canada**

Covers the development of Canada from first contacts to the modern era, with an emphasis on the twentieth century. Particular focus is on Canada's position between Great Britain and the United States, Anglo-French tensions internally, and the shifting place of the First Nations in Canadian society. 4 cr.



## HISTORY

### 575. Ancient Near East

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. 4 cr.

### 576. Hebrew Bible in Historical Context

An introductory study of the Hebrew Bible, or Old Testament, examining the development of biblical literature in the context of ancient Near Eastern cultures and history. Interpretations of the creation stories and patriarchal narratives using literary and folklore methods; the transformation of Israelite religion from Moses to David to Ezra; the role of prophets and nature of ancient prophecy; the concept of the messiah; "wisdom" literature and the biblical interpretations of misfortune; the formation of a biblical canon; and the critical analysis of sacred texts. (Also offered as RS 576.) Writing intensive. 4 cr.

### 579. History of China in Modern Times

The transformation of Chinese society from 1600 to the present. Attention will be given to political and cultural developments as well as China's interaction with the outside world. 4 cr.

### 580. History of Japan in Modern Times

Explores major tendencies in Japanese history from the Tokugawa period to present. Will stress the interrelatedness of political, social, institutional, and literary developments so as to achieve a complex view of modern Japanese society. 4 cr.

### 583. Mystic and Saint in Islam

Examines how and why a cult of Sufi saints became such a significant part of religious practice in medieval Islamic Egypt and Anatolia. 4 cr.

### 585. Venture of Islam: 6th-15th Century

The origins and expansion of Islam and the development of the Muslim community from the time of Mohammed until the Islamic empires of the 16th century. Attention is given to religious and artistic as well as political developments. 4 cr.

### 586. Islam in the Modern Age, 15th Century to present

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. 4 cr.

### 587. History of Africa South of the Sahara

From ancient times to the present. Semester I: from prehistoric times to 1870. African migrations, kingdoms, and societies; African responses to the slave trade; Islam; European imperialism, colonialism, and industrialization; African nationalism, independence, and post-independence problems. 4 cr.

### 588. History of Africa South of the Sahara

From ancient times to the present. Semester II: from 1870 to present. African migrations, kingdoms, and societies; African responses to the slave trade; Islam; European imperialism, colonialism, and industrialization; African nationalism, independence, and post-independence problems. 4 cr.

### #589. Islam in Africa

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. 4 cr.

### 595, 596. Explorations

See department listings for semester topic. 1 to 4 cr.

### 600. Advanced Explorations

See department listings for semester topic. Barring duplication of subject, may be repeated up to a maximum of 8 credits. 1 to 4 cr.

### 601. Seminar in Religious Texts

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.) 4 cr.

### 602. Holocaust: The War on Europe's Jews

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. 4 cr.

### 603. European Conquest of America

Study of the social consequences of colonization, migration, and war in America, 1500-1775. Emphasis on the interaction of British colonies with competing European cultures (French, Dutch, Portuguese, and Spanish), with Native Americans, and with African American slaves. 4 cr.

### 605. Revolutionary America, 1750-1788

Examines the social, political, and cultural transformation of thirteen British colonies into the United States, up to the adoption of the Constitution. 4 cr.

### 606. History of the Early Republic

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. 4 cr.

### #607. Religion in American Thought and Life

Interdisciplinary study of American religious experience and its relationship to other aspects of American culture, taught by a team of three specialists, each in a different discipline: American intellectual and cultural history, American literature, and American church history. Central emphasis on several transforming themes of the 19th century and their effects upon the interplay of religion and society. (Also offered as ENGL 607, HUMA 607, and RS 607.) Writing intensive. 4 cr.

### 608. Arts and American Society: Women Writers and Artists, 1850-Present

Team-taught course studying the impact of gender definitions on the lives and works of selected American artists. Considers lesser-known figures such as Fannie Fern, Lilly Martin Spencer, and Mary Hallock Foote as well as better-known artists such as Willa Cather and Georgia O'Keefe.

Prereq: permission or one of the following: WS 401, HIST 566, ENGL 585 or 586, ENGL 685 or 785, or a 600-level art history course. (Also offered as ARTS 608, ENGL 608, and HUMA 608.) Writing intensive. 4 cr.

### 609. Special Topics in American Legal History

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. Prereq: HIST 509 or instructor's permission. Consult department listings of topics. Writing intensive. 4 cr.

### 611. Civil War Era

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. 4 cr.

### #612. Emergence of Industrial America

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. 4 cr.

### 615. United States Progressivism to the New Deal

United States from 1900 to 1941: cultural, political, and social factors causing major changes in American life. 4 cr.

### 616. United States Since World War II

United States since 1941; cultural, political, and social factors causing major changes in American life. 4 cr.

### 617. Vietnam War

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. 4 cr.

### 618. American Environmental History

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. 4 cr.

### 619, 620. Foreign Relations of the United States

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. 4 cr.

### #621. History of American Thought

Significant American thinkers considered in their social context. Dividing point at 1860. 4 cr.



**622. History of American Thought**

Significant American thinkers considered in their social context. 1860 to present. 4 cr.

**#623. Early American Social and Cultural History**

Gives students the opportunity to explore some of the recent findings of scholars who have studied Early American social and cultural history. Focuses on the experiences of Anglo-Americans and on the experiences of many of the other people with whom Anglo-Americans were frequently in contact, and who also shaped Early America. Includes consideration of the pan-Atlantic context of Early America, cross-cultural contacts, family and gender, labor systems, religious observations, crime, and other themes explored in recent social and cultural theory. 4 cr.

**624. Topics in Modern United States Social History**

Advanced study of topics in U.S. social history since the Age of Jackson. Topics will vary; may include slavery and the antebellum South, reform movements in U.S. history, family history, labor history, the impact of war on American society, race in recent U.S. history. May be repeated as topics change. 4 cr.

**625. Southern History and Literature since the Civil War**

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. 4 cr.

**631. History of Brazil**

Brazil has the fifth largest territory, the sixth largest population, and the eighth largest industrial economy in the world. Its colorful history has many distinctive features: the only country in the Americas to have been the capital of a European monarchy and then to have its own emperor for most of the last century; an outwardly peaceful image masking internal violence and turmoil; a suspicion of foreigners balanced by a desire to be accepted by them as equals; seemingly benevolent racial attitudes that serve to keep people of color on society's lower range; a tremendous cultural creativity that has given the world samba, film star Carmen Miranda, composer Hector Villa Lobos, songwriter Antonio Carlos Jobim, poet Vinicius de Moraes, and novelist Jorge Amado. Includes an examination of the roles of various elites; political, social, economic, military, cultural, and religious. HIST 531, 532 recommended. 4 cr.

**632. Latin American History: Topics**

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. 4 cr.

**633. Medieval England 800-1300**

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. 4 cr.

**634. Medieval Empires**

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. 4 cr.

**640. Holy War in the Holy Land: The Medieval Crusades**

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. 4 cr.

**641. Europe after the Black Death**

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. 4 cr.

**#642. Religious Conflict in Early Modern Europe**

Religious, social, and political maps of Europe were profoundly and permanently altered in the sixteenth and seventeenth centuries due to the split of the Protestant churches from the Roman Catholic church initiated in 1517 by Martin Luther. Explores the background to the Protestant Reformation of the sixteenth century and investigates the various personalities—the Protestant and Catholic reformers; the princes, artisans and peasants; the Anabaptist radicals—who shaped this era of religious change and conflict. Also explores the important effects of religious change on European society and culture at that time, including changes in gender roles, family life, and popular cultural practices such as magic and witchcraft. 4 cr.

**644. Victorian Britain**

The Victorian Era was a time of contrasts. Upon the throne sat Queen Victoria, a monarch known for her moral uprightiness, sexual probity and rigid sense of decorum. The streets of London, however, teemed with prostitutes, pickpockets and impoverished Irish immigrants 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 Britain had amassed during the nineteenth century. Examining sources such as the novels of Charles Dickens, the decorative arts of William Morris, and the scientific writings of Charles Darwin, we attempt to uncover the many-faceted culture, society and political life of Victorian Britain. The instructor places a strong emphasis on reading, class participation and writing. 4 cr.

**647. Early Modern France**

Explores the culture and politics of early modern French society. Popular culture, religion, gender relations, the family, state-building, political theory, and revolution are emphasized. Primary documents in translation are read and discussion is encouraged. 4 cr.

**#648. Modern France**

French society from Napoleon to Mitterrand. Topics include the Revolution of 1848 and the Paris Commune; World Wars and the Vichy regime; Existentialism, DeGaulle, and the Revolt of May-June 1968. 4 cr.

**652. Topics in European Intellectual History**

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. 4 cr.

**654. Topics in History of Science**

Advanced study of a selected topic in the history of European science since the Renaissance. 4 cr.

**656. 20th Century Europe**

World War I, European totalitarianisms, World War II, the loss of European primacy and the search for a new Europe. 4 cr.

**661, 662. England in the Tudor and Stuart Periods**

Political, religious, socioeconomic, and intellectual forces for change at work in England from the accession of Henry VII to the revolution of 1688-89. 4 cr.

**664. Russia: Modernization through Soviet Empire**

The challenges of modernization, experience and legacy of Leninist and Stalinist revolutions. Soviet consolidation and decline through the Gorbachev era. 4 cr.

**665. Themes in Women's History**

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. 4 cr.

**#666. Environmental History of Northwest Atlantic Commercial Fisheries**

After centuries of groundfishing humans have radically transformed the northwest Atlantic marine ecosystem, creating a tragedy for both fish and fisherman. This marine environmental history course considers the changing technology, ecology, and sociology of the commercial fishery off New England and the Canadian maritime from 1500 to the present. 4 cr.



**669. Germany from 1918 to Present**

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. 4 cr.

**#670. Historical Thinking for Teachers**

Examines the sources, methods, and interpretive strategies of the historian. Emphasizes texts and topics relevant to the middle- and high-school classroom. Designed for history teachers as well as individuals in the Master of Arts in Teaching (M.A.T.) program. 4 cr.

**675. Early History of Ancient Greece**

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. 4 cr.

**676. Classical and Hellenistic Greek Worlds**

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. 4 cr.

**677. Roman Republic**

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. 4 cr.

**678. Roman Empire**

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. 4 cr.

**679. Rights Revolution**

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. 4 cr.

**681. Modern China Topics**

Problems in modern Chinese history from 1800 to the present. Topics may vary. Students read translated primary sources, analyze literary works, and write critical essays and a research paper. History 579 is recommended. 4 cr.

**682. Cults and Charisma**

Examines religious sects and charismatic leaders using case studies from history and the contemporary world, as well as analytical principles from religious studies and anthropology. Explores various approaches to the question: what makes a person powerful over others, in connection with the formation of messianic sects, the genesis of the "cult," the traditional authority of priests and kings, sainthood, the events at Jonestown and Waco, and the popular image of the "cult." Students learn to employ a variety of tools and models to understand historical situations of charismatic leadership. (Also offered as RS 682.) 4 cr.

**684. History of Southern Africa since 1652**

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. 4 cr.

**685. Modern Middle East**

From the 18th century to the present. Problems created by modernization and reform of the traditional society; conservative reaction to reform, impact of nationalism, and appearance of new ideologies. 4 cr.

**#686. States and Societies in Precolonial West Africa**

An in-depth exploration of the nature and dynamics of state formation processes in West Africa. Focuses on major states such as Ghana, Mali, Songhai, Asante, Dahomey, Oyo, Benin, Borno and the Hausa states. Through a critical analysis of primary and secondary sources, film footage and video documentaries, the course examines the significance of such issues as oral tradition, migrations, religion, art, slavery, gender, trade, state, kingship and warfare in African history. 4 cr.

**#688. African Religions**

An interdisciplinary introduction to basic principles of African religions including historical and recent developments in the study of religion in Africa. Covers the place of religion in African societies and the interrelatedness of religion with myth, ritual, music, art, orality, gender, economics, social process, illness and healing, and kingship and power. Particular attention to African religions in the Americas and the history and impact of Islam and Christianity in Africa. Helps students to understand what is typical about religion, and special about African religion, while appreciating the role of religion in non-Western societies. Slides, films, maps and other visual aids as well as readings. 4 cr.

**689. New Testament in Historical Context**

Introduces the collection of writings known as the New Testament as both literature and historical documentation. Assigned readings from primary and secondary sources stress the historical, social, religious, and literary backgrounds of gospels,

Paul's letters, and the Apocalypse, and include a variety of early Christian texts left out of the canonical New Testament. Will touch on more general themes such as the religious world of the Roman Mediterranean, Judaism in the time of Jesus (and the Jewish character of the early Jesus-movement), apocalyptic visions and expectations, the diversity of "Christologies" in the century after Jesus' execution, the formation of the Christian Bible, and the interpretation of parables. Emphasizes the historical-critical, rather than confessional, understanding of early Christian documents. (Also listed as RS 689.) Writing intensive. 4 cr.

**#690. Introduction to Public History**

Introduces the theory, methodology, and practices of public historians. Examines the history and contemporary practices of historians whose research and scholarship is aimed at public audiences through the creation of diverse media and interpretive frameworks. Encourages interdisciplinary thinking about history. Cr/F. 4 cr.

**691. Internship**

Supervised internship with a governmental agency, private corporation, philanthropic institution, library, archives, museum, historical society, or other institution seeking individuals interested in historical research. Cr/F. 4 cr.

**695. Independent Study**

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. Prereq: permission. 4 to 8 cr.

**698. Internship in Museum Studies**

Supervised position with a museum, historical society, archive, or other history related site. Cr/F. 4 cr.

**701. Seminar: Historical Explorations**

A seminar for advanced undergraduates and graduate students on a selected topic. Topics will vary by semester. This course is discussion-based and meets once a week. There are no prerequisites for this course, but students should expect to be assigned substantial reading and writing. 4 cr.

**771. Museum Studies**

Introduction to theory, methods, and practice of museum studies. Examination of various museum functions, as well as contemporary historical controversies. 4 cr.

**772. Studies in Regional Material Culture**

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. 4 cr.

**774. Historiography**

Analysis of ancient and modern historians. Open to undergraduates with permission. (Not offered every year.) 4 cr.

**775. Historical Methods**

Contemporary historical methods. Required of all entering Ph.D. candidates; open to undergraduate with permission. (Not offered every year.) 4 cr.

**780. Special Topics in Museum Studies/ Material Culture**

Study of a selected topic related to museum studies or material culture. May be repeated for course credit with permission of the undergraduate adviser. 4 cr.

**787. Quantitative Methods and Computers for Historians**

The historian's use of computers and statistics: opportunities and problems in using and analyzing quantitative sources; elementary statistical techniques; practical applications involving microcomputers and applications programs. No previous knowledge of computers or college mathematics is assumed or required. Prereq: admission as an undergraduate major or graduate student in history; or permission of the instructor. (Not offered every year.) 4 cr.

**789. Seminar in the History of Science**

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. 4 cr.

**796. Research Internship**

Intensive collaborative experience in research for undergraduate majors. Students gain professional skills while assisting a faculty member on a continuing research project. Permission required. 2 to 4 cr.

**797. Colloquium**

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. Writing intensive. 4 cr.

**799. Senior Thesis**

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. 4 cr.

---

## Hospitality Management (HMGT)

(For program description, see page 106.)

**401. Hospitality Industry: Historical Perspectives and Distinguished Lecture Series**

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. 4 cr.

**403. Introduction to Food and Beverage Management**

Focuses on the basic principles of food and beverage operations management. During weekly laboratory sessions in the New England Center for Continuing Education, students experience both the front of the house and back of the house activities. Application of classroom principles further enhanced through industry guests, field trips, participation in gourmet dinner productions, and a class managed and produced catered function. Prereq: permission. Special fee. 4 cr.

**554. Lodging Operations Management**

Focus on management history, planning, organizing, leadership, and current and future management issues. Requires students to compare rooms-division management in a large hotel with that of a small hotel, including reservations, front desk operations and accounting, housekeeping, and auxiliary functions. The complexities and the terminology of the design, management, and maintenance of physical structures used by civil engineers and architects are integral to the course. Guest lecturers include hotel general managers and department heads who highlight students' projects. Pre- or Coreq: HMGT 401. 4 cr.

**567. Food and Beverage Operations Management**

Integration of operations management principles and techniques. Presentation of large-scale gourmet dinners; act as managerial consultants to on-campus food service facilities. The lab provides an experiential setting for the application of such principles as marketing, operations management, accounting and organizational behavior through the planning, organizing, coordinating, and execution of weekend food service events. Lab. Special fee. 4 cr.

**595. Internship I**

A nontraditional academic experience relating to work experience within the university system. Coordinated by a faculty member who provides supervision, along with an on-site supervisor, through regular class meetings. Includes academic assignments and a written report. May be repeated to a maximum of 12 credits. Prereq: permission and good academic standing. Cr/F. 1 to 12 cr.

**600. Hospitality Marketing Management**

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. Pre- or Coreq: HMGT 401, 403, 554, 567. Writing intensive. 4 cr.

**603. Service Industries Management**

Provides broad understanding of managerial issues in the operation of service firms, as distinct from the consumer product or manufacturing firms, e.g., lodging, restaurants, health care, banking, and education. Examines, from the viewpoint of the service firm manager, the role services play in the economy, delivery systems, encounters, technology, human resources, productivity, and quality issues, along with the concept of service. Pre- or Coreq: HMGT 401, 554, 618. 4 cr.

**618. Uniform Systems for the Hospitality Industry**

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. 4 cr.

**625. Hospitality and Employment Law**

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. Prereq: junior standing. 4 cr.

**635. Hospitality Human Resource Management**

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. Pre- or Coreq: ADMN 611. Writing intensive. 4 cr.

**655. Hospitality Finance and Development**

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: HMGT 600, 618. Pre- or Coreq: HMGT 603. 4 cr.

**661. Meeting Planning Management**

Strategic and logistical considerations in managing the planning, development, marketing, and implementation of meetings, conventions, and events. 4 cr.

**667. Advanced Food/Beverage Operations Management**

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: HMGT 401, 403, 554, 567 and junior or senior standing. Pre- or Coreq: HMGT 618. 4 cr.

**681. Resort Management**

Complexities of developing and managing various types of resort properties. Emphasis on time-share properties and recreation elements of full service resorts. Special fee. Writing intensive. 4 cr.

**685. Study Abroad**

Open to students studying abroad in the discipline as approved by the hospitality management program director. Cr/F. 1 to 16 cr.



**686. Study Abroad**

Open to students studying abroad in the discipline as approved by the hospitality management program director. Special fee. Cr/F. 1 to 16 cr.

**695/695W. Independent Analysis**

Study and research project for honor students to advance knowledge in lodging and food services fields. Prereq: junior standing and permission. 695W is writing intensive. 2 to 12 cr.

**696. Supervised Student Teaching Experience**

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. Prereq: permission of instructor, program director, and director of advising. Cr/F. 1 to 8 cr.

**698. Topics**

Special topics and developments in lodging, food services, and other hospitality industries. Prereq: junior standing and permission. Course may be repeated when topics change. 1 to 4 cr.

**703. Strategic Management in the Hospitality Industry**

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. 4 cr.

**750. Senior Operations Seminar**

Allows students to experience and participate in the planning and decision-making process of a full-service hotel; to contribute to and understand the intricacies of managing change while gaining a sensitivity to interdepartmental coordination. Class meets at major metropolitan hotels. Prereq: permission. Special fee. 4 cr.

**756. Franchising**

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: MKTG 651 or HMG 600. (Also offered as MKTG 756.) 4 cr.

**771. Beverage Management/International Wines**

Examination of purchasing, evaluation, storage, service, and control of alcoholic beverages. Emphasizes wines, although beer, ale, distilled spirits, liqueurs, and mixed drinks are examined. Enrolled students must be at least 21 years old. Prereq: permission. 4 cr.

**777. Casino Management**

History, development and management of casinos and gaming. Emphasizes environment, operations, regulation, accounting, auditing and taxation of casinos and gaming. Investigates the economics, moral and cultural issues of gaming. Field trip required. Enrolled students must be at least 21 years old. Prereq: permission. Special fee. 4 cr.

**795. Internship II**

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 a hotel program faculty sponsor. A written report is required of the student. Internships may be part-time or full-time, with course credits assigned accordingly. May be repeated to a maximum of 12 credits. Prereq: permission and good academic standing; junior and senior students only. Cr/F. 1 to 12 cr.

**799. Honors Thesis/Project**

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. 4 to 8 cr.

---

**Humanities (HUMA)**

(For program description, see page 38.)

**401/401W. Introduction to the Humanities**

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. 401W is writing intensive. 4 cr.

**444. Idea of University**

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. 4 cr.

**500. Critical Methods in the Humanities**

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. 4 cr.

**510/510A-D. Ancient World: An Interdisciplinary Introduction**

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. 4 cr.

**511/511A-D. Medieval World: An Interdisciplinary Introduction**

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. 4 cr.

**512/512A-D. Renaissance and Early**

**Modern: An Interdisciplinary Introduction**  
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. 4 cr.

**513/513A-D. Modern World: An Interdisciplinary Introduction**

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. 4 cr.

**514/514A-D. 20th Century, 1900-1945: An Interdisciplinary Introduction**

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. 4 cr.

**515/515A-D. 20th Century, 1945-1999: An Interdisciplinary Introduction**

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. 4 cr.

**592. Special Topics in the Humanities**

Special topics; offered occasionally. May be repeated up to a maximum of 12 credits. 2 to 8 cr.

**#607. American Character: Religion in American Life and Thought**

Interdisciplinary study of American religious experience and its relationship to other aspects of American culture, taught by a team of three specialists, each in a different discipline: American intellectual and cultural history, American literature and American church history. Central emphasis on several transforming themes of the 19th century and their effects upon the interplay of religion and society. (Also offered as ENGL 607, HIST 607, and RS 607.) Writing intensive. 4 cr.

**608. Arts and American Society: Women Writers and Artists, 1850-Present**

Team-taught course studying the impact of gender definitions on the lives and works of selected American artists. Considers lesser-known figures such as Fannie Fern, Lilly Martin Spencer, and Mary Hallock Foote as well as better-known artists such as Willa Cather and Georgia O'Keeffe. Prereq: permission or one of the following: WS 401, HIST 566, ENGL 585 or 586, ENGL 685 or 785, or a 600-level art history course. (Also offered as ARTS 608, ENGL 608, and HIST 608.) Writing intensive. 4 cr.

**609. Ethnicity in America: The Black Experience in the 20th Century**

Team-taught course investigating music, literature, and social history of black America in the period of the Harlem Renaissance, 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, ENGL 609.) Writing intensive. 4 cr.

#### **#610. Regional Studies in America: New England Culture in Changing Times**

Team-taught course investigating some of the major contributions New England has made to American life. Focusing on three periods: the Puritan era, 1620-90; the Transcendental period, 1830-60; and the period of emerging industrialism in the late 19th century. Prereq: second-semester sophomore. (Also offered as HIST 610, ENGL 610, and ARTS 610.) Not for art studio major credit. Writing intensive. 4 cr.

#### **650. Humanities and the Law: The Problem of Justice in Western Civilization**

Interdisciplinary modular course examines interpretations of the nature of justice, its origins, the role of the professional judiciary, and the relationship of law and ethics. Students take three successive five-week modules during the semester. (Not offered every year.) Writing intensive. 4 cr.

#### **651. Humanities and Science: The Nature of Scientific Creativity**

Interdisciplinary modular course examines the historical and intellectual foundations of the physical, biological, and human sciences. Students take three successive five-week modules during the semester. (Not offered every year.) Writing intensive. 4 cr.

#### **698. Independent Study**

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. 4 cr.

#### **700. Seminar**

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. Writing intensive. 4 cr.

#### **730. Special Studies**

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. 4 cr.

#### **798. Research Seminar**

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: senior standing; permission. Writing intensive. 1 cr.

#### **799. Research Seminar**

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 798; senior standing; permission. Writing intensive. 3 cr.

## **Intercollege (INCO)**

(For program description, see page 111.)

#### **400. Graduate Preparation Seminar**

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. Cr/F. 1 cr.

#### **401. War**

Nature and experience of modern warfare and its historical development; social and biological roots of war; national security and defense concepts and issues; the nuclear age and weapons of mass destruction; the post-Cold War age; philosophical issues. Writing intensive. 4 cr.

#### **402, 402H. Peace**

Investigates 1) military deterrence in theory and practice; 2) alternatives to military deterrence such as diplomacy, international law, and conflict resolution, and nonviolent defense; 3) economic and environmental interdependence of nations; and 4) political, cultural, ethical, and religious conceptions of peace. 4 cr.

#### **403. Healthcare Professions Seminar**

This seminar is designed for students (primarily first year primarily first year undergraduates, but to include any others) 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. 1 cr.

#### **410. Introduction to College Teaching**

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. 2 cr.

#### **430. Interdisciplinary Science**

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. 4 cr.

#### **450. Introduction to Race, Culture and Power**

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.) 4 cr.

#### **480. Arts in Society**

Brings students into relationship with classical visual and performing arts. Students attend lectures about the arts and live performances of music, theatre, and dance; take trips to visit museums; and view architecture. Students read relevant materials and write about each art work experienced. Special fee. 4 cr.

#### **501/501H. Introduction to the Research Process**

A) biological sciences; B) humanities; C) physical sciences; D) social sciences; E) thematic/interdisciplinary. Examines how scholars ask questions and what methods they employ to gain answers. Cumulative GPA of 3.0 required. Permission. Cr/F. 2 cr.

#### **510. McNair Introduction Seminar**

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. 1 to 2 cr.

#### **530. Writing Consultation Across the Curriculum**

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. 2 cr.

#### **555. Peer Education**

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. Cr/F. 1 to 3 cr.

#### **585, 586. Foreign Exchange**

Juniors and seniors may spend a semester or year in Canada at one of eleven colleges and universities in Nova Scotia or one of eighteen participating institutions in Québec. Possible disciplines include public relations, hospitality management, and computer science. Eligibility requirements include U.S. citizenship, junior or senior standing, and good academic achievement. For more information contact the Center for International Education. Cr/F. 1 to 16 cr.

#### **590. Student Research Experience**

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. 1 to 4 cr.

#### **595/595W. Winterim Topics**

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. 595W is writing intensive. 1 to 4 cr.



**596. Summer Topics**

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. 1 to 4 cr.

**604H. Honors Senior Thesis**

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. 4 or 8 cr.

**610. Research Inquiry Seminar**

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. 1 to 2 cr.

**650/650H. Study Abroad Seminar: Encountering Oneself/Encountering the World**

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. Cr/F. 1 cr.

**651/651H. Study Abroad Seminar: Returning Home**

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. Cr/F. 1 cr.

**655, 656. London Program**

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. 1 to 18 cr.

**657. Justice Studies Budapest Program**

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. Coreq: JUST 650, JUST 651. Special fee. Cr/F. 6 cr.

**685, 686. Study Abroad**

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. 4 to 16 cr.

**698. Summer Research Project**

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. 8 cr.

**699. McNair Summer Internship**

McNair Fellows; not graded; Summer only.

**710. Introduction to Research Methods**

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. 2 to 4 cr.

**720. McNair Research Experience**

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. 2 to 4 cr.

**730. Writing Consultation Across the Curriculum**

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 experi-

ence and apply it to their Writing Fellows' work. Prereq: ENGL 401, one other writing intensive course. 2 cr.

**796. Touching the Limits of Knowledge: Cosmology and Our View of the World**

A seminar analyzing the paradoxes and limits of scientific knowledge and religious understanding, their compatibility or lack of it with respect to contemporary cosmology. 1 cr.

---

**International Affairs (IA)**

(For program description, see page 111.)

**401. International Perspectives: Science, Business, and Politics**

Examination of the interaction of developments in science, economics, and politics as they shape international affairs. Topics include science and technology; world trade and investment; politics, cultural values, and ethics in world affairs. Team-taught, modular course. Prereq: permission; IA major. Writing intensive. 4 cr.

**501. Global Issues in International Affairs**

Introduce students to the various relationships among peoples, states, and cultures within a global environment. While built upon the general knowledge acquired in IA 401, IA 501 provides more in-depth study of particular issues involving a variety of regions of the globe. This course is essential to preparing students for study abroad and to equip them to conceptualize suitable research topics for IA 701. Each student will be expected to put substantial time into developing the reading, research, and analytical skills necessary for the study of international affairs. Prereq: IA 401. Writing intensive. 4 cr.

**599. Special Topics**

Subjects vary. Course descriptions are available at the Center for International Education. Some semesters, this course will satisfy specific requirements for the dual major in international affairs. For specific information in a particular semester, contact the Center for International Education. 4 cr.

**695. Internship**

Designed to provide research and work opportunities with an international aspect to UNH undergraduates. Internships may involve either research with a faculty member or work with an employer. Prereq: permission. May be repeated up to 8 credit hours. Cr/F. 2 to 4 cr.

**699. Topics**

Special topics course with varying subject matter and format. Study of areas and subjects not covered by existing courses. Center for International Education provides information on current offerings. Recommended as a dual major elective. 4 cr.

**701. Seminar**

Capstone of the dual major in international affairs. To be taken after completion of the foreign language and foreign experience requirements. Strong emphasis on research and analysis, use of foreign language skills, writing, and criticism. Prereq: IA 501; IA major. Writing intensive. 4 cr.

## Italian (ITAL)

(For program description, see page 42.)

### 401-402. Elementary Italian

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. 4 cr.

### 425. Introduction to Italian Studies

Designed for students interested in exploring Italian language and culture. Culture learning by means of guest speakers and visuals. Prepares for ITAL 401-402. Taught in English. Does not satisfy foreign language proficiency requirement. Special fee. (Offered summers only, Not offered every summer.) Writing intensive. 4 cr.

### 500. Selected Topics in World Literature

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. Credit/Fail. Writing intensive. 4 cr.

### 503-504. Intermediate Italian

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. 4 cr.

### 521. Italian Literature in Translation, 13th-16th Centuries

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. 4 cr.

### 522. Italian Literature in Translation, 18th-20th Centuries

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. 4 cr.

### 525. Italian Cinema

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. 4 cr.

### 595. Practicum

Practical use of Italian language and culture through special projects outside the classroom. May be repeated for a maximum of 4 credits. Prereq: permission. Cr/F. 2 cr.

### 595A. Practicum

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. 2 or 4 cr.

### 631. Advanced Italian Conversation and Composition

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. 4 cr.

### 632. Advanced Italian Conversation and Composition

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. 4 cr.

### 651. Introduction to Italian Culture and Civilization I: Middle Ages, Renaissance, Baroque

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. 4 cr.

### 652. Introduction to Italian Culture and Civilization II: Age of Enlightenment, Romanticism, Modernism

Survey of major representative writers and artists, studied against a backdrop of social and cultural history. Parini, Goldoni, Leopardi, Manzoni, Pavese, Calvino. Pre- or Coreq: ITAL 631 or permission. Special fee. (Not offered every year.) Writing intensive. 4 cr.

### 681A, 681B. Interdisciplinary Field Seminar in Italian Culture: Ancient and Medieval Italy

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. Coreq: ARTS 695I. 4 cr.

### 682A, 682B. Interdisciplinary Field Seminar in Italian Culture: Early Modern and Contemporary Italy

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. Coreq: ARTS 695I. 4 cr.

### 684. UNH-in-Italy Summer Program

UNH-in-Italy Summer Program in Ascoli Piceno. This course number is a place-holder, but differs with regard to the special fee. Students register for both this administrative course number and the actual course number and the actual course being offered on site. These courses will vary from year to year, but the special fee will remain constant. Permission required. Coreq: ARTS 796, ARTS 996. Special fee.

### 685, 686. UNH-in-Italy Study Abroad

Provides a unique opportunity to study abroad in Ascoli Piceno, Italy during the fall semester. Special fee.

### 733. History and Development of the Italian Language

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. 4 cr.

### 795, 796. Independent Study in Italian Language and Literature

Individual guided study. Prereq: permission. 1 to 4 cr.

## Japanese (JPN)

(For program description, see page 42.)

### 401-402. Elementary Japanese

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. 4 cr.

### 425/425H. Introduction to Japanese Culture and Civilization

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. 4 cr.

### 503-504. Intermediate Japanese

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. 4 cr.

### 631-632. Advanced Japanese

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. Special fee. 4 cr.

### 795, 796. Independent Study

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. 1 to 4 cr.

## Justice Studies (JUST)

(For program description, see page 39.)

### 401. Introduction to Justice Studies

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. 4 cr.



**501. Research Methods**

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. Special fee. 4 cr.

**550-551. Mock Trial**

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. Special fee. Permission required. 2 cr.

**601. Internship**

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. 4 cr.

**602. Research Internship**

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. 4 cr.

**650. Special Studies in Comparative Justice Systems**

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. Coreq: INCO 657, JUST 651. 4 cr.

**651. Field Studies in the Hungarian Justice System**

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. Coreq: INCO 657, JUST 650. 6 cr.

**695. Special Topics**

Special topics of advanced study in Justice Studies. Selected offerings reflect faculty expertise in teaching and research. May be repeated in different topic areas. Prereq: SOC 515 or POLT 507 and one other Justice Studies course. Must hold sophomore standing or above. 4 cr.

**701. Senior Seminar**

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. 4 cr.

**765/765W. Special Topics**

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. 765W is writing intensive. 4 cr.

**767. Students, Teachers, and the Law**

Explores how the law impacts the educational lives of students and teachers. Topics include church-state relations, free speech, dress codes, and search and seizure. (Also offered as EDUC 767.) 4 cr.

**795. Reading and Research**

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 cases. 1 to 4 cr.

---

**Kinesiology (KIN)**

*(For program description, see page 77.)*

**444A. Risk and the Human Experience**

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. 4 cr.

**444B. Coolest Game? Hockey and History**

This course uses hockey as a vehicle for exploration and practice in three critical processes of scholarship: 1) analyzing and framing questions, 2) employing different methods/sources for pursuing answers to the questions, 3) presenting the results of research. Research exercises, discussions, and papers consider hockey's development in larger social and cultural contexts/practices such as ethnicity, nationalism, technology, mass media and marketing, gender relations, labor relations, and regionalism. The course also looks at hockey as a medium of craft, hero formation, community, and collective violence. Students read and analyze interdisciplinary articles and books, and also work with a range of historical sources, including those in the UNH Archives and the Charles Holt Archives of American Hockey. Writing intensive. 4 cr.

**500. Historical and Contemporary Issues in Physical Education**

Physical education is discussed in historical and philosophical terms to lay the foundation for later of recent issues and trends within the field. Open to KIN students in the pedagogy option, undeclared HHS students, and undeclared liberal arts students. Prereq: KIN Physical Education Pedagogy or department approval. 4 cr.

**501. First Aid: Responding to Emergencies**

Covers the nationally accredited American National Red Cross First Aid—Responding to Emergencies and BLS-CPR professional rescuer course. May not repeat for credit. Special fee. Cr/F. 2 cr.

**505. Prevention and Care of Athletic Injuries**

A primer in athletic injury, care, prevention and rehabilitation, specifically designed for anyone involved in sports or exercise either as a coach, personal trainer, exercise physiologist, first-aiders or participant. Topics to be covered include general conditioning, bony, muscular and ligamentous anatomy of the trunk and extremities, head trauma, emergency care, the injury process, thermal conditions, nutritional considerations and the diabetic and asthmatic athlete. Special fee. 4 cr.

**506. Concepts of Athletic Training for the Professional**

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: ZOO 507. Coreq: KIN 507. 4 cr.

**507. Concepts of Athletic Training Lab**

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. Coreq: KIN 506. 1 cr.

**521. Theory of Coaching Basketball**

Individual and team offense and defense; rules of the game. Problems in team handling and conditioning. Prereq: permission. Pre- or Coreq: KIN 565. 2 cr.

**523. Theory of Coaching Hockey**

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. 2 cr.

**527. Scientific Foundations of Health and Fitness**

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 laboratory experiences. Special fee. Writing intensive. 4 cr.

**528. Theory of Coaching Track and Field**

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. 2 cr.

**533. Basic Scuba**

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. Cr/F. 3 cr.



**540. Top Rope Rock Climbing**

Provides students with an understanding of the equipment, techniques, and procedures necessary to safely setup and manage top rope rock climbing and rappelling sites. Specific topics include: anchor construction, belay methods, climbing technique, and site selection and management. Prereq: KIN: OE major. Special fee. Lab. 3 cr.

**541. Management of Initiatives and Challenge Courses**

Management of adventure initiatives and challenge courses as an educational and therapeutic medium with a variety of populations. Focuses on skill development, processing techniques, rescue skills, evaluation techniques, and applications to specific client groups. Prereq: KIN: OE major. Special fee. Lab. 4 cr.

**543. Winter Backpacking Skills**

Provides an introduction to the leadership of winter expeditions. Students develop an understanding of winter trip planning and organization, winter nutrition and equipment, snow shoeing and/or backcountry skiing, cold weather injuries, snow shelter construction, winter camping, and group management on winter backpacking trips. Additional topics may include ice climbing and basic mountaineering skills. Prereq: KIN: OE major, KIN 551. Special fee. Lab. 2 cr.

**545. High Angle Rescue**

Provides students with the skills necessary to perform self and group rescues in a variety of steep terrain and high angle environments. Specific topics include knots for rescue, rope ascension, assisted/counterbalance rappelling, aid climbing, haul systems, and litter lowering and raising in vertical environments. Prereq: KIN: OE major, KIN 547, or equivalent experience. Special fee. Lab. 2 cr.

**546. White Water Canoeing**

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: KIN: OE major, KIN 552. Special fee. Lab. 3 cr.

**547. Lead Rock Climbing**

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, multipitch rappelling, knots, rope/belay station management, climbing technique, and multipitch leading considerations. Prereq: KIN: OE major, instructor permission. Special fee. Lab. 3 cr.

**548. High Altitude Mountaineering**

Introduces mountaineering and alpine climbing skills. Students develop an understanding of glacier travel, snow and ice climbing, hazard evaluation, crevasse rescue, mountain weather and altitude considerations, and leadership in mountain environments. Prereq: KIN: OE major, instructor permission. Special fee. 4 cr.

**550. Outdoor Education Philosophy and Methods**

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. 4 cr.

**551. Adventure Programming: Backcountry Based Experiences**

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. Prereq: KIN: OE major. Special fee. Lab. 3 cr.

**552. Adventure Programming: Water Based Experiences**

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. Prereq: KIN: OE major, KIN 551. Special fee. Lab. 3 cr.

**560. Sport Psychology**

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. Permission required. 4 cr.

**561/561W. History of American Sport and Physical Culture**

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. 4 cr.

**562. Introduction to Sports Information**

Basic concepts of sports information related to preparation of material for public relations including radio, television, and publications. Includes guest lecturers and work in the UNH Sports Information Office. 4 cr.

**565. Principles of Coaching**

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. 4 cr.

**570. Elementary Physical Education Practicum**

Provides opportunities for developing and refining elementary and special physical education movement content with pedagogical processes. Emphasizes demonstrating competence in teaching and establishing a least-restrictive learning environment. Prereq: KIN 610; KIN: PE Pedagogy major. Writing intensive. 4 cr.

**580. Sport Industry**

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. 4 cr.

**585. Emergency First Responder**

Standards of practice that conform to the content of the U.S. Department of Transportation curriculum for First 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 New Hampshire First Responder Certification Examination. Prereq: KIN: Athletic Training; KIN: Exercise Science; HHS: undeclared. Lab. Special fee. 4 cr.

**600. Movement and Gymnastics Exploration**

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. 4 cr.

**601. Lifetime Sports**

Provides teachers with the technical knowledge as well as the psychomotor and pedagogical skills necessary for instructing lifetime activities, including tennis and badminton. Prereq: KIN: PE Pedagogy major. Special fee. 3 cr.

**603. Team Sports**

Provides teachers with the technical, physical, and pedagogical skills necessary for instructing team sports, including soccer and volleyball. Prereq: KIN: PE Pedagogy major. 3 cr.

**607. Biology of Aging**

Biological mechanisms of the aging process, with special emphasis on human aging; changes due to chronic disease. 4 cr.

**610. Elementary Physical Education Pedagogy**

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: KIN: PE Pedagogy major; KIN 600, 675. 4 cr.

**620. Physiology of Exercise**

Acute and chronic effects of exercise. Muscle physiology, respiration, cardiac function, circulation, energy metabolism, and application to training. Prereq: ZOOL 507-508. 4 cr.

**621. Exercise Laboratory Techniques**

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 major. Special fee. Writing intensive. 4 cr.

**648. Current Issues in Health**

Designed to assist students in their understanding of issues related to health and health education. 4 cr.

**650A. Internship in Exercise Science**

Experiential learning in an agency that offers physical activity programs of prevention, intervention, and rehabilitation. An 8 credit internship requires a minimum of 600 hours experience. Activities include graded exercise testing, exercise prescription, and exercise leadership. Must have completed all requirements for the option. May be repeated up to a maximum of 12 credits, with no more than 8 credits taken in any given semester. Cr/F. 2 to 8 cr.



**650B. Internship in Outdoor Education**

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. Outdoor Education: Provides an appropriate transition from undergraduate education and future employment in the field of outdoor education. Generally done after students have completed all other requirements for the option. Prereq: junior/senior major; permission. Cr/F. May be repeated up to a maximum of 12 credits, with no more than 8 credits taken in any given semester. 2 to 8 cr.

**650C. Internship in Sport Studies**

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. 1 to 8 cr.

**650D. Internship in Coaching**

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. Prereq: KIN 505, 565. 2 to 4 cr.

**652. Clinical Kinesiology**

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: HHS major; ZOOL 507-508. Coreq: KIN 653A or 653B. 4 cr.

**653A. Musculoskeletal Assessment**

Principles and methodology of joint range of motion, body mechanics, and muscle strength evaluation. Uses muscle palpation, goniometry, manual muscle testing, hand-held dynamometry, electromyography, and human dissections to facilitate understanding of musculoskeletal anatomy and assessment. Special fee. Prereq: ZOOL 507-508. Coreq: KIN 652. 2 cr.

**653B. Biomechanical Analysis of Movement**

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: ZOOL 507-508. 2 cr.

**655. Middle School and Secondary Physical Education Pedagogy**

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: EDUC 500. Lab. 4 cr.

**658. Evaluation and Care of Athletic Training I**

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 frac-

tures, soft tissue injury, and the lower extremities. Prereq: KIN 506; ZOOL 507-508. Coreq: KIN 658L. Writing intensive. 4 cr.

**658L. Evaluation and Care of Athletic Training Injury I Lab**

Techniques and practice for performing test and assessment procedures for athletic injuries. Prereq: KIN 507. Coreq: KIN 658. 1 cr.

**659. Evaluation and Care of Athletic Training Injury II**

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; ZOOL 507-508. Coreq: KIN 659L. Writing intensive. 4 cr.

**659L. Evaluation and Care of Athletic Training Injury II Lab**

Techniques and practice for performing test and assessment procedures for athletic injuries. Prereq: KIN 507. Coreq: KIN 659. 1 cr.

**660. Therapeutic Exercise in Athletic Training**

Rationale, use, and application of exercise in athletic injury rehabilitation. Basic components of designing and implementing rehab programs. Assessment of physical/injury status. Prereq: KIN 652; 653A. Coreq: KIN 661. 4 cr.

**661. Therapeutic Exercise in Athletic Training Laboratory**

Students learn and practice psychomotor techniques associated with rehabilitative and conditioning exercise. Coreq: KIN 660. 1 cr.

**662. Therapeutic Modalities in Athletic Training**

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; 507. Coreq: KIN 663. 4 cr.

**663. Therapeutic Modalities in Athletic Training Laboratory**

Students use and practice with the devices, machines, and techniques associated with the treatment and rehabilitation of athletic injuries. Coreq: KIN 662. 1 cr.

**665. Laboratory Practicum in Athletic Training**

Minimum of 200 hours of experience in the approved athletic training clinical sites under the supervision of a N.A.T.A.-certified athletic trainer. 665A, Level I: General athletic training room assignment and/or low-risk sport. Prereq: KINL Athletic Training major. Special fee. 665B Level II: Assist with moderate- or high-risk sport. Prereq: KIN: Athletic Training major. Special fee. 665C Level III: Assignment to moderate-risk sport as a primary student. Prereq: KIN: Athletic Training major. Special fee. 665D Level IV: Assignment to high-risk sport as primary student. Prereq: KIN: Athletic Training major. Special fee. 665E Level V: Off-campus internship. Prereq: KIN: Athletic Training major. 2 cr.

**666. Middle School and Secondary Physical Education Practicum**

Apply secondary content and process knowledge within microteaching experiences with peers. Students also teach grades 6 through 12 within the public school setting. Emphasizes lesson, unit

plan design, and systematic observation. Prereq: KIN 563, KIN: PE Pedagogy major. Writing intensive. 4 cr.

**667. Pharmacology for Athletic Training**

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. 2 cr.

**668. Ergogenic Aids in Sports**

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. 2 cr.

**670. General Medical Conditions in Athletics**

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. 4 cr.

**675. Motor Development and Learning**

Characteristics of motor behavior across time, and the role of movement in children's and adolescents' total development. Growth processes, stage theory, as well as the relationship of maturation, experience, and the environment to motor development. Prereq: KIN 600; KIN: PE Pedagogy major; family studies major. 4 cr.

**676. Adventure Activities**

Provides teachers with the technical, physical, and teaching skills necessary to instruct adventure activities, initiatives, ropes course management, and orienteering. Prereq: KIN: PE Pedagogy major. Special fee. 3 cr.

**681. Theory of Adventure Education**

An in-depth investigation of the theories that underpin the professional practice of outdoor education. Students examine program applications in corporate, therapeutic, and educational settings, study advanced facilitation techniques, and analyze pertinent outdoor education research. Prereq: KIN: OE major, KIN 682. Special fee. Writing intensive. 4 cr.

**682. Outdoor Leadership**

Leadership theories applied through field experiences in adventure programming. Students will understand a variety of leadership, teaching, and communication styles, decision-making models, program planning and logistics, and risk management considerations for planning and delivering adventure programs. Prereq: KIN 541, 550, 551, 684, 685; KIN: OE major. Special fee. 4 cr.

**684. Emergency Medical Care: Principles and Practices**

Based on the curriculum established by the U.S. Department of Transportation for Emergency Technician (EMT-Basic), 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-Basics. Passage of both these examinations leads to national certification as an EMT-Basic. Prereq: department approval. Coreq: KIN 685. 3 cr.

#### **685. Emergency Medical Care: Principles and Practices Lab**

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. Coreq: KIN 684. Special fee. 2 cr.

#### **686. Wilderness Emergency Medical Care**

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. Prereq: current EMT-Basic and CPR certifications; KIN: OE major. Special fee. 4 cr.

#### **687. Leadership Practicum**

Supervised semester-long experience working with an organization external to the university setting to plan, prepare, and implement outdoor education programs and activities. Class sessions involve advanced leadership topics (e.g., current issues in risk management, conflict resolution, social justice issues, adaptive programming). Prereq: KIN 682; KIN: OE major. Lab. 4 cr.

#### **693. Teaching Assistantship**

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. 2 cr.

#### **694. Supervised Teaching in Physical Education**

Student teaching course is the culminating experience for students who wish to be certified to teach physical education upon completion of their senior year. Students must sign-up for both KIN 694 and EDUC 694. They will receive 4 credit hours for each. Permission required. Cr/F. 4 cr.

#### **696. Independent Study**

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. 2 to 4 cr.

#### **699H. Honors Project**

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. 4 cr.

#### **704. Electrocardiography**

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 major. 4 cr.

#### **705. Topics in Applied Physiology**

Advanced exercise physiology course dealing with topics both current and relevant to exercise science majors. Includes genetics, environmental influences, immune system, detraining and overtraining, epidemiology, ergogenic acids, and the influence of age and gender. Prereq: KIN 620, 621. KIN: Exercise Science major. Special fee. Writing intensive. 4 cr.

#### **706. Neurology**

Development, morphology, internal configuration, physiology, histology, function, and pathology of the human nervous system. Prereq: ZOOL 507-508 or equivalent. Coreq: KIN 707. Special fee. 4 cr.

#### **707. Neurology Lab**

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: ZOOL 507-508 or COMM 521 or equivalent. Coreq: KIN 706. Special fee. Cr/F. 2 cr.

#### **710. Organization and Administration of Athletic Training Programs**

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. 4 cr.

#### **715. Seminar in Athletic Training**

Career issues and special topics in athletic training. Students are required to submit and present a term project on assigned topic. 4 cr.

#### **718. Career Preparation in Athletic Training**

Designed to provide the methods to integrate the knowledge and skills learned in prerequisite courses into practical applications as the students prepare to graduate. Advanced knowledge and skills are emphasized in the areas of evaluation, treatment, rehabilitation, and implementation of policies and procedures. Prereq: KIN 658, 659, 660, 662, 710, KIN: Athletic Training major. 4 cr.

#### **720. Science and Practice of Strength Training**

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. 4 cr.

#### **724. Metabolic Adaptations to Exercise**

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 620; CHEM 404; KIN: Exercise Science major. Special fee. 4 cr.

#### **730. Research Diving Techniques**

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 ZOOL 730.) 4 cr.

#### **735. Advanced Scuba**

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. 4 cr.

#### **736. Fitness and Graded Exercise Testing**

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 704, KIN: Exercise Science major. Special fee. 4 cr.

#### **737. Exercise Prescription and Leadership**

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 736; KIN: Exercise Science major. 4 cr.

#### **740. Athletic Administration**

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. Prereq: permission. 4 cr.

#### **741. Social Issues in Contemporary Sports**

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 sociocultural factors that influence and result from participation in sports. Prereq: SOC 400 or permission. 4 cr.

#### **743. Sport Marketing**

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. 4 cr.

#### **750. Theories of Motivation in Sport and Exercise**

Social cognitive theories of achievement motivation as they relate to sport and exercise participation. Special attention will be directed at social interactions in sport. Prereq: PSYC 401; permission. 4 cr.

#### **761. Senior Seminar Sport Studies**

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 major; 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. 4 cr.



**#770. Psychological Skills in Performance**

Provides essential elements of psychological skills training in performance. Focuses on mental aspects that enhance or inhibit physical performance. Theory, direct skill acquisition, and skill application are all integral to this course. Topics include: progressive relaxation, meditation, hypnosis, goal setting, and stress inoculation testing. Special fee. Prereq: PSYC 401 or KIN 780. 4 cr.

**780. Psychological Factors in Sport**

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 or KIN 671. 4 cr.

**781. Inclusion in Physical Education**

Overview of special physical education. Addresses modifying instruction, expectations, and learning environment to accommodate physical and motor behaviors of students with disabilities. Prereq: KIN: PE Pedagogy major. Lab. Writing intensive. 4 cr.

**786. Organization and Administration of Outdoor Education**

Study of administration of outdoor education programs using a variety of organizational models. Students develop and, through simulated experiences, manage a program. Field experience. Special fee. KIN: OE major. Writing intensive. 4 cr.

**794. Cardiopulmonary Pathologies**

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. 4 cr.

**795. Practicum in Cardiac Rehabilitation**

Provides students with practical and theoretical experience in all aspects involving cardiac rehabilitation programs. Prereq: KIN 704, 794. 2 cr.

**798. Special Topics**

New or specialized courses not normally covered in regular course offerings. May be repeated up to 8 credits. Prereq: departmental approval. Special fee on some sections. 1 to 4 cr.

---

## Languages, Literatures, & Cultures (LLC)

(For program description, see page 39.)

**401-402. Elementary Language Study**

Generic course introduces students to a foreign language and culture through speaking, listening, reading, writing, labs and films. Designed for students without previous training in the specified language. 401-402 taken together satisfies the foreign language requirement. Special fee. 4 cr.

**440. Cultural Approaches to Film and Fascism**

Taking a transnational perspective, this course examines the phenomenon of fascism through its cinematic representation. Analyzes definitions of fascism, narrative representations of fascism and the role of propaganda in fascism. Special fee. 4 cr.

**444. Walls: Mortar and Metaphor**

Introduces the critical habits and skills of inquiry-based learning. As a General Education 8 course in Literature and Ideas it focuses on the wall as a "concrete" aspect of everyday material culture and as a metaphorical site of cultural and ideological definition, experience, memory and expression in diverse contexts. Students keep a journal, write a research paper in multiple drafts and write a final essay. Writing intensive. 4 cr.

**444A. Love and Nation in German Film**

In this course, we look at German films from the early Weimar period to the present. Our main question is: What connections exist between love stories and the creation of national identity in films from different periods of German history? We learn to read films as an aesthetic text with a narrative and form and as an historical text with a social and political function. Special fee. Writing intensive. 4 cr.

**444B. France and the European Union in a Global World**

Encourages students in their freshman year of college-level education to move beyond the US borders, to make connections with the diversity of European cultures, and to think as citizens of a global world. This introductory course focuses on contemporary France from the perspective of a long European historical and cultural tradition, as well as in the new context of post-May 29, 2005. (French vote against the EU Constitution) The icons on both sides of the Euro banknotes serve as illustrations of the scope of this course: bridges will be established between European countries, and windows will open onto 21st Century France at a critical crossroad. This course ultimately leads students to ask themselves new questions about their own history, identity and culture. Special fee. Writing intensive. 4 cr.

**444C. World of Salvador Dali**

Students investigate essential components of modern culture and Western tradition through the mind, art and writing of Salvador Dali. 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. 4 cr.

**540. Film History**

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. 4 cr.

**791. Methods of Foreign Language Teaching**

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. 4 cr.

---

## Latin (LTN)

(For program description, see page 42.)

**401-402. Elementary Latin**

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. 4 cr.

**501. Review of Latin**

Intensive review of Latin grammar and vocabulary. 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. 4 cr.

**502. Latin Syntax and Composition**

A continuation of LATN 501. Intensive review of Latin syntax; introduction to reading and composition. Special fee. 4 cr.

**503-504. Intermediate Latin**

Review. Readings from Cicero, Caesar, Sallust, Livy, Catullus, Horace, Ovid, Plautus, Terence, and Seneca. Prereq: LATN 402 or equivalent. Special fee. 4 cr.

**595, 596. Directed Reading**

Independent study of a classical or medieval Latin author. May be repeated. Prereq: LATN 503, 504, or equivalent. Special fee. Cr/E. 2 or 4 cr.

**605, 606. Readings in Latin Literature**

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. 4 cr.

**631, #632. Latin Prose Composition**

Grammar review; study of Latin prose style; English to Latin translation. Prereq: permission. Special fee. 4 cr.

**752. Cicero and the Roman Republic**

Prereq: permission. Special fee. Writing intensive. 4 cr.

**753, 754. Advanced Studies in the Literature of the Golden Age**

A) Lucretius; B) Catullus; C) Caesar; D) Sallust; E) Virgil; 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. 4 cr.

**755, 756. Advanced Studies in the Literature of the Silver Age**

A) Seneca the Younger; B) Persius; C) Petronius; D) Lucian; 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. 4 cr.

**795, 796. Special Studies**

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. 4 cr.

## Life Sciences & Agriculture (LSA)

(For program description, see page 83.)

### 400. Freshmen Seminar

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. 1 cr.

## Linguistics (LING)

(For program description, see page 43.)

### 405/405H. Introduction to Linguistics

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.) 4 cr.

### 444B. Secret Lives of Words

Using problem and inquiry-based pedagogy, this class delves into the ways in which new words are coined, how they become established or die, and how they change over their natural lives. Touching upon topics in philosophy (the nature of meaning), theoretical linguistics (morphology, sociolinguistics), and lexicography, it introduces students to both the methods of text-based analysis and field-based research. Topics include word formation; the history of vocabulary in English; the making of dictionaries; slang, jargon, and taboo language. Writing intensive. (Also listed as ENGL 444B.) 4 cr.

### 605. Intermediate Linguistic Analysis

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 505, or permission. (Also offered as ENGL 605.) 4 cr.

### 620. Applied Experience in Linguistics

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. 1 to 4 cr.

### 695. Senior Honors

Open to senior LING majors who, in the opinion of the department, have demonstrated the capacity to do superior work. Prereq: permission. 4 cr.

### 717. World Englishes

Study of the forms and functions of Englishes in various parts of the world and the linguistic, sociolinguistic, literary, pedagogical, and political implications of the worldwide spread of the language. Topics include language change, language policies, language and power, language and culture, language and identity, literary creativity, and linguistic imperialism. (Also offered as ENGL 717.) 4 cr.

### 719. Sociolinguistics Survey

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: LING 505 or permission. (Also offered as ENGL 719.) 4 cr.

### 779. Linguistic Field Methods

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/LING 505. (Also offered as ENGL 779.) (Not offered every year.) Writing intensive. 4 cr.

### 790. Special Topics in Linguistics Theory

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. 4 cr.

### 793. Phonetics and Phonology

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.) 4 cr.

### 794. Syntax and Semantic Theory

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. (Also offered as ENGL 794.) Writing intensive. 4 cr.

### 795, 796. Independent Study

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. 1 to 4 cr.

## Management (MGT)

(For program description, see page 107.)

### 580. Introduction to Organizational Behavior

Application of behavioral science concepts to work settings in profit and nonprofit organizations. Individual 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 MGT 611. Prereq: ECON 401 or 402. 4 cr.

### 614. Organizational Leadership and Structure

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 611. 4 cr.

### 647. Business Law I

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. 4 cr.

### 648. Business Law II

Law of contracts, agency, sales, negotiable instruments, real and personal property, partnership and corporations, with application of the Uniform Commercial Code. Prereq: MGT 647. 4 cr.

### 701. Business, Government, and Society

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 611; at least two of ADMN 601, 640, and 651. 4 cr.

### 713. Leadership Assessment and Development

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 611. 4 cr.

### 732. Exploration in Entrepreneurial Management

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 601, 611, and 651. Writing intensive. 4 cr.



**742. Internship in Entrepreneurial and Management Practice**

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.) 4 cr.

**755. International Management**

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 611. Writing intensive. 4 cr.

**798, 798W. Topics**

Special topics; may be repeated. Prereq: permission. 4 cr.

---

**Marketing (MKTG)**

*(For program description, see page 105.)*

**550. Survey of Marketing**

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 non-business administration majors and minors. No credit for students who have had ADMN 651. Prereq: ECON 401 or 402. 4 cr.

**598. Topics in Marketing**

Special topics covering a variety of marketing principles. Topics may include promotion and advertising; retail and retail management; sales and sales management. May be repeated up to 12 credits. 4 cr.

**750. Strategic Marketing**

Practical application of marketing principles taught in MKTG 651. Through case analysis, students learn to apply marketing principles to the planning, organization and control of marketing activities in large national and multinational corporations and small businesses. Issues such as new product development, pricing policies, selection of domestic and international channels of distribution, and interrelationships between marketing, production and finance are covered. Prereq: ADMN 651 and permission. MKTG 752 and/or MKTG 753 are recommended. 4 cr.

**751. Advertising and Promotion**

Covers the development of advertising strategy based on an assessment of the firm's competencies, its competitive environment, and an understanding of target customer behavior. Includes the creation and execution of advertisements and sales promotions, media planning, and budgeting. The course draws upon the marketing principles taught in MKTG 651. Prereq: ADMN 651 and permission. MKTG 752 and/or MKTG 753 are recommended. 4 cr.

**752. Marketing Research**

Examines marketing information management and decision-making. MR is an essential business process and an integral part of marketing management, a process by which marketing information is collected, analyzed, disseminated, and acted upon. Course provides the tools, techniques, data sources and research approaches commonly used for market research and analysis. Hands-on analysis of marketing data sets is provided by using leading statistical software packages. Prereq: ADMN 651 or equivalent. 4 cr.

**753. Consumer/Buyer Behavior**

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 influence consumer choice. Prereq: ADMN 651. Writing intensive. 4 cr.

**754. Retail Management**

Analysis of managerial problems in retailing establishments. Focuses on operational problems, retail store organization, location analysis, buying and inventory management, retail financial management, and selling and sales promotion. Other areas include environmental effects on retailing, the formulation of retail strategy, human resource issues, and customer service. Prereq: ADMN 651. 4 cr.

**755. Marketing of Services**

The marketing of intangible offerings, including profit and nonprofit situations, retail and business-to-business settings, public and international services. Covers theory, service quality attainments, design and strategy, and implementation plans. Texts, case analysis, speakers, field work. Prereq: ADMN 651. 4 cr.

**756. Franchising**

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 651 or HMG 600. (Also offered as HMG 756.) 4 cr.

**757. Integrated Marketing Communication**

Provides balanced coverage of all marketing communication tools: advertising, sales promotion, public relations, direct marketing, personal selling, POP, packaging, sponsorships, licensing, customer service. Emphasizes the integration of these tools to send target audiences a consistent, persuasive message that promotes the organization's goals. Prereq: ADMN 651. 4 cr.

**760. International Marketing**

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 651. 4 cr.

**761. Sales Management**

Principles and methods of successful personal selling and management of the sales function. Exposure to selling experience in field of student interest; case studies, sales presentations; oral and written analyses of sales management issues. Prereq: ADMN 651. 4 cr.

**762. Marketing Workshop**

Integrative study of a real marketing situation in a business, nonprofit institution, or government agency. Student teams identify problem, collect appropriate data, suggest alternative solutions, and submit a recommended course of action. Prereq: senior standing; at least two of MKTG 752, 753, and 763. Writing intensive. 4 cr.

**763. Market Opportunity Analysis**

Introduces students to the analysis of the business environment in which a company operates and provides key inputs into strategic marketing planning and decision-making. Students learn the process, concepts, and techniques commonly used in the identification, assessment, and forecasting of market opportunities. Prereq: ADMN 651. Pre- or Coreq: ADMN 640. 4 cr.

**764. New Product Development**

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: MKTG 651 or equivalent. 4 cr.

**798/798W. Topics**

Special topics; may be repeated. Prereq: a basic marketing course and permission. 4 cr.

---

**Materials Science (MS)**

*(For program description, see page 69.)*

**401. Science of Stuff**

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. 4 cr.

**762. Electronic Materials Science**

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. 4 cr.



## Mathematics (MATH)

(For program description, see page 66.)

### 301. Elementary Math I

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. 4 cr.

### 302. Elementary Math II

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. 4 cr.

### 418. Analysis and Applications of Functions

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. 4 cr.

### 420. Finite Mathematics

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. 4 cr.

### 424A. Calculus for Social Sciences

Real-valued functions and their graphs; derivatives and their applications; antiderivatives and areas; exponentials and logarithms; introduction to multivariable calculus and partial derivatives. Primarily intended for majors in College of Liberal Arts and the Whittemore School of Business and Economics. Prereq: MATH 418 or equivalent. (Not offered for credit to CEPS majors; not offered for credit if credit is received for MATH 425.) Students enrolling in MATH 424 are required to take a competency evaluation on algebra during the first week of the semester. Those doing unsatisfactory work will be required to take MATH 418 before enrolling in MATH 424 or to complete review assignments in the Mathematics Center (MaC) concurrently with MATH 424. Students who desire a two-semester calculus course are strongly advised to take MATH 425. Those students who successfully complete MATH 424A and subsequently wish to continue their study of mathematics with MATH 426 are required to complete successfully a supplementary module and examination on trigonometric content. 4 cr.

### 424B. Calculus for Life Sciences

Real-valued functions and their graphs; derivatives and their applications; antiderivatives and areas; exponentials and logarithms; introduction to multivariable calculus and partial derivatives. Primarily intended for majors in College of Life Sciences and Agriculture. Prereq: MATH 418 or equivalent. (Not offered for credit to CEPS majors; not offered for credit if credit is received for MATH 425.) Students enrolling in MATH 424 are required to take a competency evaluation on algebra during the first week of the semester.

Those doing unsatisfactory work will be required to take MATH 418 before enrolling in MATH 424B or to complete review assignments in the Mathematics Center (MaC) concurrently with MATH 424. Students who desire a two-semester calculus course are strongly advised to take MATH 425. Those students who successfully complete MATH 424B and subsequently wish to continue their study of mathematics with MATH 426 are required to complete successfully a supplementary module and examination on trigonometric content. 4 cr.

### 425/425H. Calculus I

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. 4 cr.

### 426/426H. Calculus II

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. 4 cr.

### 439. Statistical Discovery for Everyone

Introduces statistical concepts and practice without assuming a calculus background. Topics include observational and designed studies, data production, exploratory data analysis, descriptive statistics, probability concepts and calculations, discrete and continuous random variables and their distributions, sampling distributions, parametric estimation and confidence intervals, hypothesis testing, comparing samples, and simple linear regression. Science and engineering students should take MATH 539 or MATH 644 according to their programs. 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. 4 cr.

### 525. Linearity I

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. 6 cr.

### 526. Linearity II

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. 6 cr.

### 527. Differential Equations with Linear Algebra

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. 4 cr.

### 528. Multidimensional Calculus

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. 4 cr.

### 531. Mathematical Proof

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 426. Writing intensive. 4 cr.

### 532. Discrete Mathematics

Counting principles (including permutations, combinations, pigeonhole principle, inclusion-exclusion principle); big-O relation; graphs, trees, and related topics. Prereq: MATH 531. 4 cr.

### 539. Introduction to Statistical Analysis

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 426. 4 cr.

### 545. Introduction to Linear Algebra and Mathematical Proof

Introduction to mathematical writing and proof in the context of basic linear algebra. Designed to reinforce ideas seen throughout the mathematics curriculum. Centered on an intense study of vector spaces and linear systems, beginning with a brief study of linear system equations, progressing to a discussion of linear transformation and vector spaces. (Not offered for credit if credit is received for MATH 645.) Prereq: MATH 426. Writing intensive. 4 cr.

### 601. Exploring Mathematics for Teachers I

Provides prospective elementary teachers with the opportunity to explore and master concepts involving number systems and operations, data analysis and probability. 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. Prereq: EDUC 500. (Not offered for credit if credit is received for MATH 621, 623, 721, and/or 723; not offered for credit to CEPS majors.) 4 cr.

### 602. Exploring Mathematics for Teachers II

Provides prospective elementary teachers with the opportunity to explore and master concepts involving 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. Prereq: EDUC 500. (Not offered for credit if credit is received for MATH 621, 622, 721, and/or 722; not offered for credit to CEPS majors.) 4 cr.

### 619. Historical Foundations of Mathematics

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 545. 4 cr.

**621. Number Systems for Teachers**

Problem solving; counting and set concepts, number systems (whole numbers, integers, rational, and real numbers); number theory; estimation and mental calculation techniques; and applications requiring calculators and computers. Manipulatives and models are used in a lab setting to illustrate the concepts and properties of the number systems and teach number sense. (Not offered for credit to mathematics majors, except those in elementary or middle school options of the B.S. in Mathematic Education degree program.) Offered in alternate years in the fall semester. Prereq: permission. 4 cr.

**622. Geometry for Teachers**

Properties of plane and space figures; tessellations; symmetry; LOGO computer language; nonstandard, English, and metric units of measure; area and perimeter; volume and surface area; estimations and approximations of measurements; constructions; congruence and similarity mappings; problem solving using geometric and algebraic skills, and applications requiring calculators and computers. Manipulatives and models are used in a lab setting to illustrate concepts and properties of geometry. (Not offered for credit to mathematics majors, except those in the elementary or middle school options of the B.S. in Mathematic Education degree program.) Offered in alternate years in the spring semester following MATH 621. Prereq: MATH 621 or permission. 4 cr.

**623. Topics in Mathematics for Teachers**

Logic (valid and invalid forms of reasoning); descriptive statistics (graphs, measures of central tendency, measures of variation); inferential statistics (samplings, distributions, measures of relative standing, simulations); probability (experimental, geometrical, and theoretical); permutations and combinations; probability simulations; problem solving using skills from statistics and probability; mathematical connections and communication review of computer software; and applications requiring calculators and computers. (Not offered for credit to mathematics majors, except those in the elementary or middle school options of the B.S. in Mathematics Education degree program.) Offered in alternate years in the fall semester following MATH 622. Prereq: MATH 621 or permission. 4 cr.

**624. Analysis for Secondary School Teachers**

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: MATH 425, 545 or equivalent, EDUC 500 or by permission. Offered in alternate years in the spring semester following MATH 623. 4 cr.

**644. Statistics for Engineers and Scientists**

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 639.) Prereq: MATH 426. 4 cr.

**645. Linear Algebra for Applications**

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.) 4 cr.

**646. Introduction to Partial Differential Equations**

Introduces the solution of partial differential equations. Models arising from initial-boundary-value problems of mathematical physics and Sturm-Liouville problems are examined; solution techniques include separation of variables, Bessel functions, series expansions by orthogonal functions, and numerical methods. Prereq: CS 410 or 415; MATH 527; 528; 645; /or permission. 4 cr.

**647. Complex Analysis for Applications**

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.) 4 cr.

**656. Introduction to Number Theory**

Unique factorization, arithmetic functions, linear and quadratic congruences, quadratic reciprocity law, quadratic forms, introduction to algebraic numbers. Prereq: MATH 531. Offered in alternate years. 4 cr.

**657. Geometry**

Advanced approach to fundamental properties of Euclidean and other geometries. Prereq: MATH 531. Writing intensive. 4 cr.

**658. Topics in Geometry**

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. 4 cr.

**696, 696W. Independent Study**

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. 1 to 4 cr.

**698. Senior Seminar**

Explores mathematical topics beyond the student's previous coursework. Focuses on problem solving, generation of problems, and oral and written communication of mathematics. Prereq: senior standing in mathematics or mathematics education. 4 cr.

**700. Introduction to Mathematics Education**

General background information about mathematics education, such as theories of learning and teaching mathematics, mathematics curricula, classroom management, and techniques the teach-

ing, learning, and assessment of mathematics that are common to all levels of mathematics education. Prereq: MATH 426, EDUC 500 or equivalent, or by permission. 4 cr.

**701. Exploring Mathematics for Teachers I**

Provides prospective elementary teachers with the opportunity to explore and master concepts involving number systems and operations, data analysis and probability. 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. Credit offered only to M.Ed. and M.A.T., certificate-only students, and in-service teachers. Prereq: EDUC 500. (Not offered for credit if credit is received for MATH 621, 623, 721, and/or 723.) 4 cr.

**702. Exploring Mathematics for Teachers II**

Provides prospective elementary teachers with the opportunity to explore and master concepts involving 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 will 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. Credit offered only to M.Ed. and M.A.T., certificate-only students, and in-service teachers. Prereq: EDUC 500. (Not offered for credit if credit is received for MATH 621, 622, 721, and/or 722.) 4 cr.

**703. Teaching of Mathematics, K-6**

Methods of teaching; uses of manipulatives, models, and diagrams in instruction; purposes and methods of assessment; curriculum standards and goals; review and evaluation of textbooks and computer software; uses of calculators and computers; teaching reading and writing in mathematics. Prereq: MATH 621 or 721; EDUC 500 or permission. Offered in alternate years in the spring semester. 4 cr.

**721. Number Systems for Teachers**

Problem solving; counting and set concepts, number systems (whole numbers, integers, rational, and real numbers); number theory; estimation and mental calculation techniques; and applications requiring calculators and computers. Manipulatives and models are used in a lab setting to illustrate the concepts and properties of the number systems. Credit offered only to M.Ed. and M.A.T., certificate-only students, and in-service teachers. Prereq: permission. Offered in alternate years in the fall semester. 4 cr.

**722. Geometry for Teachers**

Properties of two- and three-dimensional figures; tessellations; symmetry; nonstandard, English, and metric units of measure; area and perimeter; volume and surface area; estimations and approximations of measurements; constructions; congruence and similarity mappings; applications requiring calculators and computers. Manipulatives and models are used in a lab setting to illustrate concepts and properties of geometry. Credit offered only to M.Ed. and M.A.T., certificate-only students, and in-service teachers. Prereq: 721 or permission. Offered in alternate years in the spring semester following MATH 721. 4 cr.



**723. Topics in Mathematics for Teachers**

Descriptive statistics; inferential statistics; simulations; probability (experimental, geometrical, and theoretical); permutations and combinations; problem solving using skills from statistics and probability; applications requiring calculators and computers. Credit offered only to M.Ed. and M.A.T., certificate-only students, and in-service teachers. Prereq: 721 or permission. Offered in alternate years in the fall semester following MATH 722. 4 cr.

**737. Statistical Methods for Quality Improvement**

Introduces scientific data collection and analysis with an emphasis on industrial and service provider applications. Topics include: descriptive and graphical statistical methods; confidence intervals and hypothesis testing; regression; ANOVA; statistical process control (SPC); failure modes and effects analysis (FMEA); Six-Sigma concepts and methods; introduction to Reliability; quality tools, MSA, and process capability studies; introduction to Lean methodology, such as 5S, Kaizen, and VSM. Use of a software package is an integral part of the course. Prereq: MATH 644. 4 cr.

**739. Applied Regression Analysis**

Statistical methods for the analysis of relationships between response and input variables: simple linear regression, residual analysis and model selection, multicollinearity, nonlinear curve fitting, categorical predictors, introduction to analysis of variance, examination of validity of underlying assumptions. Emphasizes real applications with use of statistical software. Prereq: MATH 539 (or MATH 644). Writing intensive. 4 cr.

**740. Design of Experiments I**

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 subsampling 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. 4 cr.

**741. Survival Analysis**

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. Suitable statistical software, such as SAS or JMP, SPlus, or R, are used. Prereq: MATH 639 (or 644). 4 cr.

**742. Multivariate Statistical Methods**

Introduction to statistical methods for multivariable data, including exploratory analyses of high-dimensional observations, data mining and pattern recognition. Random vectors and metrics, multivariate normal distribution, multivariate analysis of variance (MANOVA), repeated measures analysis, dimension reduction methods: principal components, factor analysis, canonical correlation. Statistical learning and data mining. Supervised learning: classification and regression with CART and neural nets. Unsupervised learning: clustering multidimensional scaling. Prereq: MATH 539 (or MATH 644). Offered in alternate years. 4 cr.

**744. Design of Experiments II**

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. 4 cr.

**745, 746. Foundations of Applied Mathematics**

Basic concepts and techniques of applied mathematics intended for graduate students and advanced undergraduates in mathematics, engineering, and the sciences. Topics include computational linear algebra, nonlinear differential equations, and partial differential equations. Methods examined include Fourier expansions and transforms, Laplace transforms, optimization techniques, linear spaces, eigenvalue analysis, Sturm-Liouville systems, numerical methods, conformal mapping, and residue theory. Prereq: MATH 527; 528 or equivalent. 4 cr.

**747. Introduction to Nonlinear Dynamics and Chaos**

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; 528; 645. 4 cr.

**753. Introduction to Numerical Methods I**

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; CS 410. 4 cr.

**754. Introduction to Numerical Methods II**

Introduces the tools and methodology of scientific computing through the examination of interdisciplinary case studies from science and engineering. Emphasizes numerical approaches to solving linear systems, eigenvalue-eigenvector Problems and ordinary and partial differential equations problems are solved on various hardware platforms using a combination of application software and data visualization packages. Prereq: CS 410 or 415; MATH 527, 645, 753; or permission. 4 cr.

**755. Probability and Stochastic Processes with Applications**

Introduces the theory, methods, and applications of randomness and random processes. Probability concepts, random variable, expectation, discrete and continuous distributions, stochastic processes, Markov chains, Poisson processes, moment-generating functions, convergence of random variables. Prereq: MATH 528 and 539 (or 644); or permission. 4 cr.

**756. Principles of Statistical Inference**

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 resampling methods, decision theory. Prereq: MATH 755; or permission. 4 cr.

**761. Abstract Algebra**

Basic properties of groups, rings, fields, and their homomorphisms. Prereq: MATH 531 or 545. Writing intensive. 4 cr.

**762. Linear Algebra**

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 4 cr.

**#764. Advanced Algebra**

Topics selected from rings, modules, algebraic fields, and group theory. Prereq: MATH 761. Offered in alternate years. 4 cr.

**767. One-Dimensional Real Analysis**

Theory of limits, continuity, differentiability, and integrability. Prereq: MATH 531, or 545. Writing intensive. 4 cr.

**776. Logic**

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. 4 cr.

**780. Teaching Middle School Mathematics**

Teaching and learning of middle school mathematics. Students examine the major mathematical concepts presented in the middle school curriculum and learn techniques for planning, designing, and evaluating procedures for helping students to learn these concepts. Prereq: MATH 426, 700, and EDUC 500 or equivalents, or by permission. Offered in alternate years in the spring semester. 4 cr.

**784. Topology**

Open sets, closure, base, and continuous functions; connectedness, compactness, separation axioms, and metrizability. Prereq: MATH 531. Writing intensive. 4 cr.

**788. Complex Analysis**

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. 4 cr.

**791. Teaching of Mathematics, 7-12**

Methods for teaching middle and secondary school mathematics; survey of instructional materials; uses of models, calculators, and computers; integrating reading, writing, and problem solving into mathematics curricula; methods of assessment; theories of learning mathematics; review and evaluation of curriculum materials, software and instructional resources; and introduction to professional organizations and publications. Prereq: EDUC 500 or equivalent; MATH 426; or permission. Offered in alternate years in the spring semester. 4 cr.

**796. Topics**

New or specialized courses not covered in regular course offerings. Prereq: permission. May be repeated up to 8 credits. 4 cr.



**799. Senior Thesis**

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. 2 or 4 cr.

---

**Mechanical Engineering (ME)**

(For program description, see page 68.)

**441. Introduction to Engineering Design and Solid Modeling**

Engineering design process and the language of graphical communication introduced via team design projects and laboratory exercises. Topics include sketching, 3-D visualization, computer aided design, solid modeling, projection theory, engineering drawings, report writing and oral communication. Writing intensive. 4 cr.

**442. Manufacturing Engineering and Design**

Introduces basic manufacturing processes associated with mechanical, electrical, and electronic systems through classroom lectures, seminars, laboratory exercises, field trips, and student projects. Prereq: ME 441. 4 cr.

**503. Thermodynamics**

Properties of a pure substance, work and heat, laws of thermodynamics, entropy, thermodynamic relations, cycles. Prereq: PHYS 407. Pre- or Coreq: MATH 528. 3 cr.

**523. Introduction to Statics and Dynamics**

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. 3 cr.

**525. Mechanics I**

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. Pre- or Coreq: MATH 426. Writing intensive. 3 cr.

**526. Mechanics II**

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. 3 cr.

**542. Mechanical Dissection and Design Analysis**

Engineering design and analysis of mechanical systems through in-depth dissection experiences. Relationships between functional specifications and design solutions, role of engineering analysis in design, and the importance of manufacturing constraints. Lab experiences include team dissections of mechanical artifacts, e.g., fishing reel, bike, electric drill. Introduces basic metal working operations. Prereq: ME 441. Coreq: ME 525 and permission. No credit if credit received for ME 442. 4 cr.

**561. Introduction to Materials Science**

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. Writing intensive. 4 cr.

**603. Heat Transfer**

Analysis of phenomena; steady-state and transient conduction, radiation, and convection; engineering applications. Prereq: MATH 527, ME 608. Pre- or Coreq: CS 41 3 cr.

**608. Fluid Dynamics**

Dynamics and thermodynamics of compressible and incompressible fluid flow; behavior of fluids as expressed by hydrostatic, continuity, momentum, and energy equations. Prereq: ME 503. Coreq: ME 627. 3 cr.

**627. Mechanics III**

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. 3 cr.

**629. Kinematics and Dynamics of Machines**

Kinematic and dynamic analysis of mechanisms and their synthesis. Applications to reciprocating engines; balancing and cam dynamics are developed. Prereq: ME 627. 3 cr.

**643. Elements of Design**

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. Writing intensive. 3 cr.

**646. Experimental Measurement and Data Analysis**

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; 608. Writing intensive. 4 cr.

**670. Systems Modeling, Simulation, and Control**

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 608, MATH 527. Writing intensive. 4 cr.

**695. Special Topics**

Course topics not offered in other courses. May be repeated for credit. Lab. Prereq: permission. 2 to 4 cr.

**696. Projects**

Analytical, experimental, or design projects undertaken individually or in teams under faculty guidance. May be repeated for credit. 1 to 4 cr.

**699. Engineering Internship**

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. 1 cr.

**702. Statistical Thermodynamics**

Macroscopic thermodynamic principles developed by means of microscopic analysis. Prereq: ME 503. 4 cr.

**705. Thermal System Analysis and Design**

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 603. Writing intensive. 4 cr.

**707. Analytical Fluid Dynamics**

Kinematics of flow; constitutive relationships; development of the Navier-Stokes equations; vorticity theorems; potential flow. Prereq: ME 608. 4 cr.

**708. Gas Dynamics**

Study of one-dimensional subsonic and supersonic flows of compressible ideal and real fluids. Wave phenomena; linear approach to two-dimensional problems; applications in propulsion systems. Prereq: ME 608 or permission. 4 cr.

**709. Computational Fluid Dynamics**

Review of matrix methods; basics of finite differences, basics of spectral methods, stability, accuracy, Navier-Stokes solvers. Prereq: ME 603 or permission. 3 cr.

**711. Coherent Optical Methods**

Introduces electro-optic experimental techniques in mechanics. Optical fundamentals including elements of scalar diffraction theory, interferometry, holography, Doppler shifts, coherence, and laser speckle. Applications including mechanical strain measurements, vibrational mode determination, fluid pressure, temperature measurements, and fluid velocity measurements. Concepts from course are demonstrated in lab. Prereq: permission. 3 cr.

**712. Waves in Fluids**

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. 3 cr.

**#723. Advanced Dynamics**

Classical dynamics oriented to contemporary engineering applications. Review of particle dynamics. Hamilton's principle and the Lagrange equations. Kinematic and dynamics of rigid bodies, gyroscopic effects in machinery and space structures. Prereq: ME 627 or permission. 4 cr.

**724. Vibration Theory and Applications**

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; 627 or permission. 4 cr.

**727. Advanced Mechanics of Solids**

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. 4 cr.



**730. Mechanical Behavior of Materials**

Elastic and inelastic behavior of materials in terms of micro- and macromechanics. 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. 4 cr.

**731. Fracture and Fatigue Engineering Material**

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; 561 or permission. 4 cr.

**735. Mechanics of Composite Materials**

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. 4 cr.

**743. Satellite Systems, Dynamics, and Control**

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. 3 cr.

**744. Corrosion**

The course is split into three parts. The first part reviews and develops basic concepts of electrochemistry, kinetics, and measurement methods. The second part covers the details of specific corrosion mechanisms and phenomena including passivity, galvanic corrosion, concentration cell corrosion, pitting and crevice corrosion, and environmentally induced cracking. The 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 405 or 403; ME 561 or permission. Lab. 4 cr.

**747. Experimental Measurement and Modeling of Complex Systems**

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 561; 646; 670. Writing intensive. 4 cr.

**755. Senior Design Project I**

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. 2 cr.

**756. Senior Design Project II**

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. 2 cr.

**757. Coastal Engineering and Processes**

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.) 3 cr.

**760. Physical Metallurgy I**

Introduction to physical metallurgy; dislocations; thermodynamics of materials, diffusion, phase transformations, and strengthening mechanisms in solids. Prereq: ME 561 or permission. Lab. 4 cr.

**761. Diffraction and Imaging Methods in Materials Science**

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. 4 cr.

**763. Thin Film Science and Technology**

The processing, structure, and properties of thin solid films. Vacuum technology, deposition methods, film formation mechanisms, characterization of thin films, and thin-film reactions. Mechanical, electrical and optical properties of thin films. Prereq: ME 561 or permission. 4 cr.

**770. Design with Microprocessors**

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. 4 cr.

**772. Control Systems**

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. 4 cr.

**773. Electromechanical Analysis and Design**

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. 4 cr.

**776. Product Design**

Provides a thorough overview of the steps in the engineering design process. Topics include product planning, need identification, specification formulation, benchmarking, concept generation and selection, design for manufacture, assembly, and environment. Students develop a product as part of a team. Prereq: ME 441 or equivalent CAD experience; ME 542 (Mechanical Dissection) or ME 442 (Manufacturing). 4 cr.

**783. Geometric Modeling**

Topics include curves, surfaces, solids, analytic and relational properties, intersections, transformations, and solid modeling. Emphasizes applications in computer graphics and CAD/CAM systems. Prereq: CS 410; MATH 528 or permission. 4 cr.

**785. Solid Mechanics in Manufacturing**

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. 4 cr.

**786. Introduction to Finite Element Analysis**

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, 603 or permission. Lab. 4 cr.

**795. Special Topics**

New or specialized courses and/or independent study. May be repeated for credit. 2 to 4 cr.

**797. Honors Seminar**

Course enrichment and/or additional independent study in subject matter pertaining to a 600- or 700-level ME course other than ME 695, 696, 697, or 795. 1 cr.

---

## Medical Laboratory Science (MLS)

(For program description, see page 95.)

**401. Introduction to Medical Laboratory Science**

Designed for students interested in the study of medical laboratory science. Program and career options, certification requirements, and medical ethics and professionalism. Cr/F. 1 cr.

**444A. Seven Deadly Diseases**

This course will analyze seven major disease processes and associated biological concepts. The student will evaluate each major disease process covered as to historical perspective, lore/misconceptions, disease etiology, physical impact of symptoms, diagnostic criteria, prevention and treatment. Emphasis will be placed upon clinical significance of race, class, gender, and global cultural traditions in the study of the selected diseases. The laboratory section will include hands on performance of pertinent diagnostic testing for disease identification. Lab fee. Writing intensive. 4 cr.



**602. Seminar**

Clinical case study presentations emphasizing the role of the laboratory in diagnosing and treating disease and in maintaining health. Prereq; senior MLS majors only or permission. Writing intensive. 2 to 4 cr.

**610. Biomedical Lab Management**

An overview of biomedical laboratory management, including financial operations, personnel management, marketing, information management, and instructional skills. Special fee. Writing intensive. 4 cr.

**640. Phlebotomy Theory**

The procedures involved in blood collection with emphasis on safety and professionalism. Students observe all techniques and have an opportunity to perform them. Recommended for students considering a health care profession. Special fee. Permission required. 2 cr.

**641. Phlebotomy Clinical Internship**

Students obtain experience and proficiency in blood collection techniques at a health care facility (80 to 120 hours). Prereq: MLS 640. Permission required. Cr/F. 1 to 2 cr.

**642. Basic Immunology and Serology**

Introduces the immunologic basis of selected disease states. Topics include both the innate and acquired immune systems and the specific changes that occur when the immune systems are challenged. 2 cr.

**643. Clinical Serology Laboratory**

Practical experience testing for immune system disorders. Coreq: MLS 642. Permission required. Special fee. 1 cr.

**644. Hematology. Blood Cells and Coagulation**

Human blood cell physiology in both health and disease. Includes all benign and malignant conditions of red blood cells, white blood cells, platelets, and hemostasis factors. 3 cr.

**645. Clinical Hematology Laboratory**

The analysis of whole blood for cellular components and plasma for hemostatic evaluation. Special emphasis on differentiating benign from malignant processes, and cellular identification by morphologic, cytochemical, and CD marker abnormalities. Coreq: MLS 644. Permission required. Special fee. 3 cr.

**656. Immunohematology and Transfusion Science**

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 infection. 2 cr.

**657. Blood Banking Laboratory**

Students obtain experience in blood banking practices including blood typing, antibody screening, cross matching, and confirmatory testing. Coreq: MLS 656. Permission required. Special fee. 1 cr.

**658. Medical Biochemistry**

The assessment of disease states through the analytical assessment of amino acids, proteins, enzymes, tumor markers, nonprotein nitrogen metabolites, carbohydrates, lipids, electrolytes, blood gases, hormones, vitamins, and trace elements. Prereq: CHEM 403 and CHEM 404. 3 cr.

**659. Clinical Chemistry Laboratory**

Utilizing analytical methodologies with an emphasis on quality control, students will analyze blood analytes such as glucose, BUN, creatine,

electrolytes, enzymes, cholesterol, bilirubin and serum protein and evaluate their clinical significance. Special fee. Coreq: MLS 658. Permission required. 2 cr.

**660. Body Fluids**

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. 2 cr.

**661. Body Fluids Laboratory**

Practical experience in the performance and clinical correlation of urinalysis and selected body fluid procedures. Permission required. Coreq: MLS 660. Special fee. 1 cr.

**696, 696W. Independent Study**

In-depth studies under faculty supervision. Prereq: approval of the faculty the area concerned. Cr/F. 1 to 6 cr. 696W is writing intensive.

**720. Mycology, Parasitology, and Virology**

Covers human fungal, parasitic, and viral infections. The mechanism of infection, life cycles, and infectious stages of the organism as well as disease progression within the host. Prereq: MICR 602. 3 cr.

**721. Mycology, Parasitology, and Virology Laboratory**

Practical experience in diagnosing and identifying specific organisms as well as correlating test results with the studied fungal, parasitic, or viral disease. Coreq: MLS 720. Permission required. Special fee. 2 cr.

**751/751W. Advanced Clinical Microbiology Internship**

Advanced clinical bacteriological procedures, fluorescent techniques, and special procedures. Mycology and parasitology identification and testing. Prereq: senior MLS majors only. 5 cr.

**752/752W. Advanced Hematology Internship**

Special hematology procedures including diagnostic staining, advanced hemostasis studies, and evaluation of blood cells in disease states. Prereq: senior MLS majors only. 5 cr.

**753/753W. Advanced Immunohematology Internship**

Advanced blood-banking procedures, including antibody identification, and component therapy. Principles and procedures for detecting disorders of cellular and humoral immunity. Prereq: senior MLS majors only. 5 cr. 753W is writing intensive.

**754/754W. Advanced Clinical Chemistry Internship**

Theory, operation, evaluation, and maintenance of automated chemistry systems. Advanced laboratory analysis of body fluid chemistries including enzymology, isotopes, hormones, blood gases, and toxicology. Data analysis, computerization. Prereq: senior MLS majors only. 5 cr. 754W is writing intensive.

**761/761W. Clinical Microbiology Internship**

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. Prereq: MICR 602; senior MLS majors only. 20 cr. 761W is writing intensive.

**762. Clinical Hematology Internship**

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. Prereq: MLS 652; senior MLS majors only. 20 cr.

**763. Clinical Immunohematology Internship**

Advanced instruction in clinical immunohematology at a local hospital or reference laboratory. Pre-transfusion testing, donor screening, phlebotomy and component therapy emphasized. Prereq: MLS 653; senior MLS majors only. 20 cr.

**764. Clinical Chemistry Internship**

Advanced instruction in clinical chemistry at a local hospital or reference laboratory. Analysis of carbohydrates, proteins, enzymes, lipids, hormones, electrolytes, blood gases, and drugs. Prereq: MLS 654; senior MLS majors only. 20 cr.

**796. Biomedical Research Internship**

Advanced instruction/participation in some aspect of biomedical research, either on or off campus. Student designs program of study with research supervisor and MLS faculty advisor. 4 to 16 cr.

**799. Senior Honors Thesis**

4 cr.

---

**Microbiology (MICR)**

*(For program description, see page 96.)*

**407. Germs 101**

Expands on the increasing public awareness of the societal and technological impact of the invisible microbial world on our lives and on the planet. Students participate in weekly extra-class activities, acting as life scientists by using the scientific method of inquiry. One experience focuses on bacteria that use sunlight to make a living, another on using bacteria in genetic engineering. Students come to view germs in diverse lights: microbes as organisms, microbes as enemies, microbes as friends, and microbes in the press. Especially useful for people with microphobia. Not for microbiology or biology major credit. 4 cr.

**444. From Frankenstein to Dolly, and Beyond**

This course is an interdisciplinary introductory course designed specifically for first year students. It seeks to stimulate and support student inquiry and exploration of social and ethical issues associated with scientific research and advances, the value-laden questions that they often precipitate, and their impact on individuals, population groups, and society at large. (Also listed as HMP 444.) 4 cr.

**501/501H. Microbes in Human Disease**

Microorganisms have a profound effect on our everyday lives. This effect can often be dramatic enough to capture many of today's news headlines. Did you ever wonder why people died from eating hamburgers contaminated with *E. coli*? How do "flesh-eating bacteria" function? Will there be an AIDS vaccine? Explores the answers to these and many other fascinating questions by examining the role of microorganisms in human disease. The fundamental structure, metabolism, genetics, and ecology of clinically relevant bacteria, viruses, fungi, and parasites and presented in relationship to the human host and its immune system. The foundation, incidence, and control of microbial diseases are presented through case studies. Emphasizes active learning in which students participate in classroom discussions, experiments, and demon-



strations. Laboratory exercises designed to introduce techniques for the identification of important pathogenic microorganisms and disease diagnosis. Special fee. Lab. 4 cr.

### 503. General Microbiology

Principles of microbiology; morphology, physiology, genetics, culture, and classification of bacteria and other microorganisms; and their relationships to agriculture, environment, industry, sanitation, and infectious diseases. Prereq: BIOL 411-412 or equivalent; CHEM 403-404 or equivalent. Special fee. Lab. 5 cr.

### #504. Brewing and Industrial Microbiology Applications

Lectures and laboratories will address basic concepts of microbiology, chemistry, and biochemistry related to the brewing and food industries. The theoretical and practical approach will serve as an integrative learning experience. A hands-on course for students wishing to learn microbiology industrial applications and for those working in the field seeking to upgrade their sanitary microbiology skills. Topics will include: bacterial cell wall composition and Gram stain characteristics, the isolation, enumeration, and identification of spoilage bacteria, yeast fermentation and biochemistry, total and viable yeast counts, wild yeast, media selection and preparation and the role of Lactobacilli and Pediococci in beer and other foods. Biochemical testing procedures and the HACCP food safety system will also be emphasized. Prereq: MICR 503 or permission of the instructor. Special fee. 4 cr.

### 600/600W. Field Experience

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. Prereq: permission. May be repeated to a maximum of 8 credit hours. Only 4 credit hours can be used toward the major. Cr/F. 1 to 4 cr. 600W is writing intensive.

### 602. Pathogenic Microbiology

Morphologic, cultural, biochemical, serologic, epidemiologic, and pathogenic characteristics of microorganisms causing human and animal diseases. Discussion of clinical presentation in host and laboratory diagnosis and treatment measures. Prereq: MICR 503. Lab. Special fee. 5 cr.

### 603. Bacteriology of Food

Lectures and laboratories will address modern technical concepts of the 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: MICR 503 or equivalent. (Not offered every year.) 4 cr.

### 604. Bacteriology of Food Lab

This lab addresses modern technical concepts of the microbiology, physiology, and biochemistry related to food sanitation. Coreq: MICR 603. Special fee. 1 cr.

### 651. Biotechnology Experience/Biomufacturing

Course begins by introducing students to the proteins and companies of biotechnology and to current good manufacturing practices. For remainder

of 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. (Also offered as ANSC 651.) 4 cr.

### 655. Biotechnology Experience/Research

One of two courses that provide students with state-of-the-art tools of biotechnology and an opportunity to master skills and acquire the knowledge needed to work effectively in a biotechnology lab within the industry. Research protocols used in this course illustrate aspects of the "central dogma" of molecular biology. Prereq: BIOL 411, 412, and MICR 503. (Also listed as ANSC 655.) 4 cr.

### 702. Infectious Disease and Health

Principles underlying the nature of infectious agents; the diseases they cause; pathogenic strategies; response of the host; intracellular parasitism; epidemiology; control measures including vaccines and chemotherapy; action of antimicrobial chemotherapeutic agents; pharmacokinetics and drug metabolism. Ethical issues in infectious disease covered. Well-established pathogens and newer, emerging human and animal disease agents covered. Prereq: MICR 602; permission. (Not offered every year.) 5 cr.

### 704. Genetics of Prokaryotic Microbes

Study of the maintenance, exchange, and expression of genetic material in bacteria and their viruses. Combines a historical overview on the important role microbial genetics played in the development of modern molecular biology with a contemporary perspective on the methods used to understand the function of genes. Particular emphasis is placed on current experimental applications to basic science, biomedical research, and biotechnology. (Also listed as GEN 704.) Prereq: MICR 503, BCHM 658. Special fee. 5 cr.

### 705. Immunology

Introduces the major cellular and molecular components of the immune system; examines their development and production, their interactions with each other and with other systems in the body, and their regulation; explores their role in beneficial and harmful immune responses in humans and animals. Prereq: MICR 503. Special fee. Lab. 5 cr.

### 706. Virology

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. Prereq: MICR 503. 3 cr.

### 707. Marine Microbiology

Qualitative and quantitative evaluation of the physiological activities of microorganisms that influence the state of carbon, nitrogen, sulfur, iron, manganese, phosphorous, hydrogen, oxygen, and other elements in the sea and its sediments. Provides an understanding of the interrelationships between marine microorganisms and their surroundings by integrating microbiological phenomena with known aspects of physical, chemical, and biological oceanography. Introduces students to the primary scientific literature in marine microbiology, teaches each student how to think provocatively and concertedly, and convey those thoughts clearly and concisely in both oral and written form. Prereq: MICR 503. Writing intensive. 5 cr.

### 708. Virology Lab

Principles and practices of animal, selected plants, and bacterial virological methods for the propagation, detection and enumeration of viruses. Prereq: MICR 503. Coreq: MICR 706. Special fee. 2 cr.

### #710. Electron Microscopy and Microbial Cytology/Electron Microscopy Lab

Ultrastructure of eukaryotes, prokaryotes, and viruses. Role of bacterial appendages, cell membranes and cell walls, cytoplasmic inclusions, cell division and sporulation and virus ultrastructure. Preparative electron microscopy techniques for biological material described in detail. Practical applications of electron microscopy instrumentation together with theory of electron optics, and instrument function discussed. Lab. Prereq: MICR 503; permission. (Not offered every year.) 5 cr.

### 711. Genomics and Bioinformatics

The 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 of a range of bioinformatics approaches—the computer applications used in genome analysis. Prereq: BIOL 604. (Also offered as BCHM 711 and GEN 711.) Lab. 4 cr.

### 713. Microbial Ecology and Evolution

Functional roles of microorganisms, their population dynamics and interactions, and their mechanisms of evolutionary change in natural communities, laboratory experiments, and simple mathematical models. Special emphasis on the tempo and mode of prokaryotic adaptation, the evolution of virulence, and the origin of new pathogens. Prereq: MICR 503. 4 cr.

### 714. Public Health and Waterborne Diseases

Course has three sections: 1) government, 2) disease and epidemiology, and 3) sources of anthropogenic (of human origin) microbial pollution, control and disinfection. The overall theme of the class is to understand how and why waterborne (virus, protozoal, and bacterial) and some food-borne diseases are still prevalent within our society. The class usually goes on at least two field trips, to a wastewater plant and a drinking water plant; at times students may be asked to go to town meetings or public hearings concerning water and pollution. In lab, students do experiments and then analyze their data and share it with the rest of the class by posting it on the class Web site. Prereq: MICR 503. Special fee. 4 cr.

### 717. Microbial Physiology

Fundamental physiological and metabolic processes of archaea, bacteria and fungi with a strong emphasis on prokaryotes. Literature-based course. Topics include regulation of and coordination of microbial metabolism, bacterial cell cycle, global control of gene expression, diversity of energy metabolism, and microbial cell differentiation. Prereq: MICR 503, BCHM 658 or 751; or permission. Special fee. Lab. Writing intensive. 5 cr.

### 718. Ethics and Issues in Microbiology

Advances being made in the biological sciences impact the need for scientific integrity. From guiding students in the laboratory to scientific record keeping, from authorship and peer review to potential conflicts of interest, from use of animals and humans in research to genetic technology, scientists need to understand the ethical issues that underlie their work. These and related issues are presented and discussed in a format that encourages both an appreciation of established guidelines and an opportunity to critically examine them. Writing intensive. 4 cr.



**751. Cell Culture**

Theory and principles fundamental to the culture of cells in vitro. Introduces techniques of preparation and maintenance of animal, plant, insect, and fish cell cultures. Application of cell culture to contemporary research in biological sciences. Prereq: MICR 503; permission. (Also offered as ANSC 751 and PBIO 751. No credit if credit received for MICR 751 of ANSCI 746.) Special fee. Lab. 5 cr.

**#766. Plant-Microbe Interactions**

Physical, chemical, genetic and molecular methods utilized by plant pathogens in interactions with plants, as well as plant defense mechanisms. Major groups of plant pathogens (bacteria, fungi, and viruses) are discussed, as well as beneficial plant-microbe symbioses. (Also offered as PBIO 766.) 3 cr.

**790. Laboratory Teaching Experience**

Students assist Graduate Teaching Assistants in preparing, presenting, and executing Microbiology laboratory. 1 to 4 cr.

**795/795W. Problems**

Special projects in microbiology. Research topics in immunology; virology; microbial genetics; pathogenesis; microbial ecology; microbial physiology; marine microbiology; detection of pathogens in shellfish. 1 to 8 cr. 795W is writing intensive.

---

**Military Science (MILT)**

(For program description, see page 119.)

**401. Leadership Laboratory I**

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.

**402. Leadership Laboratory II**

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.

**413. Introduction to ROTC**

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 physi-

cal fitness per week. Participation in one weekend exercise is also required for all cadets. Open to all college students, no military commitment required. 2 cr.

**414. Introduction to ROTC II**

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. 2 cr.

**501. Self/Team Development I**

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. Coreq: MILT 401. 2 cr.

**502. Individual/Team Military Tactics**

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. Coreq: MILT 402. 2 cr.

**550. Camp Challenge**

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, 402, 501, and 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. 4 cr.

**601. Leading Small Organizations I**

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, 414, 501, and 502. 4 cr.

**602. Leading Small Organizations II**

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. 4 cr.

**611. Seminar on Leadership and Management I**

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. 4 cr.

**612. Transition to Lieutenant**

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. 4 cr.

**695. Officer Internship**

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. 1 to 4 cr.



## Music (MUSI)

(For program description, see page 43.)

### 401/401H. Introduction to Music

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. Does not fulfill a major requirement. 4 cr.

### 402, 402H. Survey of Music History

The study of the development of musical styles and idioms in the context of selected historical and cultural aspects of Western civilization. 4 cr.

### 411, 412. Fundamentals of Music Theory

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. 4 cr.

### 441. Concert Choir

A mixed chorus that studies and performs classical and modern literature. Recommended for voice majors. Open to all students. 1 cr.

### 442. Chamber Singers

A specialized mixed chamber chorus that concentrates on the *a cappella* repertoire from the Renaissance to the present. Prereq: membership in Concert Choir; audition. 1 cr.

### 444. Music and Social Change in America

Focuses on music in the United States during the early to mid-twentieth century as it alternately reflected and led movements for social change. 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. The goal of the course is twofold: 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. Writing intensive. 4 cr.

### 448. Opera Workshop

Operatic singing, acting, and production techniques; performance of both complete operas and operatic excerpts. Prereq: audition. 1 cr.

### 450. Symphony

Presents several concerts during the year of repertoire ranging from the great, standard symphonic literature to large modern works. Prereq: audition. 1 cr.

### 451. Concert Band

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. 1 cr.

### 452. Wind Symphony

Select wind ensemble which performs difficult classical and contemporary literature. Prereq: audition. 1 cr.

### 453. Symphonic Band

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. Prereq: audition. 1 cr.

### 454. UNH Marching Band

Open to all students; performs during football games. Rehearsals conclude at the end of the football season. 1 cr.

### 455. Piano Ensemble

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. 1 cr.

### 456. String Ensemble

Groups of instrumentalists gain experience in the performance of literature for the smaller ensemble. Prereq: permission. 1 cr.

### 457. Woodwind Ensemble

Groups of instrumentalists gain experience in the performance of literature for the smaller ensemble. Prereq: permission. 1 cr.

### 458. Brass Ensemble

Groups of instrumentalists gain experience in the performance of literature for the smaller ensemble. Prereq: permission. 1 cr.

### 459. Percussion Ensemble

Groups of instrumentalists gain experience in the performance of literature for the smaller ensemble. Prereq: permission. 1 cr.

### 460. Jazz Band

Two jazz bands perform a wide spectrum of big band literature. Prereq: audition. 1 cr.

### 461. Vocal Jazz Ensemble

Singers perform in small a cappella ensembles and with various jazz instrumental ensembles. Prereq: membership in Concert Choir; audition. 1 cr.

### 462. Pep Band

Rehearsal and performance of a broad range of band music at hockey and basketball games. 1 cr.

### 463. Jazz Combo

Groups of instrumentalists gain experience in the performance of literature for the smaller jazz ensemble. Prereq: permission. 1 cr.

### 464. Guitar Ensemble

Groups of instrumentalists gain experience in the performance of literature for the smaller ensemble. Prereq: permission. 1 cr.

### 471-472. Theory I

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 473-474 concurrently. Prereq: permission. 3 cr.

### 473-474. Ear Training I

Laboratory exercises to develop aural skills; sight-singing and dictation. Students should register for MUSI 471-472 concurrently. Prereq: permission. 1 cr.

### 475-476. Functional Piano I

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. Coreq: MUSI 471, MUSI 473. Special fee. 1 cr.

### 501, 502. History and Literature of Music

Styles, forms, and techniques of composition in

Western music. Prereq: completion of MUSI 472 or MUSI 412; permission. 3 cr.

### 511. Survey of Music in America

From colonial times to the present, including the various European influences, the quest for an American style, and the emergence of such indigenous phenomena as jazz. 4 cr.

### 515. Survey of Music

The connections between music and other cultural practices and institutions with a focus on the musical traditions and institutions of several cultures. Emphasizes the role of music in society. Examines the materials and methods used to study music and musical life in any culture, as well as concepts in ethnomusicology. Musical training and background not required. 4 cr.

### 520. Diction for Singers I

Application of International Phonetic Alphabet (IPA) to English, French, German, and Italian. Emphasizes both written and spoken performance. 2 cr.

### 521. Diction for Singers II

See description for MUSI 520. Prereq: MUSI 520. 2 cr.

### 536. Early Wind Instruments

Private instruction in Renaissance and Baroque wind instruments. Special fee. 1 to 4 cr.

### 541. Piano

Private instruction in piano. Special fee. 1 to 4 cr.

### 545. Voice

Private instruction in voice. Special fee. 1 to 4 cr.

### 546. Violin

Private instruction in violin. Special fee. 1 to 4 cr.

### 547. Viola

Private instruction in viola. Special fee. 1 to 4 cr.

### 548. Violoncello

Private instruction in violoncello. Special fee. 1 to 4 cr.

### 549. String Bass

Private instruction in string bass. Special fee. 1 to 4 cr.

### 551. Flute

Private instruction in flute. Special fee. 1 to 4 cr.

### 552. Clarinet

Private instruction in clarinet. Special fee. 1 to 4 cr.

### 553. Saxophone

Private instruction in saxophone. Special fee. 1 to 4 cr.

### 554. Oboe

Private instruction in oboe. Special fee. 1 to 4 cr.

### 555. Bassoon

Private instruction in bassoon. Special fee. 1 to 4 cr.

### 556. French Horn

Private instruction in French horn. Special fee. 1 to 4 cr.

### 557. Trumpet

Private instruction in trumpet. Special fee. 1 to 4 cr.

### 558. Trombone

Private instruction in trombone. Special fee. 1 to 4 cr.

### 559. Euphonium

Private instruction in euphonium. Special fee. 1 to 4 cr.

### 560. Tuba

Private instruction in tuba. Special fee. 1 to 4 cr.

### 561. Percussion

Private instruction in percussion. Special fee. 1 to 4 cr.



**562. Jazz Piano**

Private instruction in jazz piano. Special fee. Permission required. 1 to 4 cr.

**563. Jazz Guitar**

Private instruction in jazz guitar. Special fee. 1 to 4 cr.

**564. Drum Set**

Private instruction in drum set. Special fee. 1 to 4 cr.

**571-572. Theory II**

Continuation of MUSI 471-472. 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 573-574 concurrently. Prereq: MUSI 472; 474. 3 cr.

**573-574. Ear Training II**

Laboratory exercises to develop aural skills further. Students should register for MUSI 571-572 concurrently. Prereq: MUSI 472; 474; permission. 1 cr.

**575-576. Functional Piano II**

See description for MUSI 475. Special fee. Prereq: MUSI 476. Coreq: MUSI 571, MUSI 573. 1 cr.

**595. Special Topics in Music Literature**

Open to music majors and non-majors; topics in areas not easily covered in historical courses. Prereq: permission. May be repeated for credit. 1 to 4 cr.

**#610. Popular Music and Rebellion in the 1960's**

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. 4 cr.

**#703. Music of the Renaissance**

Works of the 15th- and 16th-century composers from Dunstable to Palestrina. Prereq: MUSI 501 and 502 or permission. Writing intensive. 3 cr.

**705. Music of the Baroque**

Music of Europe from de Rore to Bach. Prereq: MUSI 501 and 502 or permission. Writing intensive. 3 cr.

**707. Music of the Classical Period**

Growth of musical styles and forms from early classicism through the high classicism of Haydn, Mozart, and the young Beethoven. Prereq: MUSI 501 and 502 or permission. Writing intensive. 3 cr.

**709. Music of the Romantic Period**

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 502 or permission. Writing intensive. 3 cr.

**711. Music of the 20th and 21st Centuries**

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 502 or permission. Writing intensive. 3 cr.

**713. Art Song**

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 502 or permission. Writing intensive. 3 cr.

**#715. Survey of Opera**

History of the genre from Monteverdi to the present. Prereq: MUSI 501 and 502 or permission. Writing intensive. 3 cr.

**731-732. Conducting**

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. 2 cr.

**736. Early Wind Instruments**

Private instruction in Renaissance and Baroque wind instruments. Special fee. 1 to 4 cr.

**741. Piano**

Private instruction in piano. Special fee. 1 to 4 cr.

**745. Voice**

Private instruction in voice. Special fee. 1 to 4 cr.

**746. Violin**

Private instruction in violin. Special fee. 1 to 4 cr.

**747. Viola**

Private instruction in viola. Special fee. 1 to 4 cr.

**748. Violoncello**

Private instruction in violoncello. Special fee. 1 to 4 cr.

**749. String Bass**

Private instruction in string bass. Special fee. 1 to 4 cr.

**751. Flute**

Private instruction in flute. Special fee. 1 to 4 cr.

**752. Clarinet**

Private instruction in clarinet. Special fee. 1 to 4 cr.

**753. Saxophone**

Private instruction in saxophone. Special fee. 1 to 4 cr.

**754. Oboe**

Private instruction in oboe. Special fee. 1 to 4 cr.

**755. Bassoon**

Private instruction in bassoon. Special fee. 1 to 4 cr.

**756. French Horn**

Private instruction in French horn. Special fee. 1 to 4 cr.

**757. Trumpet**

Private instruction in trumpet. Special fee. 1 to 4 cr.

**758. Trombone**

Private instruction in trombone. Special fee. 1 to 4 cr.

**759. Euphonium**

Private instruction in euphonium. Special fee. 1 to 4 cr.

**760. Tuba**

Private instruction in tuba. Special fee. 1 to 4 cr.

**761. Percussion**

Private instruction in percussion. Special fee. 1 to 4 cr.

**762. Jazz Piano**

Private instruction in jazz piano. Special fee. Permission required. 1 to 4 cr.

**763. Jazz Guitar**

Private instruction in jazz guitar. Special fee. 1 to 4 cr.

**764. Drum Set**

Private instruction in drum set. Special fee. 1 to 4 cr.

**771, 772. Counterpoint**

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. 3 cr.

**775-776. Composition**

Construction of phrases, periods, and short compositions following classical models. Problems of text-setting. Prereq: MUSI 572 or permission. 3 cr.

**777. Advanced Composition**

Continuation of MUSI 776. Individual compositional projects. Prereq: MUSI 776 and permission. May be repeated for credit. 3 cr.

**779. Orchestration**

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. 3 cr.

**781/781W. Analysis: Form and Structure**

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. 3 cr. 781W is writing intensive.

**782/782W. Analysis: Form and Structure**

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. 3 cr. 782W is writing intensive.

**785. Electronic Sound Synthesis**

Computers and digital synthesizers, methods of sound synthesis using C sound, MIDI programming in Visual Basic, control programs for synthesizers, notation using computers (e.g., Finale for PC and Macintosh). 4 cr.

**795. Special Studies**

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. 1 to 4 cr.



## Music Education (MUED)

(For program description, see page 45.)

### #540. Beginning Techniques in Voice

Basic techniques of voice production. Individual work is emphasized. This course is desirable for, but not restricted to, MUED majors. Prereq: permission. 2 cr.

### 595. Special Projects

Individual investigation, research, or study. Creative projects may be included. Prereq: permission. 1 to 4 cr.

### 741. Techniques and Methods in Choral Music

Problems in the organization and performance of high school, college, and community choruses. Techniques of choral conducting and rehearsal, repertory and materials. 2 cr.

### 743. Materials and Methods in Piano Music

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. 2 cr.

### 745, 746. Techniques and Methods in String Instruments

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. 2 cr.

### 747. Techniques and Methods in Woodwind Instruments

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. 3 cr.

### 749. Techniques and Methods in Brass Instruments

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. 2 cr.

### 751. Techniques and Methods in Percussion Instruments

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. 2 cr.

### 755. Vocal Pedagogy

A study of vocal anatomy, vocal function, and teaching methods, with an emphasis on application for singers and voice teachers. 2 cr.

### 763. Jazz Music Methods

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. 2 cr.

### 765. Instrumental Music Methods

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. 2 cr.

### 771. Marching Band Methods

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 571. 2 cr.

### 790. Teaching Elementary School Music

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. 3 cr.

### 791. Teaching Secondary School Music

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 731-732. 2 cr.

### 795. Special Studies

Allows upper-level students to explore individually or in groups areas related to their specific professional interests. Prereq: permission. 1 to 4 cr.

## Natural Resources (NR)

### 400. Professional Perspectives in Natural Resources

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. 1 cr.

### 401. Introduction to Natural Resources

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. Permission. Lab. Special fee. 4 cr.

### 410. Insects and Society

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. 4 cr.

### 415/415H. Global Biological Change

Introduces the biological aspects of global change. Includes historical and physical setting and emphasizes current global biological issues including

population growth, land use and deforestation, biodiversity loss, introduced species, industrial N fixation, changes to the carbon cycle, and important interactions between the biosphere hydro-sphere and atmosphere. 4 cr.

### 425. Field Dendrology

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. 4 cr.

### 426. Wood Science and Technology

Wood microstructure and identification: physical, chemical, and mechanical properties; characteristics of wood including those produced by growth and form (e.g., knots, cross-grain) and those produced by degradation (e.g., stain, decay); focused on native and local species of both softwoods and hardwoods; and the role of forests in carbon storage. Special fee. Lab. 4 cr.

### 433. Wildlife Ecology

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. 4 cr.

### 435/435H. Contemporary Conservation Issues and Environmental Awareness

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. 4 cr.

### 444. Endangered Species: A Bio-political Crossroad

A freshman inquiry course that provides students with a multidisciplinary perspective of endangered species management in the United States. The sociological, economic, and biological forces that influence policy and management of endangered species are explored with guest lectures, student-led discussion, and case-study student seminars. Writing intensive. 4 cr.

### 444A. How to Change the World: Engaging Students and Community Partners in Collaborative Research

Exposes students to the breadth of research opportunities at UNH, and engages them in collaborative research projects to develop and disseminate new knowledge broadly for the benefit of society. Through an integrated series of lectures and highly interactive work sessions, students will learn the emerging foundations and examples of Outreach Scholarship, are paired with a community partner to develop a research proposal in an area that interests them, and learn critical professional skills including proposal writing and presentation. 4 cr.

### 444B. The Real Dirt

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. 4 cr.



**501. Introduction to Soil Sciences**

An overview of physical, chemical, and biological properties of soil. Sub-disciplines of soil chemistry, soil physics, soil microbiology, soil genesis, and classification. Prereq: CHEM 403 or equivalent. Special fee. Lab. 4 cr.

**502. Forest Ecosystems and Environmental Change**

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. 4 cr.

**504. Freshwater Resources**

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. 4 cr.

**506. Forest Entomology**

Introduces insect biology, behavior, ecology, and control, focusing on the forest environment. Labs include identification to the family level and an insect collection. Special fee. Lab. Writing intensive. 4 cr.

**527. Forest Ecology**

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: P BIO 412 or BIOL 411. Permission. Special fee. Lab. 4 cr.

**542. Forestland Measurement and Mapping**

Elementary measuring equipment and techniques; preparation of maps; public land survey; courthouse deed search. Two-week field session following spring semester. (Forestry and Wildlife majors only.) Special fee. 2 cr.

**544. Forest Biometrics**

Sampling techniques basic to forest inventory, regression estimation used in deriving volume equations and predicting forest growth and yield. Field labs include plot and point sampling. Analyses made using microcomputers. Special fee. Lab. 3 cr.

**599. Work Experience**

Work in the field of forestry; must be performed under professional supervision or approved by natural resources faculty. Students are responsible for arranging their own experience. Restricted to Forestry majors. Permission. Cr/F. 4 cr.

**601. Environmental Conservation and Sustainable Living Internship**

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. 4 cr.

**602. Natural Resources and Environmental Policy**

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; permission. Special fee. Writing intensive. 4 cr.

**604. Watershed Hydrology**

Basic principles underlying the physical processes of water movement at the watershed scale. Topics include precipitation, soil infiltration, stream flow, open channel hydraulics, and groundwater movement. Labs consist of problem sets and field trips in which hydrological processes are quantified. Prereq: NR 504 and one semester of calculus. Special fee. Writing intensive. 4 cr.

**607. Soil and Land Evaluation**

Field and lecture course emphasizing application of USDA Soil Taxonomy and Soil/Land-use interpretations to soils, landscapes, parent materials. Students gain on-site practice in preparing detailed soil descriptions, classifications, and interpretations, and participate in collegiate soil judging meets. Prereq: NR 501. Special fee. Lab. 2 cr.

**#610. Coastal and Oceanic Law and Policy**

Intended for persons interested in knowledge of or careers in management of marine or coastal resources, or in the natural sciences. Focuses on policy issues affecting oceans and coastlines and the tools available to government and policy leaders for coping with those issues. Issues examined include: 1) international concerns about control of coastal waters and access to resources of the water column and ocean floor; 2) water pollution and contamination of ocean resources; 3) protection for threatened and endangered species, including depleted fisheries; and 4) environmental impacts of the development and use of coastal areas. The legal tools and policy options available to government and concerned citizens for addressing these issues and controversies are examined. Class discussions on the status and history of applicable laws are accompanied by the analysis of policy concerns and the efficacy of various legal techniques. Students work in teams to develop strategy and to research positions in preparation for a negotiation exercise and a mock hearing. (Offered Summers at the Shoals Marine Laboratory.) 2 cr.

**615. Wildlife Habitats**

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. 4 cr.

**621. Field Description of Soils**

Description of soils in the field. Application of soils properties to forestry, plant science, and community planning. Strong orientation to fieldwork. Special fee. Lab. 3 cr.

**629. Silviculture**

Application of ecological knowledge to the control, establishment, composition, and growth of forest stands for economic purposes. Prereq: NR 425 and 527. Special fee. Lab. 3 cr.

**636. Wildlife Techniques**

Introduces research design principles, protocols, and techniques for monitoring and managing wildlife populations. Labs examine techniques for monitoring a variety of vertebrate taxa. Prereq: one course in general ecology and statistics. Weekend field trips may be required. Limited to Wildlife Management majors and minors. Permission. Lab. Special fee. Writing intensive. 4 cr.

**637. Practicum in Environmental Conservation**

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. 4 cr.

**643. Economics of Forestry**

Intermediate-level analyses of supply and demand for forest-based goods and services, managerial economics, taxation, capital investments. Prereq: EREC 411 or ECON 402. 4 cr.

**650. Principles of Conservation Biology**

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. 4 cr.

**652. Forest Resources Assessment**

Aerial photo type mapping and forest resources inventory: type identification and delineation, map construction, cruise design, and forest resources inventory. Two-week field session following the spring semester. (NR majors, others by permission.) Prereq: NR 527 and 544. Special fee. 2 cr.

**655. Vertebrate Biology**

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; 412; or equivalent. Special fee. Lab. 4 cr.

**658. Introduction to Geographic Information Systems**

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 ArcView 3.x GIS software. Permission. (Also offered as GEOG 658.) 4 cr.

**660. Ecology and Biogeography of New Zealand**

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. 5 cr.

### **661. Restoration Ecology and Ecosystem Management in New Zealand**

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 tropical 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. 4 cr.

### **662. Environmental Policy, Planning and Sustainability in New Zealand**

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. 3 cr.

### **663. Applied Directed Research in New Zealand**

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. 4 cr.

### **665. Applied American Environmental Philosophy**

Applying the philosophical theory underlying environmental studies and approaches to environmental conservation. Students conduct critiques of extensive readings and write papers creatively analyzing aspects of selected philosophical works. Major research manuscript required. (Also offered as AMST 665.) Writing intensive. 4 cr.

### **#670. Forest Fire Protection**

Forest fire prevention, behavior, and effective control; weather phenomena; other aspects of forest damage; fire effects and use. Prereq: NR 527 or 629; NR 501. (Not offered every year.) Special fee. Lab. 2 cr.

### **675. CEOP (Community Environmental Outreach Program) Projects**

Matches students with an interest in environmental

issues with community groups with environmental problems to be addressed. Students form consulting teams of from two to four students to work with the community during the academic year. (May be repeated for a maximum of 4 credits.) Prereq: permission. Cr/F. 2 to 4 cr.

### **701. Ecological Values and Ethics**

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. 4 cr.

### **702. Workshops**

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. Cr/F. 1 to 4 cr.

### **703. Watershed Water Quality Management**

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 604 or permission. Special fee. Lab/field trips. Writing intensive. 4 cr.

### **706. Soil Ecology**

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 PBIO 412, CHEM 403, or equivalent, or permission. Special fee. Lab. 4 cr.

### **710. Endangered Species Seminar**

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. 2 cr.

### **711. Wetland Ecology and Management**

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. 4 cr.

### **713. Quantitative Ecology**

Applied quantitative techniques: basic concepts in probability and statistics applied to ecological systems, population dynamics, spatial patterns, species abundance and diversity, classification and ordination, production, and energy and nutrient flow. Additional credit for in-depth mathematical analysis of a particular topic. Prereq: intro. courses in calculus, statistics, and ecology. (Not offered every year.) Writing intensive. 4 cr.

### **716. Wetland Delineation**

Examines the soils, vegetation, and hydraulic functions of coastal and central New England wetlands. Students are responsible for the collection and

identification of aquatic plant species, description of wetland soils, and delineation of wetland boundaries. Lectures and fieldwork. For juniors, seniors, and working professionals. Field trips. Special fee. (Offered summer session only.) 4 cr.

### **718. Law of Natural Resources and Environment**

Federal and state environment statutory and administrative law, its application, strengths and weaknesses, and options for future amendment. 3 cr.

### **719. Wetlands Restoration and Mitigation**

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.) 3 cr.

### **720. International Environmental Politics and Policies for the 21st Century**

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. 4 cr.

### **721. Ecology of Polluted Waters**

Impact of various water quality problems (e.g., excessive nutrient loading, organic matter loading, contamination by trace organic compounds) on the ecology of fresh waters, including microorganisms, aquatic invertebrates, algae, and fish. Design of impact assessment studies and data interpretation. Prereq: NR 703 or BIOL 528 or BIOL 541. Special fee. Lab/field trips. Writing intensive. 4 cr.

### **724. Resolving Environmental Conflicts**

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. Writing intensive. 4 cr.

### **#725. Environmental Communications and Advocacy**

Principles and techniques of communication and policy advocacy as applied to selected environmental issues. Case studies of regional, national, and international importance are pursued within a seminar-workshop format in which students learn content analysis skills to critically examine practical constraints on communication about environmental issues within complex political environments



and involving stakeholders with diverse values and political interests; develop analytical procedures and rhetorical strategies to build public policy advocacy cases, using diverse perspectives, for selected environmental issues; and learn consensus building and negotiation strategies for forging advocacy coalitions and to advocate policy objectives in pluralistic contexts. Prereq: junior standing and permission. 4 cr.

**730. Terrestrial Ecosystems**

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 PBIO 412 or BIOL 411, or permission. Lab. 3 cr.

**731. Ecosystem Based Governance: Policies and Management Strategies**

Human stresses have and are taking their toll on the health and integrity of ecosystems worldwide. More and more commentators are stressing the need to switch from traditional top-down natural resource governance strategies to a broader ecosystem-based management (EBM) approach. This class explores current strategies and trends, examines EBM in theory and practice, and ultimately puts theory into practice with a collaborative effort to design an EBM governance strategy for a geographical region chosen by the class. Prereq: permission. 4 cr.

**732. Chemistry of Soils**

Chemical composition of soil; structure of soil minerals; mineral solubility; contaminant sorption by minerals and organic matter; cation and anion exchange processes; and organic reactions in soil, their kinetics and their effects on soil properties. Prereq: CHEM 403 or equivalent. Special fee. Lab. 4 cr.

**735. Land Conservation Principles and Practices**

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. 4 cr.

**737. Wildlife Population Dynamics**

Mechanisms that influence the characteristics of terrestrial wildlife populations. Prereq: one course in general ecology and statistics; senior wildlife major or permission of the instructor. Lab. Special fee. 4 cr.

**738. Wildlife Policy and Management**

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. 4 cr.

**744. Biogeochemistry**

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. 4 cr.

**745. Forest Management**

Forest land ownership, management objectives, forest inventory regulation and policy, forest administration, professional responsibilities and opportunities. Restricted to Natural Resources majors. Lab. Special fee. 4 cr.

**757. Photo Interpretation and Photogrammetry**

Practical and conceptual presentation of techniques for using remote sensing, specifically aerial photographs, in natural resources. Includes photo measures of scale, area, parallax and object heights; flight planning; photo geometry; an introduction to the electromagnetic spectrum; and photo interpretation and mapping. Concludes with an introduction to digital remote sensing including multi-spectral scanners, radar, and thermal imagery and a brief discussion of geographic information systems (GIS). Applications to forestry, wildlife, land-use planning, earth sciences, soils, hydrology, and engineering. Prereq: algebra. Special fee. Lab. (Also offered as GEOG 757.) 4 cr.

**759. Digital Image Processing for Natural Resources**

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.) 4 cr.

**760. Geographic Information Systems in Natural Resources**

Theory, concepts, and applications of geographic information systems (GIS) for use in natural resources and related fields. Discussion of database structures, sources of data, spatial data manipulation/analysis/modeling, data quality standards and assessment, and data display/map production including many examples and practical applications. Hands-on lab exercises using ArcGIS 8.x software. Permission. Lab. (Also offered as GEOG 760.) 4 cr.

**765. Community Ecology**

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. 4 cr.

**767. Earth System Science**

Introduces the study of Earth as an integrated system. Investigates the major components (e.g., atmosphere, biosphere, cryosphere, hydrosphere, and lithosphere), dynamics (e.g., energy balance, water cycle, biogeochemical cycles), and changes within the earth system. Emphasizes the interactions and feedbacks within the system. The links between components are presented by examining present day processes and selected events in Earth's history. The lab portion examines these concepts through the development and use of computer models of Earth system processes. Prereq: MATH 424B; MATH 425; or permission. Lab. (Also offered as ESCI 767.) 4 cr.

**780. Earth as a System for Educators**

Explores the Earth as a system. Topics include ecosystems, habitats, biomes, biodiversity, weather, climate, water and air (environmental) quality, watersheds, remote sensing, the flow of matter and

energy through the universe, water and nutrient cycles, wildlife identification and monitoring, wetlands, seasons, interdependence, and changes over time. Course focuses on content being taught through Project WILD, WET, Learning Tree and Project HOME activities. The GLOBE protocols are an integral part of all lab exercises, and provide an opportunity to learn science methods and content through the use of classroom friendly techniques used to integrate into units for elementary and middle school students. For elementary and middle school teachers. Permission. 4 cr.

**782. Monitoring Forest Health**

Provides the field and remote sensing tools and experience needed by students to assess forest conditions at the individual tree and stand levels, as well as to conduct independent research projects on specific topics of interest. May include assessing change-over-time, landscape-level impacts of urban developments, severe weather events, and other natural and anthropogenic perturbations affecting the health of forests. Forest damage due to insects, air pollution (primarily ground-level ozone), drought, the 1998 ice storm, and others are investigated. Lab. Special fee. Permission. 4 cr.

**783. Forest Communities of New Hampshire**

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. 4 cr.

**784. Sustainable Living**

Concepts of sustainability are explored in a learning-community format. The importance of human communication, sense of place and time, and the health and longevity of the human species as part of natural systems is emphasized. Students develop measures for sustainable living, including ecological footprinting, and gain an understanding of system conditions necessary to move toward sustainable living. Two required field trips. Special fee. 4 cr.

**785. Systems Thinking for Sustainable Living**

Introduces systems thinking from a sustainable living perspective. The course is a collaborative inquiry using a problem-solving approach. After studying different types of systems and learning a variety of tools useful in systems analysis, we ask, "In what ways can systems thinking be employed to understand and begin to resolve the complex problems that face us as we move toward living within limits of natural systems?" 3 cr.

**795/795W. Investigations**

Investigations in Natural Resources may include topics in environmental conservation, forestry, soil and watershed management, ecosystems, and wildlife management. Permission required. 1 to 4 cr. 795W is writing intensive.

**797. Special Topics**

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. 1 to 4 cr.



**799. Honors Senior Thesis**

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. Two semester sequence; IA (continuous grading) grade given at the end of first semester. Restricted to Senior/Natural Resource Majors. Permission. Writing intensive. 4 cr.

---

**Nursing (NURS)**

(For program description, see page 79.)

**501. Introduction to Nursing**

Examines the values and philosophy of the Department of Nursing. Explores the four domain concepts of nursing: health and how it is defined, the diverse clients served by nursing, nursing as a profession, and the complex environment within which nursing is practiced. The nature of nurse-client encounters is explored with an emphasis on teaching students the skills to interact in a caring, facilitative manner. Prereq: permission. Special fee. 4 cr.

**502. Concepts of Pathophysiology/ Pharmacology**

Focuses on concepts of pathophysiology/pharmacology relevant to nursing practice. The physiologic response and manifestations of alterations in normal body functioning are analyzed and the effects of pharmacological agents on these alterations are examined. Prereq: ZOOL 507-508; MICR 501; majors only. Special fee. 4 cr.

**508. Foundations of Nursing Judgment**

Focuses on the knowledge and analytical skills required to adequately assess the health status of individuals. Students learn how to collect data using an assessment framework, analyze the data, and identify client resources and problems. Emphasizes the implications of the individual's developmental status, culture, and biologic variations at all points in the assessment process. Prereq: ZOOL 507-508; NUTR 400; MICR 501; PSYC 401; NURS 501; majors only. Coreq: NURS 502, NURS 514. 4 cr.

**514. Techniques of Clinical Nursing**

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: ZOOL 507-508; NURS 501; majors only. Coreq: NURS 508. Lab. Special fee. 4 cr.

**535. Death and Dying**

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. 4 cr.

**595. Women's Health**

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. 4 cr.

**606. Seminar on Professional Nursing**

The role of health professionals from historical, social, political, economic and technical view points. Individual student examinations of values, attitudes and beliefs regarding professional role in relation to current nursing theory and practice. Open to RN students only by permission. Prereq: NURS 646. Writing intensive. 7 cr.

**615. Adult Health Nursing**

Addresses the professional nursing practice, decision making processes, strategies and interventions as they relate to the care of adults who are experiencing chronic illnesses, acute illnesses, or impending death. The perspective adopted emphasizes the functional issues of daily living that these illnesses impose and the meanings these illnesses have for adults and their families within cultural, socioeconomic, sociopolitical, physical, and personal contexts. Prereq: first semester junior nursing major. Prereq: NURS 502, 508, 514. Coreq: NURS 615C. Special fee. 4 cr.

**615C. Adult Health Nursing Clinical**

Prereq: NURS 502, 508, 514. Coreq: NURS 615. 4 cr.

**617. Nursing and Healthcare Policy**

Examines the nature and quality of health care delivery systems and health related social programs from a nursing perspective. Critical thinking skills and strategies needed by professional nurses to participate in health care planning and health care consumer advocacy for improved health services emphasized. Prereq: for RNs with at least one year of clinical experience or permission. 3 cr.

**618. Caring for People with Alterations in Mental Health**

Provides an understanding of the concepts of mental health and major factors affecting human behavior and interaction. Specific theoretical concepts guiding nurse-client interactions are used as a vehicle for supporting the person's and family's optimum state of well-being. Prereq: NURS 622. Coreq: NURS 618C. 2 cr.

**618C. Caring for People with Alterations in Mental Health**

Emphasis on the practice of psychiatric nursing as being grounded on certain empirical, aesthetic, personal, and ethical knowledge. Nursing process and a situation-based interpretive approach serve as a framework for professional action. Through a variety of clinical experiences, the student applies mental health concepts/principles of interaction. Prereq: NURS 622. Coreq: NURS 618, NURS 624C. 2 cr.

**619. Clinical Decision Making I**

To practice effectively nurses must be able to gather data, interpret its meaning, take actions based on an understanding of the data, and evaluate outcomes. They also must be aware of the processes used to reach conclusions and be prepared to revise, adapt, or reject them. The course focuses on teaching learning theory, ethical decision making, and helping clients and families deal with situational and maturational crises, using a critical thinking framework. Prereq: first-semester junior nursing majors; NURS 501; 502; 508; 514. Coreq: NURS 615. Writing intensive. 4 cr.

**620/620C. Caring for the Childbearing and Childrearing Family**

This course has family as the focus for nursing practice, introducing the student to the care of young families throughout pregnancy, birth and child-rearing periods. Healthy transitions and physical alterations occurring from conception through adolescence are examined. The health needs of the family are discussed in terms of major morbidity/mortality and contemporary issues. Experience in various clinical settings provides opportunities for the development of professional practice roles. Prereq: second semester junior nursing major. Coreq: NURS 620C. Special fee. 4 cr.

**622. Clinical Decision Making II**

Emphasizes the clinical decision making process in the nursing care of individuals, families, and communities across the lifespan and from diverse backgrounds. Builds upon the theoretical foundation developed in 619, Clinical Decision Making I. Students strengthen expertise in developing clinical judgments, interventions, and outcome evaluations. Skills predicated upon attending to and processing relevant information from clinical situations. Students apply knowledge from clinical nursing courses in a variety of ways. Prereq: second-semester junior nursing majors; NURS 619; or RN student. 4 cr.

**624. Nursing in the Community**

Explores the role of community health nursing in health promotion, disease prevention, and long-term care. Analyzes contemporary community health problems with implications for community health nursing. Explores a variety of clinical and population-focused roles in primary, secondary, and tertiary prevention of health problems. Prereq: second semester junior nursing major. Coreq: NURS 624C. Special fee. 2 cr.

**624C. Nursing in the Community**

Coreq: NURS 618C, NURS 624. Special fee. 2 cr.

**645/645W. Research**

Focuses on enhancing the student's ability to evaluate, read, comprehend, participate in, and apply research to the practice of nursing. Pre or Coreq: statistics. 4 cr. 645W is writing intensive.

**655. Community Health Nursing I**

Explores role of community health nursing in health promotion, disease prevention and long term care at the population level. Identifies population at risk and implications for aggregate level nursing care. Open to RN students only by permission. Prereq: NURS 606. 3 cr.

**656. Community Health Nursing II: Individuals, Families, and Aggregates**

Explores a variety of contemporary topics relevant to community health and community health nursing practice at the individual, family, and aggregate levels. Students have the opportunity to explore clinical focused roles of the community health in nurse in primary, secondary, and tertiary prevention of health problems in individuals, families, and aggregates at risk across the life span. Evolving roles and responsibilities of a variety of community health nurse specialists introduced. Students collaborate with multidisciplinary health professionals in planning, providing, and evaluating health services to these specific at risk populations. May be repeated. Prereq: registered nurses only; NURS 606; permission. Coreq: NURS 656C. 2 cr.



**656C. Community Health Nursing II/ Clinical**

Experience in various clinical settings to provide opportunities for the development of the community health nursing role. Students collaborate with multidisciplinary health professionals in planning, providing, and evaluating health services to population at risk. Prereq: open to RN students only by permission. Coreq: NURS 656. 1 cr.

**694. Special Topics**

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.) 1 to 4 cr.

**695. Independent Study**

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. 2 to 4 cr.

**703/703W. Nursing Leadership/ Management and the Organizational Context**

Focuses on understanding ways in which the nurse can affect the organizations in which practice occurs and ways in which the organizations affect the individual's practice. Emphasizes issues of leadership; management; power; change; motivation; and interfacing of autonomous, dependent, and interdependent nursing functions in current and future health care delivery systems. Prereq: first-semester senior nursing majors; NURS 622. RN students should take NURS 703W. Special fee. 4 cr. 703W is writing intensive.

**710. Families in Health and Illness**

Seminar focuses on the family environment as a context for the experience of health and illness. Current middle-range theories and research from nursing and other disciplines analyzed for their application to family health. Public policy initiatives related to family health explored. 4 cr.

**719. Professional Nursing Practice: Transitions**

Provides opportunity for students to refine and integrate previously learned knowledge and skills into professional practice through a cooperatively designed learning experience/environment. Open to R.N. students only, by permission. Prereq: NURS 606, 655, 656, 656C. 7 cr.

**720. Clinical Decision-Making III**

Provides the student with the opportunity to integrate prior learning and experience, reflect on individual practice, and transition to professional practice in a career as a Registered Nurse. Emphasizes the refinement of professional skills related to leadership, management, problem solving, clinical and ethical decision-making, critical thinking, interpersonal communication, information management, and working as a productive team member. The weekly seminar provides an opportunity for the analysis, synthesis, refinement, and integration of nursing knowledge and practice. Regularly scheduled standardized tests are used to assess student progress and to provide timely feedback to facilitate the student's transition to professional practice. Special fee. Prereq: all nursing major courses. Coreq: NURS 720C. 6 cr.

**720C. Clinical Decision-Making III Clinical** Refine and integrate previously learned knowledge and skills into professional practice through a cooperatively designed learning experience/environment. Coreq: NURS 720. 6 cr.

**794/794W. Special Topics**

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. 1 to 4 cr. 794W is writing intensive.

**797. Honors Thesis**

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 1 cr. in fall, and 4 cr. in spring. Writing intensive. 1 to 4 cr.

---

**Nutritional Sciences (NUTR)**

(For program description, see page 97.)

**400/400H. Nutrition in Health and Well Being**

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. 4 cr.

**401. Introduction to the Dietetics Profession**

Survey of the role and responsibilities of the dietitian. Legal and ethical considerations necessary for the student dietitian in clinical experiences. Educational and personal qualifications for specialization in dietetics. Prereq: NUTR major. Cr/F. (Fall semesters only.) 1 cr.

**405. Food and Society**

Consideration of the cultural significance of food, emphasizing historical, psychological, social, political, and economic aspects. Also offered as ANSC 405. (Spring semester only.) Writing intensive. 4 cr.

**476. Nutritional Assessment**

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. 4 cr.

**503. Principles of Food Service Management**

Practical experience in methods of purchasing and handling food, tools, and equipment used in quantity food preparation, lab experience in selective settings. May be taken independently of NUTR 504. Prereq: HMG 403 or permission of instructor. (Fall semester only.) 3 cr.

**504. Managerial Skills in Dietetics**

Emphasizes the basic principles of managing clinical, community, and food service operations, including personnel management, in-service and on-the-job training, policies and procedures development, and financial management. (Spring semester only.) 3 cr.

**510. Nutrition Education and Counseling**

Principles, methods, skills and materials involved in nutrition education and counseling. Emphasizes development of educational materials and practicum skills necessary to perform as an effective nutrition counselor. (Fall semester only.) Prereq: Nutrition major or permission. 4 cr.

**546. Nutrition in Exercise and Fitness**

An in-depth look at the facts and fallacies behind eating for optimal health and physical performance. Topics include gaining and losing weight, nutritional supplements for optimal performance, disordered eating, protein supplementation, and proper training diets. Prereq: NUTR 400 or equivalent. 4 cr.

**550. Food Science: Principle and Practice**

Principles of food composition structure and properties and the chemical changes foods undergo in preparation and processing. Study of the laws and regulations that are applied to marketing food systems; principle and practice in food preservation. Application of scientific principles and interpretations of laboratory findings. Prereq: HMG 403, NUTR 400, CHEM 403-404, and CHEM 545-546. Special fee. Lab. (Spring semester only.) 4 cr.

**595. Mediterranean Diet and Culture**

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. 4 cr.

**600/600W. Field Experience in Nutrition**

Supervised field experience in public and private agencies with planned learning objectives related to the areas of clinical and community nutrition and food service management. Students are responsible for their own transportation; faculty member coordinates arrangements with fieldwork sites. Prereq: NUTR majors and minors only; permission; NUTR 400. May be repeated for a maximum of 6 credits. Cr/F. 1 to 4 cr. 600W is writing intensive.

**650. Life Cycle Nutrition**

Comprehensive review of the nutritional issues related to the life cycle. The nutrient requirements of each stage of the life cycle are analyzed in the context of their metabolic functions. The course also involves the practical application of theory at each stage of the life cycle through projects and discussion. Prereq: NUTR 400. (Spring semester only.) 4 cr.

**680. Practicum in Weight Management**

Provides exposure to the knowledge and practical experience for conducting a weight management program. Includes fundamentals of diet analysis, clinical assessment, fitness testing, testing interpretation of an exercise prescription and dietary modification. Students are responsible for giving oral presentations in weekly classes to the clients as well as monitor clients' performance throughout the program. Prereq: NUTR 400, 476, 510 and permission. 2 cr.

**699/699W. Independent Study**

Scholarly research project or supervised teaching experience in an area of the nutritional sciences under the guidance of a faculty adviser. May be repeated. Prereq: permission. Cr/F. 1 to 4 cr. 699W is writing intensive.

**709. Nutritional Epidemiology**

Introduces the principles and applications of nutritional epidemiology. The major methods of nutritional assessment are reviewed in relation to nutri-



tional epidemiology; the evidence of diet-disease relationships is examined. Course activities include lecture, discussion participation, presentations, and group work. Prereq: NUTR 400, introduction to statistics. Permission required. 4 cr.

#### 711. Lipid Metabolism

Structure, metabolism, and function of lipids and their impact on wealth and disease. Prereq: NUTR 400 and a biochemistry course. 4 cr.

#### 720. Community Nutrition

Solutions to the complex public health nutrition problems require cost-effective, community-based interventions that identify and address their multiple causes. From food insecurity to the challenges of escalating obesity rates, the community nutritionist is a key player in designing prevention, intervention and health promotion programs and policies. Provides the skills and tools needed to assess, implement, and evaluate community nutrition interventions. Prereq: NUTR 400. Writing intensive. 4 cr.

#### 725. Metabolic Adaptations to Exercise II

Examines the regulation of cellular metabolism in muscle, liver, adipose and other tissues of the body by enzymes, effectors, and hormones in response to exercise. Focuses on the exercise-induced mechanisms for controlling metabolic pathway flow, techniques for studying metabolism, and up-to-date molecular and cellular exercise physiology research. Prereq: BCHM 658 or KIN 724. 4 cr.

#### 740. Nutrition for Children with Special Needs

Nutritional assessment and care of children with special needs resulting in feeding difficulties requiring medical nutrition therapy. Prereq: NUTR 400. 2 cr.

#### 750. Nutritional Biochemistry

Detailed analysis of the digestion, absorption, transport, and intermediary metabolism of nutrients. Nutrient requirements are evaluated in the context of their physiological and biochemical functions. Prereq: ANSC 511-512; BCHM 658; or equivalents. (Also offered as ANSC 750.) Writing intensive. 4 cr.

#### 756. Treatment of Adult Obesity

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. 2 cr.

#### #760. Geriatric Nutrition

Emphasis on the nutritional requirements and status of the elderly in view of psychological and physiological changes in aging. Approaches for nutrition intervention and support will be addressed. Prereq: NUTR 400 or permission. (Also offered as ANSC 760.) Summer semester only. 3 cr.

#### 770. Nutrition and Gender Based Health Concerns

Offers a comprehensive review of the health issues facing adult men and women today. Students read and evaluate the current literature and document their reactions to group discussion in reaction papers on the topic. Students also present a topic of interest to the class. 2 cr.

#### 773. Clinical Nutrition

Application of principles of normal nutrition and physiology to clinical problems; altered nutrient requirements in human disease. Prereq: basic nutrition, anatomy and physiology, and biochemistry, or permission. Coreq: NUTR 775. (Fall semester only.) 4 cr.

#### 775. Practical Applications in Medical Nutrition Therapy

Supervised practical experience in therapeutic dietetic in one of several cooperating New Hampshire hospitals. Emphasizes nutritional counseling, assessment, and instruction of patients with nutrition-related disorders. Prereq: basic nutrition, anatomy and physiology, and biochemistry. Coreq: NUTR 773. (Fall semester only.) 3 cr.

#### 780. Critical Issues in Nutrition

Critical review and analysis of controversial topics in nutrition; emphasis on developing oral and written communication skills and analytical reasoning skills. Prereq: permission. (Spring semester only.) Writing intensive. 4 cr.

#### 795/795W. Investigations

Prereq: permission. 1 to 4 cr. 795W is writing intensive.

#### 799. Honors Senior Thesis

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 cumulative GPA of 3.20; permission. Writing intensive. 1 to 4 cr.

---

## Occupational Therapy (OT)

(For program description, see page 80.)

#### 500. Behavior and Development of Children

Introduces to 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. 4 cr.

#### 501. Developmental Tasks of Adulthood

Includes the biological and psychosocial context of development. Developmental tasks as they relate to the accomplishment of prior tasks, physiological change, socioeconomic status, and psychosocial development. Prereq: child development course or permission. 4 cr.

#### 510. Exploring Occupational Therapy and Occupation

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. Students are required to complete a community service learning assignment 4 cr.

#### 513. Stressed Out: The Science and Nature of Human Stress

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. 4 cr.

#### 595. Special Topics

Explores areas related to occupational therapy theory, practice, and/or research. Special fee on topic: College as Transition. 4 cr.

#### 685. Psychosocial Disorders and Everyday Life

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. 4 cr.

#### 695. Independent Study

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. 2 to 4 cr.

#### 722. Introduction to Assistive Technology

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. 4 cr.

#### 724. Assistive Technology and Physical Disabilities

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. 4 cr.

#### 726. Assistive Technology and Sensory, Communicative, and Cognitive Disabilities

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. 4 cr.

#### 741. Human Occupation

Students have three hours of classroom contact and regular contact with a mentor who is a master of a particular occupational activity. Students learn the activity with support of the mentor and other relevant experiences. Assignments include a presentation and two papers. An honors in the major course. Writing intensive. Special fee. 4 cr.

#### 746. Transitions: Student to Professional

This course is designed to help occupational therapy students explore role changes involved in leaving the academic world and entering the larger realm of professional and practice settings. Research on professional development indicates this transition is easier when students are prepared in both personal and institutional domains. Through lecture, presentations, small group work, readings, and written assignments students are given opportunities to analyze factors that contribute to successful professional development and ethical practice. Students use the results of their analyses to plan their individual transitions to fieldwork and entry-level practice. Prereq: OT 792; second semester senior. 2 cr.



**751. Mind Body Systems/Neurologically Based Function and Dysfunction**

Students study neurologically related disorders commonly seen by occupational therapists. A problem-based learning 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. Selected theoretical frames of reference for assessment and intervention are discussed in terms of general, holistic methods of practice. The course is a prerequisite for courses in specific occupational therapy assessment and intervention. 4 cr.

**752. Human Movement and Environmental Effects on Everyday Occupations**

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. 4 cr.

**762. Evaluation Principles and Methods**

Introduce students to the OT evaluation process. Students apply the clinical reasoning process to OT evaluation across age levels, and types of medical conditions. Students learn about common assessment tools available to occupational therapists, where, when, and how to apply them, and how to evaluate assessment tools. Students develop technical skills in administering selected evaluation tools, in integrating assessment data, and demonstrate emergent clinical decisions about intervention planning. Finally, they gain an appreciation of the importance of measurement in various facets of OT practice. Coreq: OT 763. Special fee. 4 cr.

**763. Occupational Therapy Intervention**

Expands upon the knowledge gained and skills developed in Evaluation Principles and Methods. Students further develop skills in selecting evaluation tools and demonstrating coherent clinical decisions about intervention planning based on data gathered. Selected classes are used for adaptation of knowledge; the course emphasizes the application and demonstration of common intervention strategies used by occupational therapists. Coreq: OT 762. Special fee. 4 cr.

**764. Occupational Therapy Intervention Lab**

Occupational Therapy Intervention Lab is a corequisite course to accompany OT 763/863 Occupational Therapy Intervention, a lecture course. The lab course provides opportunity for students to engage in experiential learning and application of principles and techniques learned in the lecture course. The lab sections are small and enable students to receive feedback on their performance during in-class learning activities and written work. 3 hours of contact per week. Special fee. 2 cr.

**771. Enabling Participation in Community Groups**

Students will work in an organization, learn about the people served by this organization, conduct an assessment for occupation-based program or wellness program needs within the organization, and develop a proposal for this program to be implemented during the semester. Special fee. 4 cr.

**772. Occupation, Health, and Community Programming**

Part of the two-course community programming sequence. Explores the concepts of health and wellness applied to population-based occupational therapy. Students implement community-based interventions to meet identified public health needs. Special fee. Writing intensive. 4 cr.

**791. Senior Honors Thesis**

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. 4 cr.

**792. Level I Fieldwork**

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. Cr/F. 1 cr.

**795. Special Topics**

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. 2 to 4 cr.

---

## Ocean Engineering (OE)

(For program description, see page 112.)

**690. Introduction to Ocean Engineering**

Survey of engineering applications in the ocean environment. Topics vary and include hydrodynamics, waves, tides, underwater sound, instrumentation, diving technology, marine geomechanics, and naval architecture. Taught by a team of faculty members from engineering departments. Prereq: PHYS 408; MATH 527. 4 cr.

**710. Ocean Measurements Lab**

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. 4 cr.

**744. Corrosion**

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. 4 cr.

**745. Environmental Acoustics I: Air and Water**

Sound and vibration; simple harmonic oscillators; characteristics and measurements of sound sources and receivers; acoustic wave equation (1D, 2D, 3D); sound reflection, transmission, refraction, and absorption in various media; room acoustics; basic sonar equation. Prereq: PHYS 408; MATH 527; ECE 544 or permission. Lab. 4 cr.

**754. Ocean Waves and Tides**

Introduces waves: small amplitude, linear wave theory, standing and propagating waves, transformation in shallow water, energy and forces on structures, generation by wind and specification of a random sea, long waves with rotation, and internal waves. Introduces tides: description of tides in ocean tidal generation forces, equilibrium tide, and tidal analysis. Lab/project: field and lab measurements with computer analysis. Prereq: PHYS 407-408; MATH 527;/or permission. Lab. 4 cr.

**756. Principles of Naval Architecture and Model Testing**

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. 4 cr.

**757. Coastal Engineering and Processes**

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. 3 cr.

**770. Fundamentals of Ocean Mapping**

Introduces the principles and practice of hydrography and ocean mapping. Methods for the measurement and definition of the configuration of the bottoms and adjacent land areas of the oceans, lakes, rivers, estuaries, harbors and other water areas, and tides or water levels and currents that occur in those bodies of water. Prereq: PHYS 407-408. (Also listed as ESCI 770.) Lab. 4 cr.

**771. Geodesy and Positioning for Ocean Mapping**

he 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.) 3 cr.

**785. Environmental Acoustics II: Air and Water**

General sonar equation: active, passive, sound generation, source level, directivity, calibration methods; sound propagation, rays and normal modes, acoustic waveguides; transmission loss, reverberation, scattering; ambient noise characteristics and measurements; sound reception and processing. Prereq: ECE 745 or OE 745. Also listed as ECE 78 4 cr.

**795. Special Topics**

New or specialized courses and/or independent study. May be repeated for credit. 2 to 4 cr.



## Philosophy (PHIL)

(For program description, see page 45.)

### 401/401H/401W. General Introduction to Philosophy

Depending upon the instructor, emphasizes basic philosophic problems, recurrent types of philosophies, or selected readings from the history of philosophy. 4 cr. 401W is writing intensive.

### 412/412H. Beginning Logic

Principles of reasoning and development of symbolic techniques for evaluating deductive and inductive arguments. 4 cr.

### 417. Philosophical Reflections on Religion

Introduces philosophy of religion to help students become critically aware of philosophical issues involved in various forms of religious belief and some of the persisting philosophical understandings of those issues. 4 cr.

### 421/421H. Philosophy and the Arts

Contemporary philosophic concerns and perspectives as reflected in one or more of the arts (literature, theatre, film, music, plastic art). Writing intensive. 4 cr.

### 424. Science, Technology, and Society

Consideration of the scientific endeavor and its social import from a philosophical perspective. 4 cr.

### 430/430H/430W. Society and Morals

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. 4 cr. 430W is writing intensive.

### 435. Human Nature and Evolution

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. 4 cr.

### 436. Social and Political Philosophy

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. 4 cr.

### 444. Remaking Nature/The Ethics and Politics of Genetic Engineering

Examines the biological, ethical, social, and political issues raised by genetic engineering. Students, acting as an "Advisory Council on Bioethics," formulate policy recommendations about whether or not there should be a Federal ban on research involving cloning of human embryos and genetically modifying plants and animals for food. 4 cr.

### 444A. Concepts of Self

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. 4 cr.

### 447/447H. Computer Power and Human Reason

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. 4 cr.

### 450/450H. Ecology and Values

Focuses on historical and contemporary philosophies of nature and their effects on human interaction with the environment. Issues include obligations to future generations and to animals, plants, and ecosystems; moral limits on consumption and reproduction; and the existence of objects of intrinsic value. Specific topics may include species loss and biological diversity, population growth, changes in the atmosphere, energy use, and sustainable development. 4 cr.

### 495. Tutorial Reading

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. Prereq: permission. 1 to 4 cr.

### 496. Topics

Introductory-level seminar in specific topics or problems considered from a philosophic point of view. 4 cr.

### 500. Workshop

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 only (PHIL minors may enroll if they receive permission). Writing intensive. 4 cr.

### 510. Philosophy and Feminism

Focuses on the 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, the institutions of marriage and motherhood. Writing intensive. 4 cr.

### 520. Introduction to Eastern Philosophy

Major Eastern traditions of philosophy. Concentration on Indian, Chinese, and Japanese systems may vary from semester to semester. 4 cr.

### 525/525H. Existentialism

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. 4 cr.

### 530. Moral Philosophy

Critical examination of the development of philosophical thinking regarding human values, rights, and duties. 4 cr.

### 540. Philosophy of Race and Racism

Investigates the concept of race and how different understandings of race underlie racist and anti-racist politics; explores how racism is interlocked with gender, economic, and other forms of oppression. Questions may include: What is racism? Do racial categories (such as black, white, Latino) have any

scientific basis, or are they socially constructed? If race is socially constructed, is it still "real" and should it be treated as such? Should public policies be "color-blind" with respect to race? Is whiteness a problematic racial identity and what can white people do about it? How is racism built into the structure of the state? Can popular racial discourse serve to support racist policies or attitudes even when it does not contain explicitly racist claims? 4 cr.

### 550. Symbolic Logic

Principles and techniques of modern logic. Topics: propositional logic, truth tables, predicate logic, and, time permitting, basic meta-theorems. Prereq: PHIL 412. 4 cr.

### 560. Philosophy Through Literature

Philosophical implications of representative literary works, read in tandem with philosophical works or articles. 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. 4 cr.

### 570/570H. Ancient Philosophy

Development of Western philosophy from its beginnings in Greece to the Roman period, with particular emphasis on the thought of Plato and Aristotle. 4 cr.

### 571. Medieval Philosophy

Philosophical thought of the Middle Ages from inception in the late Roman period with thinkers such as Plotinus and Augustine through the late medieval speculative mysticism of such figures as Meister Eckhart. Writings of Augustine and Thomas Aquinas. 4 cr.

### 580. Modern Philosophy from Descartes to Kant

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. 4 cr.

### 610. Advanced Topics in History of Philosophy

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. Course may be taken twice for credit (a third time with permission of the undergraduate program director) so long as the topic is different. May not be repeated to improve an earlier grade. Prereq: two courses in history of philosophy or permission. Writing intensive. 4 cr.

### 616. 19th Century Philosophy

Philosophical movements or philosophers associated with philosophical movements, such as later German idealism, French positivism, utilitarianism, Marxism, existentialism, and vitalism. 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 undergraduate program director) so long as the topic is different. May not be repeated to improve grade without approval from director of philosophy undergraduate program. Prereq: PHIL 574 or 575; or permission. Writing intensive. 4 cr.



**618. 20th Century Anglo-American Philosophy**

Major figures in the analytic tradition in England and America. 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 undergraduate program director) so long as the topic is different. May not be repeated to improve grade without approval from director of philosophy undergraduate program. Prereq: two courses in history of philosophy (one of which may be concurrent);/or permission. Writing intensive. 4 cr.

**620. 20th Century European Philosophy**

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. Course may be taken twice for credit (a third time with permission of the undergraduate program director) so long as the topic is different. May not be repeated to improve grade without approval from director of philosophy undergraduate program. Prereq: two courses in history of philosophy (one of which may be concurrent);/or permission. Writing intensive. 4 cr.

**631. Topics in the Philosophy of Science**

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: two courses in history of philosophy;/or permission. Writing intensive. 4 cr.

**635. Philosophy of Law**

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. 4 cr.

**660. Law, Medicine, and Morals**

Critical examination of the diverse legal and moral issues facing the profession of health care. Variable topics. Possible topics: 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. 4 cr.

**701. Topics in Value Theory**

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 undergraduate program director) so long as the topic is different. May not be repeated to improve grade without approval from director of philosophy undergraduate program. Prereq: permission. Writing intensive. 4 cr.

**702. Topics in Metaphysics and Epistemology**

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 undergraduate program director) so long as the topic is different. May not be repeated to improve grade without approval from director of philosophy undergraduate program. Prereq: two courses in history of philosophy;/or permission. Writing intensive. 4 cr.

**#720. Philosophical Psychology**

Philosophical perspectives and problems concerning human nature or the human condition; e.g., the nature of "self," human action, the body-mind problem, freedom of the will, the meaning of "person," the nature of behavior, etc. Prereq: PHIL 500 and either PHIL 570 or PHIL 580; or permission. Writing intensive. 4 cr.

**730. Theories of Justice**

The idea of justice is central to social, political, and legal theory. Considerations of justice are appealed to in assessing the legitimacy of governments, and the fair distributions of goods, and opportunities both with nation-states and globally, and to address specific social concerns such as radical or gender discrimination or access to health care. Examine both historical sources and contemporary debates about the nature of justice. Prereq: PHIL 500, 530, or permission. 4 cr.

**740. Advanced Topics in the Philosophy of Law**

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. 4 cr.

**#755. Environmental Philosophy and Policy**

Explores philosophical and moral issues, principles, and perspectives involved in human behavior toward, and treatment of, the natural environment and their implications for environmental policy. Various historical and contemporary ethical perspectives compared and evaluated, e.g., utilitarianism, natural law tradition, deep ecology, anthropocentrism, eco-feminism, as well as other social and religious approaches. Prereq: one course on environmental issues (PHIL 450 or NR 435) or permission. Writing intensive. 4 cr.

**780. Special Topics**

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. 4 cr.

**795. Independent Study**

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. May be repeated to a total of 8 credits. Writing intensive. 1 to 8 cr.

**798, 799. Senior Thesis**

Two-course sequence 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 undergraduate program director before registering for 798. Students must orally defend their theses before the department. (See department guidelines for further details.) Prerequisite for 798: PHIL 500. Prerequisite for 799: B- or above in 798. Writing intensive. 4 cr.

**Physics (PHYS)**

(For program description, see page 69.)

**400. Freshman Seminar**

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. Cr/F. 1 cr.

**401. Introduction to Physics I**

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. Special fee. Lab. 4 cr.

**402. Introduction to Physics II**

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. 4 cr.

**#404. Introduction to Space Science**

Students are exposed to the theoretical, analytical, and practical aspects of research in the modern astrophysics, solar, planetary, and space plasma physics. Basic principles of physics are tied to research projects that students pursue working in small groups, using complex engineering and numerical simulation models, and becoming members of actual research teams. Cr/F. 4 cr.

**406. Introduction to Modern Astronomy**

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. Special fee. Lab. 4 cr.

**407/407H. General Physics I**

Introductory course emphasizing motion, forces, energy, momentum, rotation, and oscillations. Recommended for the student specializing in science and engineering. 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 ev-



ery class meeting. Prereq: thorough knowledge of algebra, geometry, and trigonometry; May not receive credit for both PHYS 401 and 407. Pre- or Coreq: MATH 425. Special fee. Lab. 4 cr.

#### 408/408H. General Physics II

Introductory course emphasizing waves, sound, heat, electricity and magnetism. Recommended for students specializing in science and engineering. 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. Prereq: PHYS 407. May not receive credit for both PHYS 402 and 408. Pre- or Coreq: MATH 426. Special fee. Lab. 4 cr.

#### 409. Introduction to Problem Solving

Introduces problem solving techniques applied to Physics 407 material. Emphasis on using conceptual understanding to guide problem solution, choosing appropriate strategies, and methods of checking solutions. 1 cr. Coreq: PHYS 407

#### 444. Myths and Misconceptions About Nuclear Science

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. 4 cr.

#### 444A. The Big Bang

Writing intensive. 4 cr.

#### 505. General Physics III

Electromagnetic waves, geometrical and physical optics, relativity, atomic physics, elementary quantum mechanics, molecular physics, and nuclear physics. Prereq: PHYS 408. 3 cr.

#### 506. General Physics III Laboratory

Structured laboratory experience in optics and modern physics. Coreq: PHYS 505. Special fee. Lab. 1 cr.

#### 508. Thermodynamics and Statistical Mechanics

Classical and statistical approach to thermodynamics, kinetic theory. Prereq: PHYS 505. Coreq: MATH 526 or MATH 528. 4 cr.

#### 605. Experimental Physics I

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, 505; MATH 525 or 527. Lab. 5 cr.

#### 615. Classical Mechanics and Mathematical Physics I

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. 4 cr.

#### 616. Classical Mechanics and Mathematical Physics II

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. 4 cr.

#### 701. Introduction to Quantum Mechanics I

Nonrelativistic Schrodinger equation, the hydrogen atom, applications to atomic and nuclear structure. Prereq: PHYS 505, 615, 616. 4 cr.

#### 702. Introduction to Quantum Mechanics II

See description for PHYS 701. 4 cr.

#### 703. Electricity and Magnetism I

Foundation of electromagnetic theory; electrostatics, dielectric theory, electromagnetism, magnetic properties of matter, alternating currents, Maxwell's field theory. Prereq: PHYS 408, 615, 616. 4 cr.

#### 704. Electricity and Magnetism II

See description for PHYS 703. 4 cr.

#### 705. Experimental Physics II

Modern physics experiments and special project problems assigned to individual students. Prereq: PHYS 605; senior standing in physics. Lab. Writing intensive. 4 cr.

#### 706. Introduction to Physics Research

Introduces research in physics including research currently conducted at UNH, library resources, responsible conduct in research, how research differs from coursework, and how research results are presented in the research community. Cr/F. 1 cr.

#### 708. Optics

Geometrical optics, electromagnetic theory of light, interference, diffraction, polarization, related phenomena and nonlinear optics. Prereq: PHYS 505, 615, 616. Lab. 4 cr.

#### 710. Introduction to Modern Astrophysics

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, 615, 616. 4 cr.

#### 712. Introduction to Space Plasma Physics

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.) 4 cr.

#### 718. Introduction to Solid State Physics

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 505, 615, 616. Coreq: PHYS 701. 4 cr.

#### 720. Nuclear Physics

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, 704. 4 cr.

#### 764. General Relativity and Cosmology

Review of special relativity, and the motivation for considering gravity in terms of curvature of spacetime. 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.) 4 cr.

#### 791. Special Topics

Any selected topics not covered sufficiently in a general course may be studied. May be repeated to a maximum of 8 credits. 4 cr.

#### 795. Independent Study

Individual project under direction of a faculty adviser. Prereq: department permission. 1 to 8 cr.

#### 799. Thesis

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. May be repeated to 8 credits. Writing intensive. 4 cr.

---

## Plant Biology (PBIO)

(For program description, see page 97.)

#### 400. Plants and Civilization

Global experience of human interactions with plants and ways in which plants have contributed to the development and flourishing of human societies. Includes role of plants in providing sustenance, clothing and shelter, quest for spices and 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—global change and feeding the world in the future. Special fee. 4 cr.

#### 401. Plant Biology Orientation

Overview of plant biology research and teaching facilities; introduction to research, extension, and educational functions within the department; career opportunities in plant biology. Required of all plant biology majors. Cr/F. 1 cr.

#### 405. Organic and Sustainable Food Production

Introduces systems involved in organic food production with emphasis on sustainability of our food production. Scientific and biological principles relating to organic food production. Role of organic food production in our local communities. Special fee. 4 cr.

#### 412. Introductory Botany

Plants in their natural environments: their structure, function, growth, reproduction, and evolutionary diversity. Special fee. Lab. 4 cr.

#### 421/421H. Introductory Horticulture

Introduces horticultural practices and principles affecting plant growth and development in garden,



landscape, greenhouse, and farm settings. Special fee. Lab. 4 cr.

#### 501. Basic Biochemistry

Fundamentals of general and plant biochemistry for students in majors not requiring the biology core, e.g., health sciences, agricultural sciences, environmental biology. (Will not substitute for BCHM 658-659, BCHM 751-752.) Not open to first-year students; not offered every year. Prereq: CHEM 403-404 or equivalent. 3 cr.

#### 503. Introduction to Marine Biology

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 411-412. Special fee. (Also offered as ZOOL 503.) 4 cr.

#### #546. Plants, Soils, and Environment

Plant, soil, and environment relationships under natural and modified conditions with emphasis on soils as the foundation resource for plant production. Principles and practice of organic and conventional culture to sustain and improve soils/crops. Contemporary activities impacting soils as part of ecosystems. Prereq: CHEM 403 or permission. Special fee. Lab. 4 cr.

#### 547. Environmental Horticulture

Effects of environmental factors such as nutrition, light, and temperature on plant growth and development. Hands-on learning of a scientific approach to plant production, with an emphasis on producing high-quality greenhouse plants. Diagnosis of plant problems related to environmental factors. Issues of environmental quality related to intensive horticultural production. Special fee. Writing intensive. 4 cr.

#### 565. Turf Management

Adaptation and management of fine turf grasses for recreational, aesthetic, and functional use. Lab. Special fee. 4 cr.

#### 566. Systematic Botany

Scientific basis of plant taxonomy and the identification and classification of major plant families, native trees, shrubs, and wild flowers. Field trips, plant collection. Prereq: BIOL 412 or PBIO 412. Lab. Special fee. 4 cr.

#### #572. Plant Propagation

Sexual and asexual propagation of horticultural plants. Prereq: PBIO 421 equivalent or permission. Lab. Special fee. 4 cr.

#### 600/600W. Field Experience

A supervised experience providing the opportunity to apply academic experience in setting associated with future professional employment and/or related graduate 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. 1 to 4 cr. 600W is writing intensive.

#### 612. Plant Genetics and Reproduction

Introduces plant domestication, Mendelian inheritance, plant reproduction, biochemical basis of inheritance, plant breeding, and biotechnology of crop plants. Prereq: CHEM 403; PBIO 412 or equivalent. Will not satisfy biology core requirement for genetics. 4 cr.

#### 625. Introduction to Marine Botany

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. 4 cr.

#### 650. Crop Production Technologies

Major technologies and systems for intensive production of warm season vegetable crops, including traditional and alternative tillage and fertilizer practices, irrigation systems, storage systems, and use of various plastic-culture techniques (mulches, row covers, high tunnels, and greenhouses) to extend the growing season. Prereq: PBIO 421 or equivalent or permission; PBIO 546 and 547 recommended. (Not offered every year.) 3 cr.

#### 651. Plant Pathology

Nature, symptomatology, etiology, epidemiology, and control of important plant diseases. Prereq: PBIO 412, BIOL 411-412, or equivalent. Lab. 4 cr.

#### 652. Culture of Vegetable Crops

Origin, distribution, adaptation and culture of major temperate and subtropical vegetable crops. Lectures emphasize information on varieties, planting systems, cultivation, pest control, harvesting, and storage for New England growing conditions. Prereq: PBIO 421 or 412 or equivalent or permission; PBIO 546 recommended. (Not offered every year.) 3 cr.

#### 653. Forest and Shade Tree Pathology

Principles, symptomatology, etiology, and control of forest and shade tree diseases. Prereq: PBIO 412 or BIOL 412 or equivalent. Lab. Special fee. 4 cr.

#### #668. Summer Flora of New Hampshire

Study of the flora of New Hampshire. Topics include major vegetation types, common plant families, plant identification, and field techniques. Prereq: basic botany or permission. Field trips. Special fee. 4 cr.

#### 678. Nursery Crop Production

Application of the fundamentals of environmental horticulture to the commercial production of woody ornamentals and perennials. Crop management and culture, problem diagnosis, pest management, marketing, and environmental considerations of crop production. Prereq: PBIO 547. Lab. Special fee. (Not offered every year.) 4 cr.

#### 679. Landscape Management

Relates the principles of plant growth and development to current theory and practice in the establishment and maintenance of landscape plants. Plant selection, site assessment, planting techniques, cultural practices and diagnosis of problems are addressed with emphasis on environmental sustainability. Prereq: PBIO 547 or permission. Special fee. (Offered every other year.) 3 cr.

#### #689. Greenhouse Crop Management

Production of annuals, herbaceous perennials, and flowering bulbs. Hands-on learning of production aspects including nutrition and irrigation management, and details of specific floricultural crops. Business management for greenhouse and nursery operations is covered, including use of computer spreadsheet tools. Prereq: PBIO 547. Lab. Special fee. (Offered alternate years.) 4 cr.

#### 701. Plant Physiology

Structure-function relationship of plants, internal and external factors regulating plant growth and

development, plant hormones, plant metabolism, water relations, and mineral nutrition. Prereq: PBIO 412 or PBIO 421 or BIOL 411-412; CHEM 403-404; PBIO 501 or equivalent. 3 cr.

#### 702. Plant Physiology Laboratory

Analytical techniques for plant physiology, effects of growth regulators on plant growth and development, cell and tissue culture, enzyme kinetics, and plant water relations. Pre- or Coreq: PBIO 701. Special fee. 2 cr.

#### 709. Plant Stress Physiology

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, agricultural and ecological implications are discussed. Prereq: plant physiology; biochemistry; or permission. (Offered alternate years.) 3 cr.

#### 713. Biochemistry of Photosynthesis

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.) 4 cr.

#### 714. Electron Microscopy

Theory and principles involved in preparing plant and animal tissue for observation with the transmission (TEM) and scanning (SEM) electron microscopes; shadow casting; photographic techniques; stereology; and presentation of micrographs for publication. Prereq: permission. 2 cr.

#### 715. Electron Microscopy Lab

Practical application of theoretical principles and practices used in preparing and observing plant and animal tissues with the transmission and electron microscopes. Student project assigned. Prereq: permission. Coreq: PBIO 714. Special fee. 3 cr.

#### 717. Biology of Lakes

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. (Also offered as ZOOL 717.) 4 cr.

#### 719. Field Studies in Lake Ecology

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. (Also offered as ZOOL 719.) Special fee. Writing intensive. 4 cr.

#### 721. Microscopic Algae

Ecology and diversity of broad array of photosynthetic bacteria and protists, ecological and physiological diversity, anaerobic and aerobic respi-



ration, the evolution of protists, and diversity of marine and freshwater habitats. Use of advanced glass microelectrodes to study metabolic rates. Research project tailored to individual interests. Lab and field trips. Special fee. Prereq: Biology core courses or permission. 4 cr.

#### 722. Marine Phycology

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 PBIO 412 or 703. Lab. (Offered alternate years.) Special fee. 4 cr.

#### 723. Seaweeds, Plankton, and Seagrass: The Ecology and Systematics of Marine Plants

Introduces the biology of marine plants, with an emphasis on the macroalgae common to the Gulf of Maine and found in abundance at the Isles of Shoals. Lecture topics include productivity in the world's oceans, rocky shore ecology, commercial cultivation of algae, and phytoplankton ecology, as well as molecular analysis of the evolution and biogeography of marine plants. Field and laboratory exercises include collection and identification of algae from Appledore's intertidal and subtidal habitats, experimental design and data analysis for field study, and tidepool community surveys. Individual field projects may involve studies of algae growth, productivity as it relates to morphology, photosynthesis, and desiccation during low tide. Daily and evening lectures, laboratories and field work. Prereq: field marine science or one year of introductory biology. (Summers only, at Shoal's Marine Lab.) 4 cr.

#### 725. Marine Ecology

Marine environment and its biota, emphasizing intertidal and estuarine habitats. Includes field, laboratory, and independent research project. Prereq: general ecology; permission. Marine invertebrate zoology, oceanography, and statistics are desirable. (Also offered as ZOOL 725.) Special fee. (Offered alternate years.) 4 cr.

#### 726. Integrated Pest Management

Integration of pest management techniques involving biological, cultural, and chemical control with principles of ecology into management approaches for pests. Prereq: permission. Writing intensive. 4 cr.

#### 727. Algal Physiology

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.) 3 cr.

#### #729. Algal Physiology Laboratory

Useful laboratory techniques in studying the physiology of freshwater and marine algae. Experiments in nutrition, metabolism, pigment, and enzyme analysis. Small research project required. Prereq: concurrent registration in PBIO 727; permission. Coreq: PBIO 727. (Not offered every year.) Special fee. 2 cr.

#### 732. Lake Management: A Multidisciplinary Approach

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 as-

sociations. 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 ZOOL 732.) Special fee. Lab. 4 cr.

#### #747. Aquatic Higher Plants

Flowering plants and fern relatives found in and about bodies of water in the northeastern United States; extensive field and herbarium work, preparation techniques, and collections. Prereq: PBIO 566 or permission. Lab. (Not offered every year.) 4 cr.

#### 751. Cell Culture

Theory and principles fundamental to the culture of cells in vitro. Introduces techniques of preparation and maintenance of animal, plant, insect, and fish cell cultures. Application of cell culture to contemporary research in biological sciences. Prereq: MICR 503; permission. (Also offered as ANSC 751 and MICR 751.) Special fee. Lab. 5 cr.

#### 752. Mycology

Classification, identification, culturing, life histories, and ecology of fungi, from slime molds to halucinogenic 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 411-412 or PBIO 412 or equivalent. Special fee. Lab. 4 cr.

#### 753/753H. Cytogenetics

Chromosome structure, function, and evolution. Eukaryotic genome organization. Theory of, and laboratory techniques for, cytogenetic analysis in plants and animals. Prereq: BIOL 604. Special fee. Lab. (Also offered as GEN 753. Not offered every year.) 4 cr.

#### 754. Laboratory in Biochemistry and Molecular Biology of Nucleic Acids

Application of modern techniques to the analysis of biological molecules, with an emphasis on nucleic acids; includes DNA isolation and analysis, cloning, sequencing, and analysis of gene products. No credit if credit has been received for MICR 704. Prereq: BIOL 604; BCHM 658/659; 751, or permission. (Also offered as BCHM 754, GEN 754.) Special fee. (Not offered every year.) Writing intensive. 5 cr.

#### 758. Plant Anatomy

Anatomy of vascular plants, emphasizing structure and development of basic cell and tissue types, and of the major plant organs. Prereq: BIOL 412 or PBIO 412. Lab. (Not offered every year.) 5 cr.

#### 761. Biodiversity: A Phytogeographic Perspective

Global view of biodiversity, floras and vegetation types, from a phytogeographical perspective. Major factors such as climatic, edaphic, biotic, geologic, glaciation on distributions. Four Saturday field trips: Mt. Washington, northern bogs, old-growth forest, coastal dunes. Prereq: PBIO 566 or permission. (Offered alternate years.) Special fee. Writing intensive. 4 cr.

#### #766. Plant-Microbe Interactions

Physical, chemical, genetic, and molecular methods utilized by plant pathogens in interactions with plants, as well as plant defense mechanisms. Major groups of plant pathogens (bacteria, fungi and viruses) are discussed, as are beneficial plant-microbe symbioses. (Also offered as MICR 766.) 3 cr.

#### 772. Evolutionary Genetics of Plants

Mechanisms of genetic change in plant evolution, domestication, breeding, genetic engineering. Topics include Darwinian theory; speciation and hybridization; origins and co-evolution of nuclear and organelle genomes; gene and genome evolution; transposable elements, chromosome rearrangements, polyploidy. Lab: DNA techniques, sequence analysis programs, phylogenetic trees. Special fee. Prereq: BIOL 604 or equivalent; PBIO 412 or BIOL 411/412 or equivalent. (Also offered as GEN 772.) Writing intensive. 4 cr.

#### 774. Plant Biotechnology and Genetic Engineering

Plant transformation and regeneration, gene isolation and identification, structure and regulation of plant genes, current applications of plant genetic engineering, environmental and social implications. Prereq: BIOL 604 or permission. Not offered every year. (Also offered as GEN 774.) 3 cr.

#### 775. Plant Biotechnology and Genetic Engineering Lab

Techniques for genetic transformation and selection of plants, analysis of foreign gene expression, and plant cell and tissue culture. Coreq: PBIO or GEN 774. (Also offered as GEN 775.) Special fee. (Not offered every year.) 2 cr.

#### 795/795W. Investigations

Topics may include systematic botany, plant physiology, plant pathology, plant anatomy, plant ecology, mycology, cell biology, phycology, botanical teaching, morphology, cell physiology, scientific writing, micro technique, cell and tissue culture, history of botany, genetics, plant utilization, or teaching experience. Individual projects under faculty guidance. Prereq: permission. (4 credit maximum per semester for any single section.) May be repeated. 1 to 6 cr. 795W is writing intensive.

#### 796/796W. Special Topics

Occasional offerings in subject matter not covered by existing courses. A) Systematic Botany, B) Physiology, C) Plant Pathology, D) Anatomy, E) Morphology, F) Ecology, G) Mycology, H) Phycology, I) Cell Biology, J) Genetics, K) Evolution, L) Plant Utilization, M) Plant Molecular Biology, N) Developmental Plant Biology, O) Cell and Tissue Culture, P) Physiological Ecology, Q) Plant Disease Control, R) Plant Hormones, S) Crop Management, T) Biotechnology, U) Plant Nutrition, V) Ecological Agriculture W) History and Philosophy. Prereq: permission. May be repeated. No more than 4 cr. maximum per semester for any single section. 1 to 4 cr. 796W is writing intensive.

#### 797. Senior Seminar

Professionalism course for plant biology and environmental horticulture majors. Topics focus on the importance of written and oral communications. Projects include resume preparation, oral presentations, and writing activities. Discussion of current topics in horticulture/plant sciences and job search basics. Attendance at selected seminars in related subject areas. Required of all senior majors in environmental horticulture. (Fall semesters only.) Cr/F. 1 cr.

#### 799. Honors Senior Thesis

Students work under the direction of a faculty sponsor to plan and carry out independent research resulting in a written thesis. Two-semester sequence; IA grade (continuous course) given at end of first semester. May be repeated to a total of 6 credits. Writing intensive. 2 to 4 cr.



## Political Science (POLT)

(For program description, see page 46.)

### 401/401H. Politics and Society

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. 4 cr.

### 402/402H. Introduction to American Government

Power and competition in American politics focusing on voters and elections; public opinion and the media; interest groups and political institutions—the President, Congress, and the Courts. Examines critical political issues from the founding of the nation to the present. 4 cr.

### 403/403H/403W. United States in World Affairs

Introduction to United States foreign policy since the end of World War II examining the foundations of American policy, the origins and conduct of the Cold War and the dilemmas of the post Cold War era. Explores contemporary problems facing United States foreign policy such as international economy and transnational global issues. 4 cr. 403W is writing intensive.

### 407/407H. Law and Society

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. 4 cr.

### 444. Science, Society and Politics

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. 4 cr.

### 500. American Public Policy

Political and economic factors that mold the processes by which American policy makers deal with such domestic issues as crime and violence, poverty and inequality, inflation and unemployment, urban blight and renewal, and energy and the environment. Writing intensive. 4 cr.

### 502. State and Local Government

Powers, politics, political cultures, and constitutional settings of American state and local governments. State legislatures, governorships, court systems, political parties, electoral systems, and interest groups. Structures and functions of local governments, including towns, cities, counties, and special districts. Writing intensive. 4 cr.

### 504. American Presidency

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. 4 cr.

### 505. American Congress

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. 4 cr.

### 506. Parties, Interest Groups, and Voters

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. 4 cr.

### 507. Politics of Crime and Justice

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. 4 cr.

### 508. Supreme Court and the Constitution

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. 4 cr.

### 509. Bureaucracy in America

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 policy making. 4 cr.

### 510. Mass Media in American Politics

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. Writing intensive. 4 cr.

### 512. Public Opinion in American Politics

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. Writing intensive. 4 cr.

### 513. Civil Rights and Liberties

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. Writing intensive. 4 cr.

### 520. Justice and the Political Community

Origin of the idea of justice; relationship between politics, justice, and morality; selections from Plato, Aristotle, Roman, Islamic, and Christian political philosophers. 4 cr.

### 521. Rights and the Political Community

Human rights and the quality of communities as expressed in Hobbes, Locke, Mandeville, Rousseau, and others. 4 cr.

### 522. Dissent and the Political Community

Current political ideologies and controversies in America and abroad; liberal democracy and its critics since the 19th century. 4 cr.

### #523. American Political Thought

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. 4 cr.

### 524. Politics and Literature

Classical and contemporary works of literature to illustrate perennial issues in political philosophy; among authors studied are Aristophanes, Sophocles, Shakespeare, Melville, Tolstoy, and Sartre. 4 cr.

### 525. Multicultural Theory

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. 4 cr.

### 544. Pathways to Democracy

Parting from analysis of the Third Wave of worldwide democratization in the 1980s and 1990s, focuses on understanding how and why these regime changes came about, the ongoing trials of democratic consolidation faced by many of these nations, and movement toward democracy by some of the world's remaining authoritarian regimes. Writing intensive. 4 cr.

### #545. People and Politics in Asia

Surveys the contemporary politics of nations and peoples of East Asia within the framework of their modern histories and societies. Emphasizes China and Japan, and introduces the evolving political systems of Taiwan, North and South Korea, Hong Kong/Macao. Companion course to POLT 546, but either may be taken separately. Writing intensive. 4 cr.

### #546. Wealth and Politics in Asia

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. 4 cr.

### 550. Comparative Government and Society

Concepts for comparing modern political systems, such as ideologies, institutions, social movements, and various forms of states, from democracies to authoritarian regimes. Illustrates concepts with examples from Western-style democracies, former communist regimes, and the developing world. Writing intensive. 4 cr.

### 551. Global Urban Politics

Examines the social, economic, demographic, and political processes of cities around the globe. Topics include population growth, theories of urbanization, urban economic development, urban policies toward transportation, environment, employment, housing, land, water supplies, sanitation, solid-waste disposal, and infrastructure. Comparisons are made between cities of the developed and less developed nations of the world. Structures of urban and national social stratification, structures of urban and subnational governments, and political participation examined. Writing intensive. 4 cr.

### 552. Contemporary European Politics

Politics and governments in Western Europe, with attention to both basic characteristics of political life in different countries and current issues of politics. Writing intensive. 4 cr.

### 553. Politics in the Developing World

Considers patterns of political and economic development in the context of globalization. Part one addresses why much of the world has not kept pace with the industrialized democracies; part two



addresses nation-building and development efforts, with case studies from Central Asia, Latin America, the Middle East, and Sub-Saharan Africa. 4 cr.

#### #554. Latin American Politics

Examines region-wide transitions from state-led to neo-liberal economic strategies in the 1980s and 1990s and from authoritarian to democratic political systems. Considers the results of these ongoing political and economic changes in several case study nations and the broader impacts of increased globalization and economic integration of the Americas. Writing intensive. 4 cr.

#### 555/555W. Politics in Russia

Develops an understanding of politics in the Russian Federation. Surveys the political history of Russia from 1900 until the collapse of the Communist Party and the dissolution of the USSR. Focuses on the development of the Federation's institutions, with emphasis on the Presidency and the Parliament, federalism, the role of the people, transformation toward a market economy, and the Federation's status as a democracy. 4 cr. 555W is writing intensive.

#### 556. Politics in China

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. 4 cr.

#### 557. Politics in Italy

Develops an understanding of the politics and political development of Italy, with an emphasis on the political system which emerged after WWII and the transformation of the 1990's. 4 cr.

#### 558. Government and Politics of Canada

Cultural background of party competition, role of ideology, structure of government, and contemporary issues in Canadian political system. Special fee. Writing intensive 4 cr.

#### 559. Comparative Politics of the Middle East

This intermediate-level course introduces students to the comparative political and economic study of the Middle East, as a geographical region and as an imagined construct. During the course of the semester, we will explore the creation of the modern state system, colonialism and nationalism, relations between the "West" and the "Middle East", development and environment, Islamist movements, authoritarianism and democratization, and how media and popular culture shape American and Middle Eastern perceptions. We will become acquainted with the principal theoretical approaches employed by political scientists to understand and explain these developments. By the end of the course, students should understand the principal trajectories of political-economic change within the region and be familiar with the range of theoretical approaches used by scholars of comparative politics. 4 cr.

#### 560. World Politics

Examines the structures, processes and issues that shape contemporary international relations. Topics include: the rise and fall of the nation-state system and its current prospects, national and international security in the post Cold War era, problems of the international political economy, international conflict resolution, human rights, and global environmental politics. 4 cr.

#### 562. Strategy and National Security Policy

Provides an overview of U.S. national security. Examines the nature of security, evolution of strategy, and the history of the United States'

approach to its national security. Focuses on the policy and decision-making processes, the use of force in international affairs, and the capabilities of the U.S. military. Concludes with treatment of specific issues, including the current American security environment—state and non-state threats, contemporary military strategy, weapons of mass destruction, terrorism, peacekeeping, coercive diplomacy, alliances, and conflict management and resolution. Writing intensive. 4 cr.

#### 565. United States/Latin American Relations

Contemporary political, economic, and social relations between the U.S. and Latin America. Topics include the pattern of U.S. response to political change in Latin America, regional cooperation, debt, trade investment, the drug trade, immigration, rising interdependence, and prospects for economic integration. 4 cr.

#### 566. Foreign Policies of Asia and the Pacific

Analyzes the foreign policies and interactions of the four great Pacific powers: China, Japan, Russia and the United States from the breakdown of the western imperialist order and the rise of imperial Japan, the Cold War clashes in Korea and the Sino-Soviet border, to the current search for a new Pacific economic and political order. Writing intensive. 4 cr.

#### 567. Politics of Global Resources

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 policy making. Writing intensive. 4 cr.

#### 568. Introduction to Intelligence

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. 4 cr.

#### 569. Chinese Foreign Policy

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. 4 cr.

#### #571. International Politics of the Middle East

Examines inter-Arab affairs and U.S. involvement in the region. Particular focus on oil and economics, migration, transnational political ideologies (Arab nationalism, Islam, democracy), and the Arab-Israeli crisis. Writing intensive. 4 cr.

#### 600. Selected Topics in American Politics

Special topics such as politics and public affairs in New Hampshire, women in politics, and civil liberties. See departmental listings for semester offerings. Writing intensive. 4 cr.

#### 602A. Internship

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 G.P.A. Permission of the undergraduate curriculum committee of the department is required prior to the internship. 4 cr.

#### 602B. Washington Center Internship

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. 4 cr.

#### 602C. Concord Internship Program

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 junior and seniors with a 3.2 or better G.P.A. Applications accepted in the fall semester and can be found on department's website. Permission required. Students may sign up for 602A or any four (4) credit course along with 602C for a total of 16 credits. Cr/F. 12 cr.

#### 602D. Internship

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 G.P.A. Permission from the undergraduate curriculum committee of the department is required. From 2 to 12 credits maybe taken. Cr/F. 2 to 12 cr.

#### 620. Selected Topics in Political Thought

Selected issues in political theory, such as liberalism and conservatism, radical political thought, the American political character, and others. See departmental listings for semester offerings. Writing intensive. 4 cr.

#### 651. Selected Topics in Comparative Politics

Specialized areas or issues such as regional politics, national politics, judicial systems, administrative law, constitutions, etc. See department listings for semester offerings. Writing intensive. 4 cr.

#### 660. Selected Topics in International Politics

Examines specialized issues in international politics. Topics may include ethnic conflict, non-proliferation and global security, economic and political globalization, etc. See department listings for semester offerings. Writing intensive. 4 cr.

#### 695/696. Independent Study

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 on the Web), 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 8 credits can be counted toward the non-field major requirements. Prereq: at least one upper-level course in field of independent study. 2 to 4 cr.

#### 701. Courts and Public Policy

Impact of judicial decisions on public policy and influences on judicial decision making at the federal, state, and local levels. Writing intensive. 4 cr.

#### 703. Urban and Metropolitan Politics

An eclectic approach to the study of urban and metropolitan politics. Topics include urban poli-



tics, forms of local government, migrations, urban development, intergovernmental relations, community power structure, urban policy making, urban service delivery, crime and law enforcement, urban bureaucracy, urban decay, and revitalization. Writing intensive. 4 cr.

#### **704. Policy and Program Evaluation**

Policy and program evaluation of federal, state, and local governmental enterprise; focuses on the politics, practices, and methods of evaluative investigation. Evaluation as a technique for providing rational information for budgetary and policymaking decisions. Writing intensive. 4 cr.

#### **705. American Public Policy**

Examination of public policy formation, agenda-setting, decision-making, implementation. Focuses on theories, models, concepts, actors, and case study examples. 4 cr.

#### **706. State and Local Government**

Advanced study of powers, politics, political cultures, and constitutional settings of American state and local government. 4 cr.

#### **707. Criminal Justice Administration**

Examines the administration and politics of police organizations, the courts, and correctional institutions. 4 cr.

#### **708. Administrative Law**

Examines the legal rules governing regulatory agencies, in the U.S. Topics include regulatory adjudication and rulemaking, legislative and executive control over administrative agencies, judicial review and public participation. Examines federal and state levels of government. 4 cr.

#### **711. Public Opinion and Survey Research**

Examines the role of public opinion in democracy. Research, design, implementation and analysis of a public opinion survey. 4 cr.

#### **712. Leadership Theory and Practice**

Explores the major theoretical approaches to leadership, including students' and others' leadership skills, styles, roles, and practices. Students will refine their own conceptual and practical approaches to leadership in a variety of settings. 4 cr.

#### **715. Art of Negotiation**

Identification, analysis, evaluation and application of effective communication and negotiation skills. Course includes case studies, and simulation/role-playing exercises. 4 cr.

#### **721. Feminist Political Theory**

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. 4 cr.

#### **725. Politics and Literature**

Seminar: Advanced work in exploring classical and contemporary works of literature to illustrate perennial issues in political philosophy. 4 cr.

#### **743. Comparative Political Economy**

Explores the origins, development, and functions of the modern state in the West, its links with markets and capitalism, and its role in contemporary political economy. Examples from various advanced industrial societies. Writing intensive. 4 cr.

#### **750. Politics of Poverty**

Examines economic development to understand causes of international inequality in the distribution of wealth. 4 cr.

#### **751. Comparative Environmental Politics and Policy**

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. 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. 4 cr.

#### **760. Theories of International Relations**

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. 4 cr.

#### **762. International Political Economy**

The evolution of international economic regimes (monetary, trade, development). Particular emphasis on theoretical approaches to explain current economic problems: systematic theories (interdependence, hegemonic stability); domestic determinants (bureaucratic, interest group); and decision-making theories (rational choice). Writing intensive. 4 cr.

#### **778. International Organization**

Various forms of cooperation among nations on security, economic, environmental and social issues through international organizations such as the United Nations, NATO, the World Trade Organization, and other global and regional bodies. Examines the role and influence of non-governmental international organizations. Writing intensive. 4 cr.

#### **780. International Environmental Politics, Policy and Law**

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. 4 cr.

#### **795/796. Advanced Study**

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. 4 cr.

#### **797B. Seminar in American Politics**

Advanced analysis and individual research. Prereq: senior standing. Writing intensive. 4 cr.

#### **797C. Seminar in Comparative Politics**

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, political leadership. Prereq: senior standing. Writing intensive. 4 cr.

#### **797E. Seminar in International Politics**

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. 4 cr.

#### **797F. Seminar in Public Administration**

Advanced analysis and individual research, including opportunities for direct observation of governmental administration. Prereq: senior standing. Writing intensive. 4 cr.

#### **797I. Seminar in Political Thought**

Advanced treatment and individual research. Prereq: senior or graduate standing. Writing intensive. 4 cr.

#### **798B. Seminar in American Politics**

Advanced analysis and individual research. Prereq: senior standing. Writing intensive. 4 cr.

#### **798C. Seminar in Comparative Politics**

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, political leadership. Prereq: senior standing. Writing intensive. 4 cr.

#### **798E. Seminar in International Politics**

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. 4 cr.

#### **798F. Seminar in Public Administration**

Advanced analysis and individual research, including opportunities for direct observation of governmental administration. Prereq: senior standing. Writing intensive. 4 cr.

#### **798I. Seminar in Political Thought**

Advanced treatment and individual research. Prereq: senior or graduate standing. Writing intensive. 4 cr.

#### **799. Honors Thesis**

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 results 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. 4 cr.



## Portuguese (PORT)

### 401-402. Elementary Portuguese

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 401 and 402 together satisfies the foreign language requirement.) 4 cr.

### 500. Selected Topics in World Literature

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. 4 cr.

### 595. Portuguese Practicum

Practical use of Portuguese language or cultural skills outside the classroom through special projects. Prereq: PORT 401-402 and permission. May be repeated up to 4 credits. 2 cr.

## Psychology (PSYC)

(For program description, see page 46.)

### 401/401H. Introduction to Psychology

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. 4 cr.

### 402/402H. Statistics in Psychology

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; DS 420; EREC 525; HHS 540; MATH 639; MATH 644; SOC 502. Special fee. 4 cr.

### 444. Scientific Perspectives on Belief in Alleged Paranormal Phenomena

Examines alleged paranormal phenomena and various ways that people approach and attempt to understand them. Students explore alternative ways of making sense of these phenomena. Draws heavily on the social sciences (e.g., psychology, sociology, anthropology), but information and approaches from the physiological and biological sciences are introduced as appropriate. Cannot receive credit if credit earned for PSYC 591A. Writing intensive. 4 cr.

### 444A. Think Globally, Act Locally: The Individual in Community Context

Introduces students to the field of community psychology through both classroom work and service learning. Broadly, the course aims to help students consider questions such as: What is community? How is individual development influenced by larger community variables? What makes a strong community and what is our role in promoting changes to help our communities become more effective? Students will explore these questions through consideration of current community problems (for example, interpersonal violence, poverty) and through 20 hours of service learning during the semester. Writing intensive. 4 cr.

### 502. Research Methods in Psychology

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 402. Special fee. Writing intensive. 4 cr.

### 511. Sensation and Perception

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. 4 cr.

### 512. Psychology of Primates

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. 4 cr.

### 513. Cognitive Psychology

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. 4 cr.

### 521. Behavior Analysis

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. 4 cr.

### 523. Behavior Modification

The application of principles of behavior analysis to a variety of realistic non-laboratory settings, including daily life, education therapy, and self management. Examines factors governing behavior observed in the world. Prereq: PSYC 401. 4 cr.

### 531. Psychobiology

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. 4 cr.

### 552. Social Psychology

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. 4 cr.

### 553. Personality

Major theories, methods of assessment, and research. Prereq: PSYC 401. 4 cr.

### 561. Abnormal Behavior

Causes, diagnosis, and treatment of abnormal behavior. Implications of varying theoretical viewpoints. Prereq: PSYC 401. 4 cr.

### 571/571H. Great Psychologists

Historical introduction to some of the great psychologists and their classic works. 4 cr.

### 581. Child Development

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. 4 cr.

### 582. Adult Development and Aging

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. 4 cr.

### 591. Special Topics

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. 4 cr.

### 591A. Special Topics/Psychology of Paranormal Belief

Examines belief in paranormal phenomena from psychological theories such as social cognition. Students will study how psychology offers insight into paranormal phenomena and the stories behind them. Science offers a way to examine these phenomena, and these phenomena, in return, are a way of examining science. Prereq: PSYC 401 or permission. No credit for students who have taken PSYC 444. 4 cr.

### 595. Applications of Psychology

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. 1 to 4 cr.

### 702. Advanced Statistics and Research Methodology

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; 502; or permission. (Not offered every year.) Writing intensive. 4 cr.



**705/705H. Tests and Measurement**

Testing intelligence, creativity, achievement, interests, and personality. Test construction; evaluation; relation to psychological theory, research, and practice. Prereq: PSYC 402; 502; or permission. 4 cr.

**710. Visual Perception**

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, 502, 511, or 531; or permission. Special fee. Writing intensive. 4 cr.

**712. Psychology of Language**

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; 502; 512; or 513; or permission. Special fee. Writing intensive. 4 cr.

**713. Psychology of Consciousness**

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; 512; or 513; or permission. Writing intensive. 4 cr.

**720. Animal Cognition**

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; 402; 513 or 521; or permission. 4 cr.

**722. Behaviorism, Culture, and Contemporary Society**

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; 502; 521; or permission. No credit for students who have completed PSYC 522. Writing intensive. 4 cr.

**731. Brain and Behavior**

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; 502; 531; or permission. Special fee. Writing intensive. 4 cr.

**733. Drugs and Behavior**

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; 502; 531; or permission. Writing intensive. 4 cr.

**735. Neurobiology of Mood Disorders**

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; 502; 531; or permission. Writing intensive. 4 cr.

**737. Behavioral Medicine**

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; 502; 531; or permission. Writing intensive 4 cr.

**741. Advanced Topics**

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 CI. A) Psychology as a Natural Science, B) Cognition, C) Behavior Analysis, D) Biological/Sensory. Prereq: PSYC 402; 502; plus other prerequisites when offered; or permission. Writing intensive. 4 cr.

**755. Psychology and Law**

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; 502; or permission. Writing intensive. 4 cr.

**756. Psychology of Crime and Justice**

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; 502; or permission. Writing intensive. 4 cr.

**758. Health Psychology**

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; 502; or permission. Writing intensive. 4 cr.

**762. Counseling**

Theories of counseling, ethical considerations, professional and paraprofessional activities in a variety of work settings. Prereq: PSYC 402; 502; 553; or 561; or permission. Writing intensive. 4 cr.

**763. Community Psychology**

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; 402; 502; 552, 553, or 561; or permission. Writing intensive. 4 cr.

**765. Dysfunctional Families and Therapy**

Family structure and function. Problem cycles of functioning (dysfunction) and their impact on family members. The multigenerational nature of dysfunction. Role differentiation; physical, sexual abuse; addictive patterns; issues of power/control; problems with intimacy development; clinical methods of intervention. Prereq: PSYC 402, 502, 561, 762; or permission. 4 cr.

**771. Psychology in 20th Century Thought and Society**

Reassesses, extends, and integrates knowledge of 20th century psychology within the historical perspective. Major figures, schools, systems, theories. Social, institutional, and international developments since the 19th century. Review of major fields of psychology. Prereq: PSYC 402; 502; or 571; or permission. Writing intensive. 4 cr.

**780. Prenatal Development and Infancy**

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; 502; 581 or FS 525; or permission. Writing intensive. 4 cr.

**783. Cognitive Development**

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; 502; 581; or permission. Writing intensive. 4 cr.

**785. Social Development**

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; 502; 581; or permission. Writing intensive. 4 cr.

**791. Advanced Topics**

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; 502; plus other prerequisites when offered, or permission. Special fee with some topics. Writing intensive. 4 cr.



**793. Internship**

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. 4 to 8 cr.

**794. Advanced Internship**

Supervised advanced practicum experience in cooperating 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. Up to 8 credits. 4 to 8 cr.

**795. Independent Study**

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. 1 to 4 cr.

**797. Senior Honors Tutorial**

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.) 4 cr.

**799. Senior Honors Thesis**

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.) 4 cr.

**Recreation Management & Policy (RMP)**

*(For program description, see page 81.)*

**444. Building a Culture of Peace**

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. 4 cr.

**490. Recreation and Leisure in Society**

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. 4 cr.

**501. Recreation Services for Individuals with Disabilities**

Presents and discusses issues that concern the delivery of quality leisure services to individuals with disabilities in community settings. Lab requirements as well as classroom activities provide opportunities for practical experience. Prereq: permission. Lab. 4 cr.

**502. Foundations of Therapeutic Recreation**

History and professional concepts of therapeutic recreation and the roles and functions of the therapeutic recreation specialist. 4 cr.

**503. Therapeutic Recreation Rehabilitation Principles & Interventions**

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. Prereq: RMP 490, 501, 502. Special fee. 4 cr.

**504. Therapeutic Recreation Mental Health Principles and Interventions**

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. Prereq: RMP 490, 501, 502. 4 cr.

**511. Issues of Wilderness and Nature in American Society**

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. 4 cr.

**550. Perspectives on Disability**

Introduces many fields of study to current perspectives on disability. Designed to appeal to students not intending to work with individuals with disabilities as a career focus. Students who will soon be in positions of managing key resources and systems associated with areas of community life targeted by the Americans with Disabilities Act (e.g., public transportation, state and local government, etc.) gain a broader understanding of how to accommodate and value a diverse membership in their communities. Writing intensive. 4 cr.

**557. Recreation Services Program Design**

Introduces the student to a systems approach to program design. Includes needs assessment techniques, goal setting and objectives writing, process of group planning, public relations, program evaluation, and leisure education. Applied projects are required. Prereq: RMP 490 or permission. Lab. 4 cr.

**558. Program Supervision and Leadership**

Emphasizes specific knowledge of leisure activity categories with related organization and leadership techniques. Other topics include facilitation of activity throughout the lifespan and planning for instruction, safety, and crisis confrontation. Applied projects are required. Prereq: RMP 557 or permission. Special fee. 4 cr.

**560. Recreational Sport Management**

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. 4 cr.

**#561. Introduction to Outdoor Recreation**

The history, delivery system, social and economic impacts, and management tools for outdoor recreation. Includes identification of contemporary issues, problems, and opportunities in recreation resource management. Lab. 4 cr.

**563. Recreation Management and Policy Practicum**

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, 501. Permission required. Cr/F. 2 cr.

**#570. Community Systems Planning and Development**

Evaluation of principal theories of community systems and planning. Topics include problem analysis, methods of community research design, and decision-making skills. 4 cr.

**593/593W. Special Topics**

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-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. 2 to 4 cr. 593W is writing intensive.

**600. Multicultural Perspectives and Leisure**

Explores the multicultural issues within a pluralistic society both generally and as they are specifically evident through leisure, recreation, and play behaviors, values, and possibilities. Course topics and assignments applied to the exploration of three questions: 1) How does leisure expression honor, value, and preserve unique cultural and ethnic heritages? 2) Does and/or can leisure expression create meaningful bridges across interpersonal and societal differences? 3) What are the moral and ethical responsibilities and opportunities for leisure services providers within a pluralistic society? Writing intensive. 4 cr.



**602. Clinical Treatment Lab I**

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 a community-based, post-rehabilitation program 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 490, RMP 501, RMP 502. Coreq: RMP 603. Permission required. 2 cr.

**603. Assessment and Treatment Planning in Therapeutic Recreation**

Addresses the principles of activity analysis, client assessment, documentation, individualized program planning, selection of interventions, and collaboration with a treatment team. Prereq: RMP 490; 502. Special fee. 4 cr.

**603L. Clinical Treatment Lab I**

Provides students with the opportunity to apply principles central to the effective delivery of therapeutic recreation services—individualized treatment planning, client assessment, documentation, and activity analysis—with members of a community-based, post rehabilitation program 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. Permission required. Prereq: RMP 490, RMP 501, RMP 502. Coreq: RMP 603. 2 cr.

**604. Therapeutic Communication and Facilitation in Therapeutic Recreation**

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; 502; 603. Special fee. 4 cr.

**604L. Clinical Treatment Lab II**

This clinical treatment lab emphasizes the concepts and intervention techniques used in the clinical application of therapeutic recreation services, which relate to practice. Students provide therapeutic recreation services to members of a community-based, post rehabilitation program 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 603 and RMP 603L. Coreq: RMP 604. Permission required. 2 cr.

**605. Clinical Treatment Lab II**

A clinical treatment lab that emphasizes the concepts and intervention techniques used in the clinical application of therapeutic recreation services, which relate to practice. Students provide therapeutic recreation services to members of a community-based, post-rehabilitation program 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 603 and RMP 602. Coreq: RMP 604. Permission required. 2 cr.

**654. Professional Development and Ethics**

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. Majors only. Prereq: permission. Cr/F. IA (continuous grading). 2 cr.

**663. Management and Policy in Leisure Services**

Comparative analysis of administrative processes within various organizations as well as the political and policy-making roles of the managers in the private and public sectors. Emphasizes organizational development, fiscal management, and budgeting as tools used in formulating and implementing policy. Prereq: RMP 557 or permission. 4 cr.

**664. Internship**

A) Internship in Recreation Management, B) Internship in Therapeutic Recreation. Students enroll in the section corresponding to their major option after receiving approval from the academic adviser. Supervised work experience in an approved profession-related agency. An IA (continuous grading) grade (yearlong course) may be assigned at the end of the semester or summer session. Prereq: majors only; permission. Special fee. Cr/F. 14 to 16 cr.

**665. Applied Marketing and Communications in Recreation Services**

Prepares students to respond effectively to an information-based society. Course topics are applied to the leisure service delivery systems and include microcomputer systems and applications, standardized information systems, networking, and dissemination of information through audio-visual, print, and mass media. Prereq: RMP 557 or permission. 4 cr.

**#667. Recreation Resource Planning**

Overview of site-planning techniques and issues as currently practiced by recreation resource agencies at local, state, and national levels. Relationship of planning to management, policy, and practice; current trends in planning and likely future directions. Extensive use of field trips to enable students to learn how to read landscapes in order to use natural features in design as well as to enhance visitor experiences. Prereq: RMP 490; RMP major or permission. 4 cr.

**668. Youth Culture and Programs**

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. Prereq: RMP 490 or permission for non-majors. Writing intensive. 4 cr.

**680. Festival and Event Planning**

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. 4 cr.

**700H. Senior Honors Project**

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. 4 to 6 cr.

**705. Management and Policy in Therapeutic Recreation**

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 502; 603; 604. 4 cr.

**711. Recreation Resource Management**

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. 4 cr.

**724. Grantsmanship, Evaluation, and Research**

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, 663 and senior RMP major or permission. Writing intensive. 4 cr.

**730. Camp Administration and Leadership**

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. 4 cr.

**743. Culture and Environmental Interpretation**

This course focuses on the communication process and practices used by parks and recreation professionals to explain and interpret the special characteristics of cultural and environmental resource sites for visitors. Conceptual principles for planning interpretive programs, as well as techniques for analyzing and disseminating information and entertainment through various media (personal interactions, verbal presentations, exhibits, publications, and other programs) will be discussed. Delivery of interpretive messages across a variety of audiences, strategies for programming interpretive services, and the administration and evaluation of interpretive services in recreation settings will be examined. 4 cr.

**760. Community Sport Organizations: Administration and Development**

The administration and development of participant-based community sport organizations and resources. Emphasizes the organizational, administrative, and programming competencies necessary to effectively manage these resources. Focuses on problems and research-oriented solutions related to the management of community sport organizations. Prereq: RMP 560 or permission of the instructor. 4 cr.

**770. Management and Design of Recreation and Park Facilities**

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. Prereq: RMP 705; permission. Special fee. 4 cr.



**772. Law and Public Policy in Leisure Services**

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, 663, and senior RMP major or permission. Writing intensive. 4 cr.

**775. Entrepreneurial and Commercial Recreation**

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. Prereq: RMP 663. 4 cr.

**793. Advanced Topics**

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 2 to 4 cr.

**796. Independent Study**

Individual study and/or research relating to leisure-oriented topics. Prereq: permission. 1 to 4 cr.

---

**Religious Studies (RS)**

*(For program description, see page 29.)*

**483. History of World Religions**

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. 4 cr.

**484. Patterns in World Religions**

Introductory course on the comparison of religions and religious patterns. Examining cross-cultural themes such as sacred places, sacred books, and sainthood, students become acquainted with the concepts and methods used in the historical study of religions. Primary and secondary readings encompass a wide variety of religious practices and ideas. (Also offered as HIST 484.) Writing intensive. 4 cr.

**576. Hebrew Bible in Historical Context**

An introductory study of the Hebrew Bible, or Old Testament, examining the development of biblical literature in the context of ancient Near Eastern cultures and history. Includes the interpretation of creation stories and the patriarchal narratives using literary and folklore methods, the transformation of Israelite religion from Moses to David to Ezra, the role of prophets and nature of ancient prophecy, the concept of the messiah, "wisdom" literature and the biblical interpretations of misfortune, the formation of a biblical canon, and the critical analysis of sacred texts. (Also offered as HIST 576.) Writing intensive. 4 cr.

**600. Special Topics**

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. 4 cr.

**601. Seminar in Religious Texts**

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.) 4 cr.

**#607. Religion in American Thought and Life**

Interdisciplinary study of the varied nature of American religious experience and its relationship to other aspects of American culture. Topics vary from year to year, and may include the interdisciplinary study of a spiritual community, African American religious history, material culture and spiritual expression, politics and religious free speech, religious culture in the nineteenth century, multi-ethnic religions, and literature. (Also offered as AMST 607.) Writing intensive. 4 cr.

**617. Religion, Culture, and Conflict in South Asia**

Explores connections between religion and violent conflict in South Asia. Includes overviews of three great religious traditions of the region: Buddhism, Hinduism, and Islam, and how they are realized in the daily lives of South Asian practitioners. Ethnographic case studies of religious violence, coupled with readings in contemporary theory, to understand how and why violence is produced by considering not only religious belief and practice but also such factors as colonialism, postcolonial politics, the social processes of contemporary diasporas, economic structure and change, and international religious movements. Prereq: at least sophomore standing. Anthropology or religious studies background is recommended. (Also offered as ANTH 617.) Writing intensive. 4 cr.

**682. Cults and Charisma**

Examines religious sects and charismatic leaders using case studies from history and the contemporary world, as well as analytical principles from religious studies and anthropology. Explores various approaches to the question, What makes a person powerful over others? in connection with the formation of messianic sects, the genesis of the "cult," the traditional authority of priests and kings, sainthood, the events at Jonestown and Waco, and the popular image of the "cult." Students learn to employ a variety of tools and models to understand historical situations of charismatic leadership. (Also offered as HIST 682.) 4 cr.

**689. New Testament in Historical Context**

A study of the collection of writings known as the New Testament as both literature and historical documentation. Assigned readings from primary and secondary sources stress the historical, social, religious, and literary backgrounds of gospels, Paul's letters, and the Apocalypse, and include a variety of early Christian texts left out of the canonical New Testament. Other more general themes are the formation of the Christian canon, the division of the Jesus-movement from Judaism, the status of Jesus in his own time, the nature of parables, the end of the world, and the authority of women in early churches. Emphasizes the historical understanding of sacred scripture. (Also offered HIST 689.) Writing intensive. 4 cr.

**699. Seminar in Religious Studies**

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. 4 cr.

**770. Anthropology of the Sinister**

Examines narratives of the sinister stories about witches, demons, vampires, and extraterrestrials that are told as if true. Investigates the cultural, political, and economic contexts of their production. Variants of the sinister are compared cross-culturally and trans-historically. Links between a recent worldwide upsurge in narratives of the sinister and the processes of globalization and modernity are emphasized. Seminar format; open only to juniors and seniors. (Also listed as ANTH 770.) 4 cr.

**795, 796. Independent Study**

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. 2 or 4 cr.

---

**Russian (RUSS)**

*(For program description, see page 42.)*

**401-402. Elementary Russian**

Oral-aural practice and written drills designed to achieve a mastery of basic grammatical patterns. Language lab and computer lab work. For students without previous training in Russian. Special fee. 4 cr.

**425. Introduction to Russia: Contemporary Society and Culture**

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. 4 cr.

**#426. Film and Communism**

Examines Soviet/Communist mythology from its birth to its deconstruction through film. Particular attention is focused on the instructive nature of Soviet film (1917-1991) and the cultural idioms used in this medium. Taught entirely in English. Films, readings, lectures, discussion. No prerequisites. Special fee. 4 cr.

**500/500W. Selected Topics in World Literature**

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. 4 cr. 500W is writing intensive.

**503-504. Intermediate Russian**

Continuation of RUSS 401-402. Review of Russian grammar, and practice in oral and written expression. Prereq: RUSS 402 or equivalent high school or college course with a grade of C or better. Special fee. 4 cr.



**521/521W. Devils, Deities, and Madness in Russian Literature**

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. 4 cr. 521W is writing intensive.

**522/522W. Morality, Sex and Revolution in Russian Literature**

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. 4 cr. 522W is writing intensive.

**593/593W. Myths, Visions and Issues in Russian Literature and Society**

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. 4 cr. 593W is writing intensive.

**601. Russian Conversation and Phonetics**

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. 4 cr.

**631, 632. Advanced Russian Conversation and Composition**

Advanced spoken and written Russian designed to maintain aural-oral fluency; emphasis on translation and advanced grammatical structures. Prereq: RUSS 503-504 or equivalent with a grade of C or better. Special fee. 4 cr.

**685, 686. Study Abroad**

Studies at a Russian institution of higher learning. Interested students should consult with a Russian adviser. 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. (LA grade will be assigned until official transcript is received from the foreign institution.) 16 cr.

**691/691W. Readings in Russian Literature**

Linguistic and stylistic characteristics of works of important authors of the 19th and 20th centuries. Readings, lectures, and papers entirely in Russian. Special fee. 4 cr. 691W is writing intensive.

**693/693W. Myths, Visions and Issues in Russian Literature and Society**

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. 4 cr. 693W is writing intensive.

**721/721W. Topics in Contemporary Russian Literature: From Chekhov to Post-Modernism**

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. 4 cr. 721W is writing intensive.

**725/725W. Topics in Russian Culture and Society**

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. 4 cr. 725W is writing intensive.

**733. History and Development of the Russian Language**

Overview of the changes in sounds, structure, and vocabulary from Proto-Indo-European through Old Church Slavonic, Old Russian, to contemporary Russian. Readings in culture and civilization parallel to the chronology of the studied linguistic period. Prereq: grade of C or better in last Russian course taken. Special fee. 4 cr.

**790. Advanced Language and Style**

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. 4 cr.

**795, 796. Independent Study**

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. 1 to 4 cr.

**797, 798. Special Studies in Russian Language, Literature, and Culture**

Selected topics in language, literature, and culture. Barring duplication of subject, may be repeated for credit. Special fee. 2 or 4 cr.

**Social Science (SCSC)**

**681. Internships**

Fieldwork in a state or local government department, agency, or institution, or in an approved private agency. Work is under supervision of agency. Department chairperson or representative is responsible for arranging the program. Offered through departments of history, political science, psychology, sociology, and anthropology. Prereq: senior standing. Special fee. 16 cr.

**682. Washington Internship**

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. 12 cr.

**Social Work (SW)**

*(For program description, see page 82.)*

**424. Introduction to Social Work**

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. 20 hour/semester service learning experience at community social service agencies required. Special fee. 4 cr.

**444. You've Got Your Troubles, I've Got Mine**

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. 4 cr.

**525. Social Welfare Policy: History of Social and Economic Justice**

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. 4 cr.

**550. Human Behavior and Social Environment I**

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. 4 cr.

**551. Human Behavior and Social Environment II**

Continuation of 550. Agents of socialization that most significantly affect family, group, and organizational development and behavior within an ecosystems framework. Particular attention to the influence of class, gender, race, ethnicity, religion, age, sexual orientation, and other aspects of diversity on development and behavior. 4 cr.



**601. Research Methods in Social Work**

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. 4 cr.

**622. Social Work Practice: Interventions with Individuals and Families**

Introduces methods and practice. Basic principles, values, and ethics, interviewing skills, problem assessment, social contracting. Skills training in lab sessions. Should be taken in junior year. Prereq: SW 424 or permission. Writing intensive. 4 cr.

**623. Social Work Practice: Interventions with Groups, Organizations and Communities**

Continuation of SW 622. Delineation and study of intervention and change strategies differentiated with individuals, groups, and communities. Prereq: SW 622. Writing intensive. 4 cr.

**625. Social Welfare Policy: Analysis and Advocacy**

Builds on the curricular content covered in Introduction to Social Welfare Policy (SW 424). 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. 4 cr.

**640. Social Work Field Experience I**

Majors are placed in a social welfare setting for a minimum of 225 hours; individual arrangements with faculty coordinator. Prereq: SW 622 and permission. Must have senior status. Coreq: SW 640A. Special fee. (No credit toward a minor.) Cr/F. 5 cr.

**640A. Social Work Field Experience I: Seminar**

On-campus seminar for all seniors in field work. Emphasizes processing field experiences and achieving competency in skills of completing an interview and assessment within ethical boundaries of the profession. No credit toward minor. Prereq: SW 622. Coreq: SW 640. 3 cr.

**641. Social Work Field Experience II**

A continuation of SW 640 with a minimum of 225 hours. Prereq: SW 640 and permission. Coreq: SW 641A. (No credit toward a minor.) Cr/F. 5 cr.

**641A. Social Work Field Experience II: Seminar**

Continuation of 640A. Emphasizes intervention and termination skills, self awareness, and moving into the professional world. Must have senior status. No credit for minor. Prereq: SW 640 and 640A. Coreq: SW 641. 3 cr.

**697. Special Topics in Social Welfare**

Seminar for advanced majors. Topics may include: A) Alcohol and Alcoholism, B) Drugs and Chemical Dependency, C) Income Maintenance, D) Health Care, E) Child Welfare, F) Aging, G) Mental Health, or H) Developmental Disabilities. May be repeated for different topics. Prereq: permission. 4 cr.

**701. Women and Aging**

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: senior status or permission. 4 cr.

**705. Child and Adolescent Risks and Resiliency: Program, Policy and Practice**

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: senior status or permission. 4 cr.

**711. Understanding Mental Illness**

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: Senior status or permission. 4 cr.

**712. Understanding Developmental Disabilities**

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: Senior status or permission. Special fee. 4 cr.

**715. Practice with Gay, Lesbian, Bisexual, and Transgender People**

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. Senior status only. (Also offered as SW 815.) 4 cr.

**785. Study Abroad: Comparative Social Welfare Systems**

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. Special fee. 4 cr.

**795. Independent Study in Social Service**

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. 1 to 6 cr.

**796. Independent Study: Teaching Assistantship**

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. 1 to 6 cr.

**797H/798H. Honors Thesis**

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; permission. Prereq for 798H: satisfactory completion of 797H; permission. 6 credit maximum for both semesters. 2 to 4 cr.

---

**Sociology (SOC)**

(For program description, see page 48.)

**400/400H/400W. Introductory Sociology**

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. Special fee on some sections. 4 cr. 400W is writing intensive.

**444. Social Mobility and Social Change**

Uses a multidisciplinary perspective to examine the major social and economic trends that have affected American mobility patterns since the 1950s. The primary goal of the course is to help students ask and answer questions about the processes of social mobility and social change. Students learn how social scientists formulate research questions, how they collect and analyze data to answer those questions, and how their findings shape scholarly debates and public policy. Writing intensive. 4 cr.

**#500/500W. Self and Society**

Examines meaning and interaction at the individual level of society. Considers reciprocal relationships between self and society, including: 1) the nature of the self concept, identity formation processes, and the fulfillment of social roles; and 2) the impact of social structure on thoughts, feelings, and behavior. 4 cr. 500W is writing intensive.

**502/502H. Statistics**

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 639, MATH 644, PSYC 402, but petitions for acceptance of such courses to fulfill the sociology major requirement in statistics will be entertained. 4 cr.

**515. Introductory Criminology**

Introduces the scientific study of crime. Reviews the different forms of criminal behavior, theories of crime, and strategies of crime control. 4 cr.

**520/520H. Family**

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. 4 cr.

**525. Juvenile Crime and Delinquency**

Crime, violence, and the criminal justice system as it affects children and youth in the role of both perpetrators and victims. 4 cr.



**530/530W. Race and Ethnic Relations**

Majority-minority group relations; special attention to nature and results of black-white and ethnic group relations in the United States. 4 cr. 530W is writing intensive.

**535. Homicide**

Introduces to theory and research in homicide studies, including a review of the origins of and social responses to homicide. 4 cr.

**540/540W. Social Problems**

Relation of customs and institutions to such social problems as crime, delinquency, alcoholism, physical and mental disease, sexual deviance, poverty, old age, broken families, and racial and religious prejudices. Especially for non-majors. 4 cr. 540W is writing intensive.

**570. Sexual Behavior**

A comparative approach to questions of the universality and variability of human sexual behavior. Topics include the changing expression of sexuality at various stages of the life cycle, patterns of arousal and response for each sex, the social control of sexuality, and sexual dysfunction 4 cr.

**580. Arts in Society**

Students attend live concerts of "classical" music, dance, opera, and theatre; as well as visit art museums and architectural monuments in the region. Assigned readings and introductory lectures precede the performances and art trips, and response papers and discussion follow them. While exposure to "live" art is primary, events are related to other institutions that constitute society—the family, education, the economy, religion, and government, again through assigned readings, lectures, and discussion. (Also offered as INCO 480.) Special fee. 4 cr.

**595. Independent Reading and Research**

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. 2 to 8 cr.

**597. Special Topics**

Occasional or experimental offerings. May be repeated for different topics. 4 cr.

**599. Sociological Analysis**

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. Special fee on some sections. Writing intensive. 4 cr.

**601. Methods of Social Research**

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 and SOC 599; juniors and seniors only. Writing intensive. 4 cr.

**611. Sociological Theory**

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. 4 cr.

**612. Topics in Sociological Theory**

Major schools, concepts, and issues in present-day sociological theory. Functionalism, conflict theory, feminist theory, social constructionism,

systems theory, critical theory, and hermeneutics are among the possible topics. Prereq: SOC 611. Writing intensive. 4 cr.

**620. Drugs and Society**

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. 4 cr.

**630. Sociology of Gender**

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. 4 cr.

**635. Medical Sociology**

Interrelationship of health, medicine, and society; the social construction of wellness, illness, and healing; age, sex, class, and ethnicity in medical care; institutional networks and the social control functions of medicine; roles and relations of physicians, patients, nurses, and other health workers; medicine in a cross-national context. Writing intensive. 4 cr.

**#640. Sociology of Religion**

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. 4 cr.

**645/645W. Class, Status and Power**

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. 4 cr. 645W is writing intensive.

**650. Family Violence**

Various forms of family and intimate violence, including child physical abuse, sexual abuse, spouse assault, dating violence and elder abuse, their characteristics and dynamics, place within larger social trends, the theories that explain their occurrence and effects and the major social institutions that respond to them. Juniors and seniors only. 4 cr.

**655. Sociology of Law and Justice**

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. 4 cr.

**660. Urban Sociology**

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. 4 cr.

**665. Environmental Sociology**

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. 4 cr.

**670. Sociology and Non-Fiction Film**

Examines nonfiction films as both a method of exploring social life and a cultural product that reflects its social environment. Among the topics to be addressed are the use of photographic images in social science research, the historical development of documentary film, and the critical analysis of visual images. 4 cr.

**675. Sociology of AIDS**

Seminar class addresses social, political, emotional, and bioethical dimensions of HIV infection and AIDS. Specific topics include the social epidemiology and etiology of AIDS, stigmatization and the social construction of disease, community action, AIDS prevention, and ethical issues in the health care of people with AIDS. 4 cr.

**680/680W. Sociology of the Holocaust**

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. 4 cr. 680W is writing intensive.

**#685. Work and Occupations**

Examines the changes in workplace organizations and workers' lives as the U.S. became first an industrial society, and later, a postindustrial nation. Emphasizes how and why workers' rights have been contested as well as how and why racial, ethnic, and gender segmentation emerged and persist. 4 cr.

**690. Ethnographic Field Research**

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, 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. Writing intensive. 4 cr.

**695. Research on Family Violence in World Perspective**

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. 4 cr.



**697. Special Topics**

Occasional or experimental offerings. May be repeated for different topics. Writing intensive. 4 cr.

**699. Senior Thesis**

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. 4 or 8 cr.

**699H. Senior Honors Thesis**

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. 4 or 8 cr.

**715. Criminological Theory**

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. Prereq: SOC 502, 515; juniors and seniors only. 4 cr.

**720. Sociology of Drug Use**

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. 4 cr.

**#730. Political Sociology**

Contemporary issues in political sociology, with emphasis on the relationship between social class structure and political power. Explores various perspectives on the nature and distribution of power, theories of state, class structure and political participation, and the politics of policy making. 4 cr.

**740. Sociology of Mental Health**

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. 4 cr.

**741. Social Change and Development**

Examines theoretical and empirical work on social change and development, and explores on-the-ground efforts to alleviate poverty and stimulate equitable development. Reliance on key concepts of class, culture and politics; attention to the role of technology and the importance of the environment. Focuses on social change in America from 19th century to the modern post-WWII era and on change and development in developing countries throughout the world. Permission required. 4 cr.

**742. Sociology and Social Policy**

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. 4 cr.

**745. Race, Ethnicity, and Inequality**

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. Prereq: SOC 530 or SOC 645, juniors and seniors only. 4 cr.

**754. Sociology of Religion**

Focuses on the diversity of lived religion in contemporary American society. Reviews central themes in American religious history (e.g., immigration, pluralism, separation of church and state, civil religion) and examines the multiple ways in which religious and spiritual engagement take form and influence other domains of social, cultural, and political behavior. Topics include religion's role in constructing social identities, feminism, sexuality, and the negotiation of traditional religious doctrine, religion and social capital, religious violence, and political and cultural conflict. The course gives particular attention to questions pertaining to religious authority and meaning, how religious traditions are contested and reinvigorated and how new religious/spiritual practices emerge. Throughout the semester, we evaluate various theoretical perspectives on the continuing vibrancy of personal and institutional religion in American society. 4 cr.

**760. Aging and Late Life Family**

Using a life-course perspective, this course focuses on family relationships and social role transitions in later life. Addresses the impact of the empty-nest stage, grandparenting, retirement, care giving, and widowhood on the well-being and relationships of older people. Juniors and seniors only. 4 cr.

**770. Social Stress and Health**

Increases students' understanding of how the social environment affects the health and well-being of individuals. In particular, we examine how stress processes rooted in social structures and institutions to help to explain variations in mental health. The conceptualization and measurement of social stress, moderators and mediators in the stress process, and mental health outcomes will also be addressed. 4 cr.

**773. Sociology of Childhood**

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. Prereq: SOC 520 and permission. Writing intensive. 4 cr.

**776. Family Violence Research Seminar**

Permission required. 4 cr.

**780. Social Conflict**

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. Writing intensive. 4 cr.

**792. Research Internship**

Designed for students who want some practical experience applying social research methods in a program or policy setting. Students meet weekly to discuss their experiences in the internship placement. Students design and carry out research in the placement settings. Placements are arranged by the student and faculty member. Examples include community development agencies, social services agencies, nonprofits, research centers and companies. Major report on the research undertaken is required. Prereq: SOC 502, 599, 601, permission. 4 cr.

**793. Internship**

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. Prereq: junior or senior sociology majors. 4 cr.

**#794. Evaluation of Social Programs**

Evaluation research defined: purposes of evaluation, design of evaluation studies, setting of programs, utilization of evaluation results. Examination of case studies of evaluations of social programs. Students are responsible for designing an evaluation study in their chosen substantive area. Prereq: SOC 601. 4 cr.

**797. Special Topics**

Occasional or experimental offerings. May be repeated for different topics. Writing intensive. 4 cr.

---

**Spanish (SPAN)**

(For program description, see page 42.)

**401-402. Elementary Spanish**

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 a significant period of time should consult the chair about possibly receiving credit.) 401-402 taken together satisfies the foreign language requirement. Special fee. 4 cr.

**410. Communicative Spanish for the Professions**

A skill-based course for students at the advanced beginner/low intermediate level who wish to focus on the Spanish language for use in relation to the health fields, business, law, tourism, and social services. Helps students develop a practical understanding of the Hispanic world through communicative activities in specific fields. 2 cr.

**500. Selected Topics in World Literature**

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. 4 cr.



**503/503H. Intermediate Spanish**

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. 4 cr.

**504/504H. Intermediate Spanish**

See description for SPAN 503. 4 cr.

**#522. Latin American and Brazilian Literature in Translation**

Major works by principal authors such as Inca Garcilaso, Díaz del Castillo, Machado de Assis, Borges, Asturias, Neruda, E. Verissimo, Fuentes, Leñero, Guimarães Rosa, and Jorge Amado. Readings, discussion, papers in English. Does not count toward Spanish major. May be repeated. Special fee. Writing intensive. 4 cr.

**525/525H. Spanish Civilization and Culture**

Historical, geographical, and artistic expressions of Spanish civilization that have formed the character of contemporary Spanish culture. Readings, slides, films, tapes, and records. Conducted in English. Majors must take either 525 or 526, but both may not be counted for major credit. Special fee. 4 cr.

**526/526H. Latin American Civilization and Culture**

Significant historical, geographical, and artistic expressions of pre-Colombian and Latin American civilization. Readings, slides, films, tapes, records. Conducted in English. Majors must take either 525 or 526, but both may not be counted for major credit. Special fee. 4 cr.

**595. Practicum**

Practical use of Spanish language or cultural skills outside the classroom through special projects. Prereq: SPAN 504. 2 cr.

**601. Spanish Phonetics**

Practical application of fundamental phonetic theory to spoken Spanish. Required of Spanish majors. Special fee. 4 cr.

**631/631H, 632/632H. Advanced Conversation and Composition**

To maintain and perfect written and spoken Spanish through intensive classroom work, individual conferences, and laboratory sessions. Discussion and frequent papers in Spanish based on cultural and literary readings, audiotapes, and videos. Prereq: SPAN 504 or equivalent. Special fee. Writing intensive. Satisfies the foreign language requirement. 4 cr.

**645. Intro to Spanish Linguistics**

This course is an introduction to Spanish linguistics and establishes the basis for future application of linguistic principles. The course 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 631 (or equivalent); SPAN 632 recommended; permission required. 4 cr.

**648. Readings in Current Periodicals**

Advanced practice in reading, speaking, and writing, based on current events in contemporary periodicals of the Spanish-speaking world. Pre- or Coreq: SPAN 632 or equivalent. Special fee. 2 to 4 cr.

**650. Introduction to Critical Analysis**

Methods and practice of literary criticism. Critical analysis of representative essays, fiction, poetry, and drama from Spain and Latin America. Frequent short papers. Required of Spanish majors; should be taken concurrently with or immediately following SPAN 632. Special fee. Writing intensive. 4 cr.

**651, 652. Introduction to Spanish Literature and Thought**

Reading and analysis of major works within the historical, cultural, and social background of the Iberian peninsula. Papers, discussion, and examinations in Spanish. Prereq: SPAN 631, 632. May be taken concurrently with SPAN 632 with permission of adviser. Special fee. Writing intensive. 4 cr.

**653, 654. Introduction to Latin American Literature and Thought**

Reading and analysis of major works within the historical, cultural, and social background of the New World. Papers, discussion, and examinations in Spanish. Prereq: SPAN 631, 632. May be taken concurrently with SPAN 632 with permission of adviser. Special fee. Writing intensive. 4 cr.

**681. Summer Study Abroad in Mexico**

Six-week summer immersion program for undergraduate students. (There are two sessions; one for home stay and one for dorm). Special fee. Cr/F. 8 cr.

**685, 686. Study Abroad/Granada**

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.) 16 cr.

**733. History of the Spanish Language**

Evolution of the Spanish language from the period of origins to the present. Special fee. 4 cr.

**756. Modern Spanish Poetry**

Study of selected Spanish poets of the 18th, 19th, and 20th centuries in the context of historical, literary, and social currents of the time. Prereq: SPAN 652, 654, or equivalent. Special fee. Not offered every year.) 4 cr.

**#757. Spanish Drama of the 20th Century**

Study of selected Spanish dramatic works of the 20th century in the context of the historical, literary, and social currents of the times. Prereq: SPAN 652, 654, or equivalent. Special fee. (Not offered every year.) 4 cr.

**#758. Spanish Prose of the 20th Century**

Novels, short stories, and essays: Unamuno, Baroja, Menéndez Pidal, Ortega y Gasset, Julián Marías, Aranguren, Pérez de Ayala, Gironella, and Cela; survey of contemporary prose. Prereq: SPAN 652, 654, or equivalent. Special fee. (Not offered every year.) 4 cr.

**771. Latin American Drama**

Topic varies from year to year. Examples: 20th-century Latin American drama; Latin American one-act plays; Theater of protest in Latin America. Prereq: SPAN 650, 654, or equivalent. Special fee. (Not offered every year.) 4 cr.

**772. Latin American Novel**

Development from romanticism to the present; contemporary trends and techniques. Prereq:

SPAN 652, 654, or equivalent. Special fee. (Not offered every year.) 4 cr.

**#773. Latin American Short Story**

Representative authors; stress on 20th century. Principles of interpretation. Prereq: SPAN 652, 654, or equivalent. Special fee. (Not offered every year.) 4 cr.

**#774. Major Latin American Authors**

Works and lives of selected writers; pertinent historical circumstances. Prereq: SPAN 652, 654, or equivalent. Special fee. (Not offered every year.) 4 cr.

**790. Grammatical Structure of Spanish**

Overview of the grammatical structure of Spanish through in-depth analysis of both morphology and syntax, with emphasis on the meaningful contrasts within the Spanish language and the grammatical contrasts between Spanish and English. Special fee. 4 cr.

**795. Independent Study**

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 major supervisor. 1 to 4 cr.

**795K. Special Studies in Contemporary Latin American Literature**

2 or 4 cr.

**797. Special Studies in Spanish Language and Literature**

A) History of the Spanish Language, B) Medieval Spanish Literature, C) Spanish Literature of the Renaissance, D) Spanish Literature of the Golden Age, E) Spanish Literature of the 18th and 19th Centuries, F) Spanish Literature of the 20th Century, G) Contemporary Spanish Literature, I) Latin American Literature of the 16th and 17th Centuries, J) Latin American Literature of the 18th and 19th Centuries, K) Latin American Literature of the 20th Century, M) Contemporary Latin American Literature, N) Structural and Applied Linguistics, O) Spanish Literary Criticism, P) Latin American Essay, Q) Latin America, S) Spanish Theatre, T) Spanish Poetry, U) Latin American Poetry, V) Galdós, W) Archetype Latin American Literature, X) Special Teaching Problems, Y) Spanish Civilization and Culture, Z) Latin American Civilization and Culture. Specialized courses covering topics not normally presented in regular course offerings. Prereq: permission of major supervisor. Special fee. Writing intensive. 4 cr.

**798. Special Studies in Spanish Language and Literature**

A) Historic Minorities of the United States, B) Portuguese, C) Hispanic Film, D) Introduction to Hispanic Linguistics, E) Hispanic Dialectology, F) Other. Specialized courses covering topics not normally presented in regular course offerings. Barring duplication of content, topic F may be repeated for credit. Prereq: permission of major supervisor. Special fee. 4 cr.

**799. Senior Honors**

For senior Spanish majors with a minimum cumulative grade-point average of 3.20 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. Special fee. 4 cr.



## Technology (TECH)

(For program description, see page 53.)

### 400. Introduction to CEPS Programs

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. 1 cr.

### 444. Symmetry in Nature, The Arts, and Daily Life

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. 4 cr.

### 564. Fundamentals of CAD

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. 3 cr.

### 583/583H. Technology: Cultural Aspects

Study of the requirements, limitations, benefits, and hazards that are constraints on the development of technological systems. Prereq: prior courses in physics or chemistry at high school level; sophomore or higher standing at UNH; not open to CHE, CIE, EE, or ME majors; permission. 4 cr.

### 601. Fundamentals Examination Review Course

A ten-week review course for those interested in taking the fundamentals examination to be certified as an engineering-in-training (EIT). Cr/F. 1 cr.

### 685. Budapest Program

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. 20 cr.

### 696. Independent Study

Open to all qualified students pursuing studies that do not fall within existing departmental areas. Special fee when the topic is chemistry for engineers. 1 to 4 cr.

### 797. Undergraduate Ocean Research Project

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. 2 cr.

## Theatre & Dance (THDA)

(For program description, see page 48.)

### 435. Introduction to Theatre

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. 4 cr.

### 436/436H. History of Theatre I

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. 4 cr.

### 438/438H. History of Theatre II

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. 4 cr.

### 442. Introduction to the Art of Acting

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 Grotowski, Augusto Boal, and Jacques Lecoq. Additional topics include contemporary plays and playwrights, an historical perspective of the art of acting, and the current state of live theatrical performance. 4 cr.

### 450. History of Musical Theatre in America

Study of the development of the musical and its relationship to American social history. Special fee. 4 cr.

### 458. Costume Construction

Study and development of costuming techniques, including hand and machine sewing, pattern drafting, alterations, and fabric manipulation. Emphasis on demonstrated understanding. Special fee. 4 cr.

### 459. Stagecraft

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. 4 cr.

### #461. Modern Dance I

Introductory course that includes techniques and improvisation as well as lectures in history and theory. (Also listed as KIN 604.) 4 cr.

### 462. Ballet I

Introductory course: technique, historical development of ballet. Students who have had several years of ballet are expected to register for THDA 562 or 662. Instructor determines appropriate level. Not open to seniors. 4 cr.

### 463. Theatre Dance I

Introductory course: techniques; improvisation; lectures on jazz, ethnic, and other theatrical dance forms. Students with prior experience are expected to register for THDA 563 or 663. Instructor determines appropriate level. Not open to seniors. Special fee. 4 cr.

### 470. Movement and Vocal Production

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. 4 cr.

### 475. Stage Makeup

Fundamentals of juvenile, old age, character, and special stage makeup techniques. Special fee. 2 cr.

### #487. Dance

Historical and philosophical consideration of dance trends. Not a performance course. 4 cr.

### 520. Creative Drama

Drama techniques leading to the design and execution of drama sessions with children. Includes role-playing, improvisation, and story dramatization. Lab. 4 cr.

### 532. London Experience

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. Special fee. IA (continuous grading). 2 cr.

### 541. Art and Theatre Administration

Administration practices applied to arts, music, and theatre management. Fund raising, public relations, business and box office management, audience development and long range planning. 4 cr.

### 546. Costume Design for the Theatre

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. 4 cr.

### 547. Stage Properties

Research and manufacture of period and modern stage, trim, and hand properties. Prereq: THDA 459. Special fee. 4 cr.

### 548. Stage Lighting Design and Execution

Script analysis, the light plot, and instrument schedule, including cue-writing, color, instrumentation, and the mechanics of developing a functional design. Special fee. 4 cr.

### 550. Actor's Voice Through Text

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. 4 cr.

### 551. Acting I

Development of fundamental vocal and physical stage techniques for actors and directors through exercises, improvisation and theatre games. Special fee. 4 cr.

### 552. Acting II

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. 4 cr.



**555. Exploring Musical Theatre**

Introduces musical theatre as an American art form. Discussion and analyses of performing, acting, and staging techniques. Permission required. Lab. Special fee. 4 cr.

**562. Ballet II**

Extension of ballet I syllabus; emphasis is on technique, with additional step vocabulary. May be repeated once for credit. Prereq: THDA 462 or permission. 2 cr.

**563. Theatre Dance II**

Technique; African-Cuban, modern, and East Indian dance; body movement through exercise and combinations involving stretch, strength, and flexibility. May be repeated for credit. Prereq: THDA 463 or permission. Special fee. 2 cr.

**576. Pointe**

Intermediate course in the art of dancing on pointe. Focus on technique involved in gaining strength and on methodology for understanding the art of the ballerina. 2 cr.

**583. Introduction to Puppetry**

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. (Not open to seniors.) Special fee. 4 cr.

**586. Dance Pedagogy**

Introduces the art and science of teaching the movement forms of ballet, modern, jazz, and tap. Provides a general background into the nature of teaching, standards that make up good teaching, and methods of teaching dance that allow for technical proficiency to develop. Students focus on pedagogic approaches to learning their art and craft. 4 cr.

**592A. Special Topics**

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. 1 to 4 cr.

**597. Dance Theatre Performance**

Designed for students participating in UNH Dance Theatre Company. Skill development through rehearsal and actual performance experience. May be repeated for credit. 2 cr.

**622. Storytelling, Story Theatre, and Involvement Dramatics**

Students actively develop storytelling techniques based on individual needs. Includes an examination of story theatre and involvement styles and the development of the ensemble. Special fee. 4 cr.

**624A. Theatre for Young Audiences/Acting**

Introduces coaching and directing techniques for classical and contemporary acting styles in theatre for young audiences. A brief historical context leads into practical exploration of coaching situations. Students are expected to demonstrate effective acting techniques and to develop teaching strategies for young performers by participating in a culminating performance or project. Prereq: THDA 436 or 438. 4 cr.

**624B. Theatre for Young Audiences/Directing**

Introduces to every aspect of theatre production for young audiences. A brief historical context leads into practical exploration of directing, research, playwriting, design, actor training, choreography, production, and business management for theatre for youth programs. Students develop teaching

strategies for young performers and participate in a culminating performance. Prereq: THDA 436 or THDA 438. Special fee. 4 cr.

**632. Interpretation of Shakespeare in Theatre**

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. 4 cr.

**633. Dance Composition**

Practical, developmental approach to process of creating dances. Prereq: THDA 561; 562; 563; or permission. Special fee. 4 cr.

**638. American Theatre: 1920-1970**

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. 4 cr.

**641. Stage Management**

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. Prereq: (one of the following) THDA 459; 551; 597; 655; or 741. Special fee. 2 cr.

**650. Scene Painting for the Theatre**

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. 2 cr.

**651. Rendering for the Theatre**

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. Prereq: THDA 459. 2 cr.

**652. Scene Design**

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 459. 4 cr.

**653A. Performance Project**

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. Writing intensive. 2 cr.

**653B. Performance Project/Musical Theatre**

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. 2 cr.

**654. Scenic Arts Project**

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. Writing intensive. 2 cr.

**655. Musical Theatre Styles**

Gives an increased understanding of performing and directing techniques as they apply to musical theatre. Students gain knowledge of various writers, and historical periods, and apply their knowledge to a variety of performance styles. Focuses on the discussion and application of auditioning, acting, and staging techniques. Special fee. Lab. Permission required. Writing intensive. 4 cr.

**656. Musical Theatre Repertoire and Audition**

Students read and analyze selected texts and scores from the 20th Century Musical Theatre and use their combined readings and research to develop audition repertoire materials. Class participants are expected to demonstrate an understanding of subject matter through shared oral presentations and written work throughout the term. Prereq: THDA 655 or permission. Special fee. 4 cr.

**657. Play Reading**

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. 4 cr.

**662. Ballet III**

Advanced-level course in technique; pointe work included. May be repeated for credit. Prereq: THDA 562 or permission. 2 cr.

**663. Theatre Dance III**

Extension of Theatre Dance I and II; brings students to a more advanced technical level. May be repeated for credit. Prereq: Theatre Dance II. Special fee. 2 cr.

**665. Aerial Dance**

The study of aerial arts including two and one point trapeze and fabric. May be repeated for credit. Prereq: THDA 662 or 663. Permission required. 2 cr.

**670. Dialects**

Study and practice in basic dialect acquisition for performers. Prereq: THDA 470, 551. Permission required. Special fee. 4 cr.

**683. Advanced Puppetry**

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. 4 cr.

**684. Special Topics**

Exploration of topics agreed upon by students and instructor. Topics vary. May be repeated. 2 to 4 cr.

**689. Practicum**

The practicum ensures a breadth of experience in the major. Students should register for a different topic each semester during the sophomore and junior years. A) technical, B) costumes, C) performance, D) management. May be repeated for up to 6 credits. Cr/F. 1 cr.

**691. Internship**

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 8 credits. Cr/F. 2 to 8 cr.

#### 721. Education through Dramatization

An advanced course that is paired with Methods of Teaching Theatre. Provides in-depth study and practice of integrated arts lessons in K-12 school curricula. Prereq: THDA 520. Special fee. Writing intensive. 4 cr.

#### 727. Methods of Teaching Theatre

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. 2 to 4 cr.

#### 729. Community Oriented Drama Programs

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 4 credits. 1 to 4 cr.

#### 732. Choreography

Theoretical and practical consideration of the creative and aesthetic aspects of ballet, modern, and theatre dance. Prereq: THDA 633. Special fee. 4 cr.

#### 741. Directing

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. 4 cr.

#### 742. Directing II

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. 4 cr.

#### 750. Writing for Performance

An intensive exploration of the playwright's process. A mixture of theory and creative writing. Students incorporate the fundamentals of creating a script in a step-by-step process from monologues and scenes to the completion of a one-act play. Though the focus of the course is on writing for the stage, the process is applicable to screen and teleplay writing. Special fee. (Not offered every year.) Writing intensive. 4 cr.

#### 755. Advanced Musical Theatre

Emphasis on characterizations and directing techniques. Use of scripts and scores of representative composers, lyricists, and librettists. Permission required. Lab. Special fee. 4 cr.

#### 756. Producing and Directing the Musical

Focuses on analyzing musical scripts/scores from the viewpoint of the producer and the director. Learning is theoretical and performance-based. Prereq: THDA 555. Special fee. 4 cr.

#### 758. Acting III

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. 4 cr.

#### 759. Acting: Period and Style

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 d'Elle Arte, the Renaissance, the Neoclassical period, and the Restoration period. Prereq: THDA 470, 551, 552; one semester of THDA 436 or THDA 438, or permission. 4 cr.

#### 760. History and Play Analysis for Teachers

Focuses on how to teach the areas of history, play analysis, and playwriting to high school students. Lesson plan writing, an integral part of the class, explores different methods of introducing theatre history and play analysis in secondary education classrooms. Includes playwriting through original scripting as well as writing adaptations. Prereq: THDA 436 or THDA 438. 4 cr.

#### 762. Women in 20th and 21st Century American Theatre

A high-volume reading course which introduces a sampling of American female playwrights starting with the 20th century. Focus is on the evolution of female theatre artists and how roles of women are portrayed in various dramatic works. Reading lists may vary according to the interests and needs of students. Students read and analyze two to three plays/week. Prereq: THDA 436, 438, 450 or a History Gen. Ed., or permission of instructor. 4 cr.

#### 781. Short Courses for Teachers and Directors

Each of these intensive short courses for elementary, middle, and high school teachers focuses on expanding production skills and methods of implementing theatre and dance techniques in the classroom. Topics may include puppetry, storytelling, play production for the elementary and middle school teacher; makeup; performing the musical with elementary and middle school students; play production for middle school and high school teacher; basic choreography for the school musical; script adaptation; the use of drama to enhance reading and writing; set and lighting design; and design and construction techniques; teaching/directing Shakespeare; theatre pedagogy/advanced methods of teaching theatre; analysis and research; putting arts in the classroom; and integrated arts. Continuing education and professional development is also available for graduate education credit. (Also offered as EDUC 998.) Special fee. May be repeated. 3 or 4 cr.

#### 791. Internship in Theatre and Dance

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 8 credits. 2 to 8 cr.

#### 795. Independent Study

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. Writing intensive. 1 to 8 cr.

#### 796. Independent Study

See description for THDA 795. Writing intensive. 1 to 8 cr.

#### 798. Senior Thesis

Supervised research leading to the presentation of a major research paper. Prereq: permission, majors only, senior standing. Writing intensive. 2 cr.

#### 798H. Honors Senior Thesis

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. 4 cr.

#### 799. Capstone Project

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. 2 or 4 cr.

## Tourism Planning & Development (TOUR)

(For program description, see page 98.)

#### 400. Introduction to Tourism

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. Writing intensive. 4 cr.

#### 510. Tourism and Global Understanding

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. 4 cr.

#### #550. Tourist Characteristics and Behavior

Study of the socioeconomic, demographic, and psychographic characteristics of various types of tourist populations; specific emphasis on host-guest relationships and human development. Prereq: TOUR 400. 4 cr.

#### 560. Special Topics

A) Heritage Tourism Planning, B) Rural Tourism Development. Prereq: TOUR 400. May be repeated. 4 cr.



**615. Tourism Planning and Development**

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. 4 cr.

**633. Economics of Travel and Tourism**

Provides an understanding of both the microeconomic and macroeconomic aspects of travel and tourism. Using economics as a theory base, the course attempts to identify what is significant or special about travel and tourism compared with other activities. Special attention is given to issues such as resource immobility, capacity constraints, seasonality, and consumers' inability to experience the product before purchase. Prereq: EREC 411. (Also offered as EREC 633.) 4 cr.

**700. Marketing Communications Research: Methodological Foundations**

Concepts, tools, and techniques to facilitate accurate product, service, and idea marketing communications. Specific application to tourism and economic/community development initiatives are included. Prereq: Basic statistics course or permission. 4 cr.

**705. Ecotourism: Managing for the Environment**

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. 4 cr.

**767. Social Impact Assessment**

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. 4 cr.

**792. International Experience**

Travel to foreign country for study of a specific topic to be approved by the student's major adviser. Prereq: permission. 1 to 4 cr.

**794. Internship**

nts in a full-time, 15-week (600 hours) supervised situation where they have an opportunity to achieve a synthesis, transfer, and application of the academic experience in a setting similar to that associated with professional employment. Prereq: permission. 4 to 12 cr.

**798, 798W. Independent Study**

Special assignments in readings, investigations, field problems. May include teaching experience. Prereq: permission. 1 to 4 cr. 798W is writing intensive.

**Women's Studies (WS)**

(For program description, see page 52.)

**401/401H. Introduction to Women's Studies**

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. 4 cr.

**444. Constructing Gender Identity and Expression in Everyday Life**

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. 4 cr.

**595/595W. Special Topics**

In-depth study of topics not covered in regular course offerings. Prereq: permission; WS 401. 1 to 4 cr. 595W is writing intensive.

**632. Feminist Thought**

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. Writing intensive. 4 cr.

**795. Independent Study**

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. 1 to 4 cr.

**796. Advanced Topics**

Advanced or specialized topics not normally covered in regular course offerings. May be repeated, but not in duplicate areas. Prereq: permission. 1 to 4 cr.

**797. Internship**

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. 4 cr.

**798. Colloquium**

Intensive study of specialized topic for advanced students. Topics vary with instructor. Prereq: permission. Required for WS minors. Barring duplication of topic, may be repeated for credit. Writing intensive. 4 cr.

**799. Honors Thesis**

With a faculty sponsor, students enrolled in the honors-in-major program develop an independent, investigative project in women's studies. Written thesis. Prereq: majors only; one other WS 700-level course prior to or concurrently with WS 799; permission. 4 to 8 cr.

**Zoology (ZOO)**

(For program description, see page 100.)

**400. Professional Perspectives in Zoology**

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. 1 cr.

**401. Human Biology**

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 ZOO 507-508. Special fee. Lab. 4 cr.

**408. Ocean Sciences**

Ocean sciences is a hands-on, inquiry-based introduction to marine systems, focused primarily on marine biology and ecology. Designed to introduce students to science as a way of knowing and understanding the world around us, specifically the world's oceans and their contributions to world food and oxygen supply, their role in regulating climate, and their unfortunate overexploitation for our technological world. Uses evolution as the unity common to many seemingly different forms of life. Helps students discover the relevance of the topic to their own lives and to the many problems that face us in the 21st century. Engages students by helping them discover first-hand the joy and excitement that comes from making discoveries using the scientific method. Prereq: acceptance to Campus-to-Coast Fellowship Program. 4 cr.

**410. Marine Immersion**

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. 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. 2 cr.

**412. Biology of Animals**

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.) 4 cr.



**415. Biomechanics**

Introduces the physical workings and properties of organisms and their environments. Basic physical concepts of forces, fluid mechanics, scaling, and materials properties are introduced in the context of organismal behavior and morphology. General topics include the physical properties of fluid environments, animal locomotion, the mechanical significance of size, and the structure and function of biomaterials. Special topics relating to current research in the field. Emphasizes using physical concepts to gain insight into organismal functions, adaptations, and habitats. 4 cr.

**444. Dogs to Dragons: Origins of Species**

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. 4 cr.

**444A. Introduction to Aquatic Invasive Species**

This is an inquiry course for first-year students interested in issues relating to the management of aquatic invasive plants and animals based on an understanding of the ecology and biology. Course is a combination of lectures, laboratory and field exercises and discussions focusing on the selected freshwater and marine invasive species and their management. Special fee. 4 cr.

**460. Biological Illustration**

Scientific publishing and illustration including labeling, color techniques, and printing processes. Illustration techniques include 1) pen and ink: wildlife illustrations; 2) carbon dust: half-tone illustrations; 3) colored pencil: drafting film; 4) watercolor: for accurate and detailed illustrations. The student may choose to explore a single technique in-depth with subjects selected from a wide variety of material on Appledore Island. Course size is limited to allow individual attention. (Summers only at Shoals Marine Lab.) 2 cr.

**474. Introduction to Marine Science**

Allows non-biology majors to experience the breadth of the marine sciences under field conditions at an island (Appledore) laboratory, with excursions to seal and seabird colonies on the neighboring islands and whale feeding grounds in the Gulf of Maine. Involves field investigation, lab work, and lectures as well as reading, independent research, and scientific writing. Topics

include general marine biology, intertidal ecology, plankton biology, fisheries, and benthic (sea floor) communities. (Summers only at Shoals Marine Lab.) 4 cr.

**503. Introduction to Marine Biology**

Organization of marine biological communities in various marine environments—pelagic, benthic, temperate, tropical. Major emphasis on the approaches (e.g., analysis of energy flow and predator-prey interactions) used to analyze marine communities and on the sampling techniques employed for each approach and the habitat type. Prereq: BIOL 411-412. (Also offered as PBIOL 503.) Special fee. Lab. 4 cr.

**507, 508. Human Anatomy and Physiology**

Cellular and systematic aspects of the human body. Laboratory exercises utilize preserved specimens, dissectible models, living tissue and computer-aided instruction. No credit if credit earned for ANSC 511-512 or ZOOL 625. Not offered for credit to zoology majors. Lab. Special fee. 4 cr.

**510. Field Ornithology**

Introduces field ornithology focusing on the biology, ecology, and behavior of avifauna on the Isles of Shoals. Includes such ornithological field methods as censusing 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.) 4 cr.

**518. Vertebrate Morphology**

Evolutionary and comparative examination of vertebrate anatomy. Covers the structure of the major systems at both the macroscopic and microscopic levels. Prereq: BIOL 411-412 or equivalent. Special fee. Lab. 5 cr.

**529. Developmental Biology**

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 411-412 or equivalent. No credit if credit earned for ZOOL 729. Special fee. Lab. 4 cr.

**542. Ornithology**

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.) 4 cr.

**545. Tropical Ecology**

Study of the factors affecting distribution and abundance of organisms of coral reefs, mangroves, and tropical dry and moist forest. Course conducted over winter break in the Virgin Islands National Park, St. John, USVI. \$250.00 deposit required at registration. Program fee. Prereq: one biology course. Permission required. Writing intensive. 4 cr.

**570. Coastal Ecology and Bioclimates**

Practically-oriented. Emphasizes 1) the definition, description and measurement of major abiotic factors (e.g., radiation, temperature, atmospheric moisture and precipitation, and winds and currents; 2) the role of both biotic and abiotic coastal environmental factors with respect to plants and animals, including humans; and 3) the fundamentals of dynamic meteorology and short-term

weather prediction from observations of natural coastal phenomena such as cloud and wind patterns. Special attention is given to the terrestrial and littoral microclimate of Appledore Island. Prereq: one year of college-level biology; some physics or physical geography preferred. (Summers only at Shoals Marine Lab.) 4 cr.

**600/600W. Field Experience**

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. 1 to 4 cr. 600W is writing intensive.

**610. Principles of Aquaculture**

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 411-412 or equivalent. 3 cr.

**611. Principles of Aquaculture Lab**

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 411-412 or equivalent. Coreq: ZOOL 610. 2 cr.

**625. Principles of Animal Physiology**

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: two years of the biology core curriculum. 3 cr.

**626. Animal Physiology Laboratory**

Basic training in the measurement of function in animals, data analysis and expression, and the development of scientific communication skills. Coreq: ZOOL 625. Special fee. Writing intensive. 2 cr.

**628. Marine Invertebrate Evolution and Ecology**

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 411-412. Special fee. Lab. (Not offered every year.) 5 cr.

**665. Conservation Genetics**

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 popu-



lation 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 ZOOL 705. 4 cr.

#### 674. Field Marine Science

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. (Summers only at Shoals Marine Lab.) 8 cr.

#### 675. Field Marine Biology and Ecology

Introductory marine science course emphasizing field work in natural habitats with a focus on marine ecology. Examines the ecology of the intertidal zone and the ecological, evolutionary, and physiological adaptations of marine organisms. Course includes lectures; discussions; field work, including quantitative field sampling methods; experience aboard a coastal research vessel; and excursions to distinctive habitats. Offered in cooperation with Cornell University. Students may not take this course after taking Field Marine Science. Prereq: one full year of college-level biology. (Summers only at Shoals Marine Lab.) 8 cr.

#### 690. Evolution

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 411-412 or equivalent. Writing intensive. 4 cr.

#### 701. Conservation Biology

Critical and quantitative investigation of current issues in the conservation of biological systems. Issues addressed include habitat restoration, non-indigenous species, harvest strategies, conserving genetic diversity, population viability analysis, global climate change, endangered species recovery, habitat fragmentation, and reserve design. Case studies include examples drawn from terrestrial, aquatic, and marine systems. Weekly laboratories include trips to local habitats of concern. Prereq: BIOL 541 or permission. A statistics course is highly recommended. Special fee. Lab. (Not offered every year.) 4 cr.

#### 705. Population Genetics

Explores the forces affecting the frequency and distribution of allelic variation in natural populations. Emphasizes the relative roles of mutation, selection, random drift, and inbreeding in structuring genetic variation and on the quantification of the genetic structure of populations. Prereq: BIOL 604. (Also offered as GEN 705.) Special fee. Lab. (Not offered every year.) 4 cr.

#### 708. Stream Ecology

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.) 4 cr.

#### 710. Ichthyology

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.) 4 cr.

#### 711. Zooplankton Ecology

Methods of sampling populations, factors regulating temporal and spatial distribution, trophic interactions of communities, role of zooplankton in the food web of lakes. Experimental techniques employed in field trips to freshwater habitats; seminars examine current research. Prereq: general biology. Special fee. Lab. (Not offered every year.) 4 cr.

#### 712. Mammalogy

Evolution, ecology, behavior, physiology, and diversity of mammals. Focuses on conceptual issues such as the relations of structure, function, physiology, and ecology of species; reproductive physiology and life history strategies; and the evolution of mating systems and social structure. Requires familiarity with mammalian groups to the family level and identification of local fauna to species. Prereq: BIOL 411-412 or equivalent. Lab. (Not offered every year.) Special fee. 4 cr.

#### 713. Animal Behavior

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 411-412 or equivalent. Lab. Writing intensive. 4 cr.

#### 714. Ecology of Animal Behavior

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: introductory biology; experience in psychology, animal behavior, or ecology is helpful. (Summers only at Shoals Marine Lab.) 4 cr.

#### 715. Molecular Evolution

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 as well as on methods of reconstructing phylogeny from molecular sequences. Prereq: BIOL 604. Some knowledge of statistics is recommended. (Also offered as GEN 715.) Special fee. Lab. (Not offered every year.) 4 cr.

#### 717. Biology of Lakes

Introduces the ecology of freshwater systems, with emphasis on lakes. Origins of lakes and the ef-

fects of watersheds on lake chemistry, nutrient cycling, and the lake food web 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. (Also offered as P BIO 717.) 4 cr.

#### 719. Field Studies in Lake Ecology

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 to 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. (Also offered as P BIO 719.) Special fee. Lab. Writing intensive. 4 cr.

#### 721. Aquatic Invasive Species

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. 4 cr.

#### 725. Marine Ecology

Marine environment and its biota, emphasizing intertidal and estuarine habitats. Includes field, laboratory, and an independent research project. Prereq: general ecology; permission. Marine invertebrate zoology, oceanography, and statistics are desirable. (Also offered as P BIO 725.) Special fee. (Not offered every year.) 4 cr.

#### 730. Underwater Research

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.) 4 cr.

#### 732. Lake Management: A Multidisciplinary Approach

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 actual lake management plans in cooperation with government agencies and lake associations. Guest speakers from state agencies and non-governmental organizations. Introduction to GIS (Geographic Information Systems) methods for the analysis of lakes and watersheds. Present lake management issues from scientific and social science points of view. Open to students from all disciplines. (Also offered as P BIO 732.) Special fee. Lab. 4 cr.



**733. Behavioral Ecology**

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. 4 cr.

**734. Diversity of Fishes**

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. (Summers only at Shoals Marine Lab.) 6 cr.

**745. Biology and Diversity of Insects**

Study of the biology of insects, the most diverse group of organisms, focusing on why they are unique, how they have become so diverse, and the basis of their success. The laboratory is designed to develop an understanding of insect diversity through utilization of different sampling techniques in several habitats, sorting to "morphospecies," and use of biodiversity indices. Prereq: BIOL 411-412 or equivalent. Special fee. (Not offered every year.) 4 cr.

**750. Biological Oceanography**

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.) 4 cr.

**751. Research in Marine Biology**

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. Offered in cooperation with Cornell University. Prereq: one year of college-level biology. Additional experience in ecology or physiology is recommended. (Summers only at Shoals Marine Lab.) 6 cr.

**753. Marine Vertebrates**

Lectures, laboratory work, and fieldwork on the systematics, ecology, and physiology of fishes, marine reptiles, marine birds, and marine mammals of the Gulf of Maine. Offered in cooperation with Cornell University. Prereq: field marine science or vertebrate biology. (Summers only at Shoals Marine Lab.) 6 cr.

**772. Fisheries Biology**

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.) 3 cr.

**773. Physiology of Fish**

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. Prereq: ZOOL 625 or equivalent; or permission. 4 cr.

**777. Neurobiology and Behavior**

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 411-412 or permission. Physiology (ZOOL 625) also desirable. 4 cr.

**795/795W. Special Investigations**

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 department chairperson and staff concerned. 1 to 4 cr. 795W is writing intensive.

**796/796W. Special Investigations**

See description for ZOOL 795. 1 to 4 cr. 796W is writing intensive.

**799. Honors Senior Thesis**

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. 2 to 4 cr.



# THOMPSON SCHOOL OF APPLIED SCIENCE

The following courses are offered through the Thompson School of Applied Science. For more information, see page 121.

## Program Abbreviations

The number of class hours, laboratory sessions, and credits is shown following each course description. For Example, "2 lec/1 lab/3 cr" signifies that the course has two hours of lecture and one laboratory session scheduled each week, and that it is a three-credit offering; "rec" stands for "recitation." The word "permission" indicates permission of the instructor is required.

"Cr/F" following the description indicates that the course carries no letter grade, being marked "Cr" for credit, "F" for failure.

The abbreviations are used to identify those disciplines offering the coursework.

Code	Discipline
AM	Agricultural Mechanization
AAS	Applied Animal Science
ABM	Applied Business Management
ANSC	Animal and Nutritional Science
CT	Civil Technology
COM	Communications
CSL	Community Service and Leadership
FSM	Food Services Management
FORT	Forest Technology
HT	Horticultural Technology
MTH	Mathematics
NUTR	Nutrition
PHYS	Physics
SSCI	Social Science
ZOOL	Zoology

## Agricultural Mechanization (AM)

### AM 251. Welding and Fabrication Technology

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 Welding (PAC), and Gas Tungsten Arc Welding (GTAW). Welding metallurgy and control of distortion. Special fee. Prereq: permission. 2 lec/2-hr rec. 4 cr.

### AM 261. Internal Combustion Engines I

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. 4 cr.

### AM 262. Internal Combustion Engines II

Advanced engine principles and theory. Detailed major failure analysis and overhaul techniques. Prereq: permission, AM261 or EDUC 461. 2 lec/2-hr rec. 4 cr.

### AM 270. Residential Electricity

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.) 2 cr.

### AM 275. Building Science/Residential Construction

The study of interrelationship of physical principles that affect the functionality and life span of a building. The materials and methodologies of residential construction. 3 lec/2-hr lab. Special fee. 4 cr.

### AM 280. Technical Computer Literacy/Internet Applications

An introduction to the concepts, common hardware components, and operating practices of microcomputers. Emphasis on a networked Windows environment, the Internet, hard disk management, Paint Shop Pro, Microsoft Word, PowerPoint, Excel, and Access. 2 lec/2-hr rec. 4 cr.

### AM 291, AM 292. Studies in Agricultural Mechanization

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. 1 to 4 cr.

### AM 451. Welding and Fabrication Technology

Processes and procedures of welding including: Shielded Metal Arc Welding (SMAW), Oxyacetylene Welding (OAW), Oxy-Fuel Gas Cutting (OFC-A), Gas Metal Arc Welding (GMAW), Plasma Arc Cutting (PAC) and Tungsten Arc Welding (GTAW). Welding metallurgy and control of distortion. Special fee. Prereq: permission. 2 lec/2-hr rec. 4 cr.

### AM 461. Internal Combustion Engines I

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. 4 cr.

### AM 462. Internal Combustion Engines II

Advanced engine principles and theory. Detailed major failure analysis and overhaul techniques. Prereq: permission, AM 261, AOE 461, or EDUC 461. 2 lec/2 rec. 4 cr.

### AM 470. Residential Electricity

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.) No credit earned if credit earned for the second half of CT 227. 2 cr.

### AM 475. Building Science/Residential Construction

Studies the interrelationship of physical principles that affect the functionality and life span of a building. The materials and methodologies of residential construction. 3 lec/2-hr lab. Special fee. 4 cr.

## Applied Animal Science (AAS)

(For program description, see page 123.)

### AAS 219. Animal Cruelty: NH Laws, Investigations, and Prosecution

An Internet class delivered through Blackboard Course Management System. Explains and discusses all aspects of animal cruelty, NH cruelty laws, and presents the importance and implications of recognizing animal cruelty and its link to human violence. Cruelty investigation procedures, prosecution protocol and officer field safety will also be presented. Designed as a 14-week class with a "presentation" of one hour per week accessed by the student at their convenience within a specific 3-day time frame during the week. Permission required. 1 cr.

### AAS 221. Large Animal Behavior and Handling Techniques

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 techniques which can be applied to the fields of veterinary medicine, animal research, commercial agriculture, and animal control. 1 lec/1 lab. 2 cr.

### AAS 222. Small Animal Grooming I

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. 1 lec/1 lab. 2 cr.

### AAS 223. Dairy Selection

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. 2 cr.

### AAS 224. Small Animal Management

Organization, care, facilities design, and general management of small businesses dealing with companion animals and their owners. 3 lec/1 lab. 4 cr.

### AAS 226. Equine Conformation and Lameness

The study of conformation as it relates to soundness and performance. Topics include basic unsoundness related to faulty conformation and type evaluation. Special fee. 2 lec/1 lab. 4 cr.

### AAS 227. Small Animal Diseases

Common diseases in companion animals discussed system by system; emphasis on canine and feline medicine. Prereq: AAS 227, 228, 239, 249. 2 1-hr lec. 2 cr.

### AAS 228. Anatomy and Physiology of Domestic Animals

Structure of the body and functions of the tissues, organs, and systems in the living animal. 3 lec/1 lab. 4 cr.



**AAS 230. Small Animal Breeds and Behavior**  
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. 4 cr.

**AAS 231. Introduction to Animal Science**  
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. 4 cr.

**AAS 232. Animal Forages**  
Production and utilization of New England forage crops. Selection of species and varieties; cultural and harvesting practices for top production of excellent quality feed. Combining uses for greatest efficiency in feeding various livestock classes. 2 lec/1 lab. 3 cr.

**AAS 233. Small Animal Grooming II**  
Continuation of AAS 222 Small Animal Grooming I. Student is assigned more complex breeds to groom and develops more proficiency in scissoring, hand stripping and clipping. Must have taken AAS 222. Special fee for non-TSAS students. 2 lab. 2 cr.

**AAS 234. Equipment and Facilities Management**  
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. 3 cr.

**AAS 235. Animal Nutrition**  
The food nutrients, their digestion and absorption, factors affecting value of feeds, feed additives, and nutrient requirements for maintenance and productive functions. 3 lec. 3 cr.

**AAS 236. Equine Show Preparation and Competition**  
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. Lec/lab. 1 cr.

**AAS 237. Equine Handling and Care Techniques**  
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. 4 lec/lab or rec. 4 cr.

**AAS 239. Fundamentals of Animal Health**  
Principles of disease mechanisms: causes, body reactions, and preventive medicine. Prerequisite for other AAS disease courses. Prereq: AAS 228. 2 lec/1 lab. 3 cr.

**AAS 240. Animal Breeding**  
Principles and practices, including the physiology of reproduction, fertility and sterility, artificial insemination, breeding systems, and selection. 2 lec/1 lab. 3 cr.

**AAS 242. Introduction to Business: Applied Animal Science**  
Basic course covering business structure, philoso-

phy, and terminology. Foundation for AAS 246, Management Applications. 2 lec. 2 cr.

**AAS 244. Introduction to Dairy Herd Management**  
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. (Also offered as ANSC 409/410.) 4 cr.

**AAS 246. Animal Business Applications**  
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. 4 cr.

**AAS 247. Applied Equine Management**  
The application of farm and horse management techniques, including stable routine, planning, and design; nutrition; business considerations; and legal responsibilities. 2 lec/1 lab. 3 cr.

**AAS 249. Small Animal Care Techniques**  
Essential skills and basic background knowledge for the day-to-day care of dogs and cats in a small animal enterprise. 1 lec/1 lab. 2 cr.

**AAS 251. Human/Animal Bond**  
Explores the many aspects of the human/animal bond through required reading, writing, and discussions. Requires an 8 hour volunteer practicum. 2 cr.

**AAS 252. Equine Health Management**  
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. 2 lec/1 lab. 4 cr.

**AAS 253. Equine Competition Management**  
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. 1 lab. 2 cr.

**AAS 254. Animal Assisted Activities and Therapy**  
Course explores the human/animal bond in specifically goal directed activities and therapeutic interventions. Covers human/pet volunteer training; animal selection; animal assisted therapeutic applications; and animals in institutions, residential facilities, and classrooms. The text for the class is provided and covered by the special fee of \$25.00. 2 cr.

**AAS 263. Small Animal Grooming III**  
Individual supervised grooming experience for students who wish to obtain more technical grooming skills. Must have taken AAS 222 twice or AAS 222 and 233. Cr/F. 1 cr.

**AAS 264. Dairy Nutrition Practicum**  
Practical instruction in feeding dairy cattle, formulating rations and using dairy nutrition software. Major emphasis on ruminant digestion, health and metabolism in the high producing dairy cow. Prereq: Introduction to Dairy Management AAS 244 or permission. 1 cr.

**AAS 272. Comparative Equine Operations**  
Exploration of regional equine farms and related businesses. Using field trips and journals, students will experience and study different farm and business operations. Prereq: AAS 226. 1 lab. Cr/F. 1 cr.

**AAS 274. Dairy Cattle Disease Seminar**  
Covers principles of the immune response, immunological basis for disease control, and emphasizes management practices to prevent disease and maintain optimal animal health. Numerous guest lecturers, field and case studies, and emphasis on current topics of interest to the industry. (Also offered as ANSC 630.) 2 cr.

**AAS 275. Cooperative for Real Education in Agriculture Management (CREAM)**  
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. Permission. Two semesters of 4 credits each are required. 4 cr.

**AAS 276. Introduction to Laboratory Animal Science**  
Basic introduction to laboratory animal science for second year small animal care students interested in exploring or working in the field. Includes the husbandry, health, and science of common laboratory animal species and environmental, sanitation, hygiene, and safety topics. Prereq: AAS 228, 230, 239, and 249. Coreq: AAS 277. 2 lec. 2 cr.

**AAS 277. Laboratory Animal Science Practicum**  
Hands-on experience working in the UNH laboratory animal facilities. Coreq/Prereq: AAS 276. May be taken twice. 3 to 4 hours per week. 1 cr.

**AAS 278. Applied Animal Science Computer Applications**  
Use of computers in a university setting, developing skills in Microsoft Office, and using the internet. During the second half of the semester, students further develop skills using specific animal science and business-related programs. 1 lec/1 lab/half-term. 1 cr.

**AAS 279. Small Animal Care Practicum**  
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 222, AAS 228, AAS 230, AAS 239, AAS 249. Special fee required only for first time the course is taken 2 cr.

**AAS 291, AAS 292. Studies**  
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. 1 to 3 cr.



**AAS 293. Equine Field Operations**

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 225, 226, 247, and/or permission of instructor and adviser. 1 to 3 cr.

**AAS 297. Applied Animal Science Work Experience**

Employment (12 weeks, generally in the summer following the first year) in an approved animal-related position. Cr/F.

---

**Applied Business Management (ABM)**

*(For program description, see page 125.)*

**ABM 202. Professional Writing**

The major focus is on strategies in writing and speaking as related to day-to-day business operations. Applications relate to employees, suppliers, customers, creditors, public officials, and others. 3-hr lec-discussion. 3 cr.

**ABM 204. Principles of Management**

This first-semester course introduces students to the principles and applications of the full spectrum of management. Topics include: marketing and sales, finance, supervision, production/operations, law, social responsibility and ethics, and international business. Students may develop a long-term career plan and/or business plan as a beginning to their career path. 2 1-hr, 1 2-hr lec-discussion. 4 cr.

**ABM 205. Applied Financial Accounting**

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. 4 cr.

**ABM 206. Human Resource Management**

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. 4 cr.

**ABM 207. Applied Marketing**

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. 4 cr.

**ABM 208. Managerial Accounting**

Upon successful completion of Applied Financial Accounting (ABM 205), students now focus on the decision-making aspects of financial management, primarily for internal use by managers. Topics

include: both short- and long-term considerations in areas such as budgeting, inventory control, capital investments and depreciation, tax strategies, interpretation of financial statements, profitability analysis, cash flow management, standard cost accounting, manufacturing accounting, and other cost accounting techniques. 3-hr lec. 2-hr lab. 4 cr.

**ABM 211. Business Policy**

Through use of case studies from existing businesses, the organization and execution of a student-run business, and computer simulations of the overall management of a manufacturing facility, students now bring together and apply all they have learned throughout the program. 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. 4 cr.

**ABM 212. Business and Industry Internship**

Students work and/or complete research projects with business and industry partners under the supervision of faculty; an excellent experiential opportunity. The specific content of each internship will vary tremendously and is unique to each project. Sample focus areas include, but are not limited to, marketing and sales, financial management, personnel management, international trade and operations. Course may be repeated for credit. Cr/F. 1 to 4 cr.

**ABM 214. Applied Sales**

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 sales. Also presents and discusses the roles of the sales manager and related financial elements. 2 2-hr lec-discussion. 4 cr.

**ABM 215. Business and the Community**

Successful business people must understand the relationship between business and community. The course will explore the role of business and entrepreneurs within the community and the role of the community in developing a successful business environment. An overview of the regulatory environment will be investigated; such as zoning regulations and other constraints on private decisions. This will be accomplished through lectures, guest lecturers, site visits and a group project. The group project will be a substantial part of the course. This will enable students to apply the principles as well as to experience working in a team environment. 2 2-hr lec. 4 cr.

**ABM 217. Web Page Programming and Design**

Course focuses on creating and maintaining sites on the World Wide Web. Topics include designing, programming, and promoting individual Web sites, and HTML coding. 2 2-hr lec. 4 cr.

**ABM 218. Computer Database Management**

Training on the latest database management software. Emphasis on database development and use as a business tool. Major topics include: inventory management, personnel record keeping, managerial decision making, development of queries, reports, labels, and relational database. Special fee. Prereq: ABM majors and permission. 2-2hr. lec for one half semester. 2 cr.

**ABM 219. Desktop Publishing and Advanced Applications**

Training in the use of desktop publishing applications for the development of both personal and business-oriented support materials, such as business cards, resumes, posters, and pamphlets. Special fee. 2-2hr. labs. 4 cr.

**ABM #220. Computer Spreadsheet Applications**

Training with current spreadsheet software. Emphasis on managerial decision making and problem solving. The class meets weekly for training, and students work independently on projects they develop in conjunction with the instructor. Special fee. Prereq: ABM major and permission. 2 cr.

**ABM 221. Seminar in Marketing and Sales**

Marketing and sales techniques for the small business manager, salesperson, or entry-level marketing department employee. Topics include market segmentation; product pricing and differentiation; prospecting, approaching, presenting, and closing of a sale. No credit for students taking ABM 214 or FSM 240. 1st quarter module. 1 cr.

**ABM #222. Operating Systems and Networking**

Training on current PC and networking operating systems including Windows and UNIX. Explores file, disk, and directory management as well as creating and maintaining Ethernet hardware and software. Prereq: ABM Computer Option only. 2 lec. 2 cr.

**ABM 223. Seminar in Human Resource Management**

Human resource management for small business managers and middle managers in larger firms. Topics include motivation, recruiting, training, and conflict management. No credit for students taking ABM 206. 3rd quarter module. 1 cr.

**ABM 224. Seminar in Financial Management**

Financial statement preparation and analysis for merchandising and service firms. Tailored to small-business managers and middle managers of larger businesses. No credit for students taking ABM 205. 4th quarter module. 1 cr.

**ABM 225. Senior Project**

Independent study project and research paper relating to a specific management problem. Topic selected by student and adviser. Student must complete 15 weeks of work experience either prior to or during the senior project. 4 cr.

**ABM 226. Business Computer Applications**

Trains students to use common software as an effective tool to answer business questions and solve complicated problems. Microsoft Office programs including Excel, Access, and PowerPoint are used. Microsoft Office is the standard for almost all business operations and will be helpful in other TSAS courses like Managerial Accounting and Business Policy. Each student creates more than twenty business related spreadsheets, creates and manages multiple databases, and creates several presentations. 4 cr.

**ABM 232. Business Law**

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. 4 cr.



**ABM 240. Ethics in Business and Society**

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. 4 cr.

**ABM 242. International Trade Applications**

Through textbook readings and classroom discussions, students will learn about the 3 major aspects of foreign trade, the "Market Connection" which revolves around locating, qualifying, and establishing relationships with overseas customers; the "Financial Plan" which ensures that adequate financing is available for start-up, production, and working capital needs; and the "Distribution Process" which involves packaging, customs requirements, shipping, storing and delivery to final destination. Students will establish contacts with individuals and agencies involved in foreign trade, and will develop an "Export Plan" for their selected product(s) or service(s). The traditional classroom/textbook course is enhanced through an intensive field research/industry focused semester project. Prereq: permission of instructor. 2 lec. May repeat once for credit. 4 cr.

**ABM 291, ABM 292. Studies**

Students who have exhibited the ability and willingness to work independently may design and contract a research project on a topic not available through existing course offerings. Each project is facilitated by faculty/staff member. Credit varies from one to four, depending on depth and breadth of the project. Areas may include, but are not limited to: retail, service or manufacturing, international trade, real estate, hospitality, health and fitness, computer technology, commerce, finance, or philanthropy. 1 to 4 cr.

**Civil Technology (CT)**

(For program description, see page 126.)

**CT 220. Professional Practice**

Serves as an introduction to the civil technology program and various fields in the civil environment in a seminar format. Provides for student contact with industry professionals and employment opportunities. Assists with student learning skills and serves as common period for Freshmen guidance on academic matters. 2-hr sem. 1 cr.

**CT 222. Computer Aided Design Level I**

The student designs fundamental buildings and structures and 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 developing proficient skills with this software. The student also works concurrently on course projects. 2-hr lec/2-hr rec. 4 cr.

**CT 223. Introduction to Surveying and Mapping**

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. Coreq: CT 224. 3 cr.

**CT 224. Surveying and Mapping Applications**

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. Coreq: CT 223. 2 cr.

**CT 227. Mechanical and Electrical Systems**

Description, analysis and design application of conventional heating, ventilating, air conditioning, lighting and plumbing systems. Electrical principles, laws, and installation with emphasis on the National Electrical Code. 2-hr lec/2-hr rec. 4 cr.

**CT 230. Statics and Materials**

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. 4 cr.

**CT 231. Design I**

Provides foundational skills in critical thinking, design process, verbal and graphic description/idea documentation, project implementation, and creative process activation. Presentation and demonstration skills to be developed as part of individual and group project solutions. Course will develop intermediate CAD skills. Prereq: CT 222. 2-hr lec/2-hr rec. 4 cr.

**CT 233. Construction Surveying**

This course applies methods and techniques learned in CT 223 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 to include data collectors and land design computer software. Prereq: CT 223 with a grade of C- or better. 2-hr lec/1-hr rec/2-hr lab. 4 cr.

**CT 234. Soils and Foundations**

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. 4 cr.

**CT 235. Introduction to Information Technology**

This course will provide an introduction to Information Technology and the issues and challenges with managing the computing enterprise in a corporate environment. Topics to be covered include hardware troubleshooting and repair, operating system fundamentals, general application deployment, data communications, networking software and hardware, server security and management, and an introduction to HTML (Web site) programming. Prereq: AM 280, MTH 203. 2 lec/1 lab 4 cr.

**CT 237. Land Design and Regulations**

Hydrology of drainage and storm water runoff, basic concepts of hydraulic flow in pipes and chan-

nels, 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. 4 cr.

**CT 240. Legal Aspects of Surveying**

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 223 with a grade of C- or better. 2-hr lec/1-hr rec. 3 cr.

**CT 243. Advanced Surveying and Mapping**

A continuation of surveying topics not covered in CT 223, CT 233 and 240. Specifically: Geodesy, Map Projection Systems, State Plane Coordinates, Control Surveys, Satellite Positioning, Astronomic Observations, Equipment Testing and Adjustment and Theory of Observations. 2-hr lec/2-hr lab. 3 cr.

**CT 244. Advanced Surveying Computations**

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 223, 233, 243, or permission. 3-hr lec/2-hr lab. 4 cr.

**CT 247. Construction Contracting**

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. 4 cr.

**CT 281. Architecture I History and Design**

Develops a basic understanding of American architectural history while developing architectural programming and design skills in a project based environment. Considerable CAD usage for project submissions 2-hr lec/2-hr rec. 4 cr.

**CT 282. Architecture II**

Studio application of principles and skills developed in the architectural concentration. Design of a complete shelter system into the design development phase. Prereq: CT 281. 2-hr lec/2-hr rec. 4 cr.

**CT 291, CT 292. Studies**

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. 1 to 4 cr.

**CT 297. Work Experience**

Career-oriented work experience (10 weeks, full time) to include, but not limited to, architecture, construction, surveying, and mapping. Cr/F.



## Community Leadership (CSL)

(For program description, see page 127.)

### CSL 200. Technology for Community Service and Leadership

This two-credit course will provide students with the skills needed to effectively use Microsoft Office and other related computer applications. During the second half of the semester, students will further develop their computer skills and their social science research skills by completing research assignments and other projects designed to enhance their understanding of the information available to them through Web-based investigation. 2 cr.

### CSL 201. Introduction to Community Service and Leadership

This course serves as the foundation course for the Community Service and Leadership Program. Students are introduced to current and historical definitions of community and "service" to the variety of organizations providing service within communities, and to the challenges facing leaders within community organizations as they work to address key problems. All students will participate in a variety of community placements during this course. 4 cr.

### CSL 202. Introduction to Nonprofit Organizations

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. 4 cr.

### CSL 203. Organizing and Supervising Volunteers

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. Permission required. 4 cr.

### CSL 204. Managing Change and Conflict in Communities

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 201, permission. 4 cr.

### CSL 205. Communication Within Communities

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 com-

monly shape "community opinion." Students will also examine community newsletters and create at least one newsletter as a service to a community organization. Prereq: COM 209, 210 or Coreq: COM 210. 4 cr.

### CSL 206. Literature of Family and Community

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. 4 cr.

### CSL 207. Introduction to Non-profit Budgeting and Accounting Practices

This course is designed to help students understand the responsibilities of nonprofit financial management. It introduces key budgeting and accounting practices for community-based nonprofit organizations. Students will explore such topics as budget planning and development, budget design, roles and responsibilities of those involved in budgeting, and how to read and interpret financial data. Common nonprofit accounting principles and approaches will also be taught. 3 cr.

### CSL 208. Essentials of Fundraising for Community-Based Organizations

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. 2 cr.

### CSL 209. Essentials of Grant Writing for Community-Based Organizations

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. 2 cr.

### CSL 210. Capstone Seminar

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 201, 202, 203, and CSL 205. 4 cr.

### CSL 290. Civic and Community Internship

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 201 or permission of instructor. May be repeated for up to 8 credits. 2 to 4 cr.

### CSL 291, CSL 292. Studies in Community Service and Leadership

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 201 or equivalent. 1 to 4 cr.

### CSL 297. Work Experience

Career-related internship and/or training (minimum of 50 hours) that enhances previous course work and service-learning experiences in community organizing and leadership. Students may work with a community-based and/or nonprofit organization in a full or part-time position; participate in an internship with an organization that serves the needs of the community; attend UNH's Leadershape Program or other leadership programs to learn more about leadership, teambuilding, and other group management skills; create an independent project based on a specific interest; or work with a "for profit" company. Course focus is on learning new skills and developing deeper insights into the work of creating and sustaining community. Required for graduation. Prereq: CSL major. Cr/F.

## Food Service Management (FSM)

(For program description, see page 128.)

### FSM 200. Introductory Chemistry

Introduces chemical concepts and principles, including chemical symbols, conversion factors, chemical calculations, chemical and physical properties, and changes. Touches upon organic compounds—their structure, major reactions, and applications—followed by an elementary introduction to biomolecules and how they function in metabolism. Dietetic technician majors only. 3 lec. 3 cr.

### FSM 201. Food Preparation Fundamentals

Preparation techniques, knife skills, measurements, food handling, selection, and classification. FSM majors only. 2-hr lec. Restaurant Management majors must also complete a lab. Practical application of skills and techniques utilized in a professional kitchen. 2-hr lab. 2 or 3 cr.

### FSM 202. Meal Management

Enhancement of food preparation skills and techniques, recipe conversion, standardization and costing, garnishments, and service, as adapted for hotels and restaurants. Prereq: FSM 201 or permission. FSM majors only. 1-1/2 lec/1 to 3-hr lab. 3 cr.

### FSM 203. Introduction to Restaurant and Hospitality Management

This first-semester course introduces students to the field of hospitality and restaurant management. Topics discussed include: forms of business, employment opportunities in the field, social and environmental responsibility and ethics, as well as the future of the restaurant and industry. 3 1-hr lec. 3 cr.



**FSM 205. Hospitality Computer Applications**

Introduction to personal computers and business application software. Utilizing the most recent Windows environment, students will learn the fundamental principles and techniques associated with processing (Word), spreadsheets (Excel), and database management (Access). Each of these applications will be presented in relationship to business management responsibilities within the hospitality industry. Concepts/applications such as business letters, proposals, contracts, accounting spreadsheets, and customer and employee databases will all be explored. 3 contact hours/lec/lab. 3 cr.

**FSM 206. Food and Beverage Operations Controls**

An overview of accounting principles with emphasis on managerial accounting as it relates to the food services industry. Cost control with respect to product, labor, purchasing, and physical plant examined in depth. Extensive practical experience in cost control procedures, methods, and techniques utilizing computer spreadsheet applications required. Prereq: FSM 205. 3 1-hr lec/1 2-hr lab. 4 cr.

**FSM 207. Hospitality: Sanitation and Safety**

The organization, functions, and responsibilities of food services operators in both the public and private sectors as they relate to sanitation and safety. Development, control and implementation of HACCP standards and procedures, pest control, crisis management, safe food production, and accident prevention explored. Also requires students to sit for the Foodservice Sanitation Certification exam as offered by the Educational Foundation of the National Restaurant Association. 1-2 hr lec. 2 cr.

**FSM 208. Non-Commercial and Contract Food Service Management**

Course focus is on the contract and non-commercial aspect of the food service business. Emphasis is on comparing and contrasting food services offered in healthcare, business and industry, education, recreation and leisure, in-flight and vending operations. 3 cr.

**FSM 209. Applied Restaurant Operations Management**

Students learn hands-on while managing the Balcony Bistro, an upscale, gourmet restaurant open to the public. Emphasis is on plate presentation, kitchen management, front-of-the-house operations, menu pricing, and food and labor cost controls for an on-going restaurant operation. Prereq: FSM 201, 202, and 207. FSM majors only. 1 lec/6-hr lab. 4 cr.

**FSM 211. Food and Beverage Facilities Planning**

Course covers preplanning and layout of facilities and equipment for various food services operations. Care and maintenance of the physical plant, as well as selection, operation, and placement of essential equipment will be emphasized. Design and development of the operation in relation to the physical plant as well as the product/service offering examined and analyzed. May be repeated. 1 2-hr lec. 2 cr.

**FSM 212. Hospitality Personnel Management**

A course focusing on motivational theory, personnel administration techniques, and supervisory attitudes that affect employee work performance. Topics discussed specifically reflect human resource issues in the context of the hospitality work environment. 2 lec. 3 cr.

**FSM 215. Restaurant And Hospitality Law**

Study of the legal environment as it applies to all segments and aspects of food services operations. Topics include common and statutory law with regard to contracts, employment, negligence, public accommodation and disclaimer liability as well as the operator's duty to protect guests and "reasonability." Significant examination of actual case law will be employed. May be repeated. 1 2-hr lec. 2 cr.

**FSM 218. Beverage Operations Management**

Provides a well-rounded examination of the foundation of knowledge and techniques regarding the history, production, and control of wines, spirits, and other beverages within a food services operation. Additionally, a variety of other topics such as purchasing, staffing, cost control, and safe alcoholic beverage service covered. May be repeated. 2 2-hr lec. 2 cr.

**FSM 226. Dining Room Practicum**

The fundamental principles of dining room service, organization, and supervision. Students actively participate in real-world applications of techniques and methods associated with effective front-of-the-house operations in a supervised setting. Students will be required to staff all positions at the Balcony Bistro, our on-campus, full-service operation, throughout the semester. 1-hr lec/4-hr lab. 2 cr.

**FSM 228. Applied Nutrition**

Consideration of the nutritional requirements of healthy individuals and the benefits of good nutrition. Basic study of food and nutrients: functions, sources, requirements, digestion, absorption, and metabolism. Introduction to the science of energy balance, special needs during the life cycle, and selected nutrition problems/controversies. 3 lec. 3 cr.

**FSM 229. Applied Nutrition for Dietetic Technicians**

Consideration of the nutritional requirements of healthy adults and the benefits of good nutrition. Basic study of nutrients: functions, sources, requirements, digestion, absorption, and metabolism. Introduction to such topics as energy balance, special needs during the lifecycle, and selected nutrition problems/controversies. Incorporates practical application of lecture topics through problem-solving activities completed in the lab. 2 lec/2 lab 1 cr.

**FSM 240. Restaurant Sales and Promotion Management**

An overview of fundamental marketing principles as they relate to the food services industry. Evaluation methods for planning, testing, budgeting, and analyzing in-house promotional programs explored in detail. Emphasis will be placed upon techniques and media utilized in the promotion of food and beverage operations. Basics of the marketing mix such as product, price, promotion, and distribution applied to management of a foodservice operation. May be repeated. 2 2-hr lec. 4 cr.

**FSM 241. Applied Buffet and Catering Management**

Students learn hands-on while managing a weekly international buffet series and catering special events at the Thompson School. Emphasis is on food arrangement and presentation, garden-manager display work, buffet set-up, garnishments, banquet presentations, and on/off premises catering. Prereq: FSM 201, 202, and 207. FSM majors only. 1 lec/6-hr lab. 4 cr.

**FSM 260. Community Nutrition Practicum**

Exploration and participation in programs and organizations that offer nutrition services to the community. Hands-on activities vary from year-to-year with emphasis on providing nutrition education using a variety of curricula presented to varying age groups throughout the lifecycle including: Head-start, Cooperative Extension (EFNEP&4-H), the Elderly Nutrition Program, as well as public schools and various low-income groups. Prereq: FSM 228/229, NUTR 476, NUTR 510, majors only. Coreq: FSM 265. 5 cr.

**FSM 265. Community Nutrition for Dietetic Technicians**

A study of community programs and agencies providing food and nutrition services to age groups throughout the life cycle. Emphasis is on assessment of nutritional needs in the community. Prereq: FSM 229; NUTR 510. Coreq: FSM 260. 2 lec. 2 cr.

**FSM 275. Diet Therapy**

The study of therapeutic nutrition. Review of the physiology related to nutrition disorders so that students may calculate and plan the most common modified diets. Prereq: FSM 200, 229; NUTR 476, 510; ZOOL 401. 2hr-lec/3-hr lab. 3 cr.

**FSM 278. Applied Principles of Food Preparation**

Principles and techniques of food selection, preparation, and presentation in relation to quality and acceptability. Dietetic Technician students only. 2 lab. 1 cr.

**FSM 290. Managerial and Clinical Dietetics Practicum**

Supervised practice in current foodservice systems and clinical practice in healthcare institutions. Students will participate in the activities of a foodservice operation including menu planning, food purchasing and production, delivery and service, sanitation and safety, management and supervision as well as quality improvement. Students also participate in patient care activities in the nutrition department including nutrition screening and assessment, development of patient care plans and documentation. Majors only. Prereq: FSM 201, 207, 228/229, 278, NUTR 476, 503, 504, 510. Coreq: FSM 275. 7 cr.

**FSM 291, FSM 291. Independent Studies in Restaurant Management**

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. Independent studies may include experiences in culinary, dining room, or marketing. 1 to 4 cr.

**FSM 293, FSM 294. Studies in Dietetic Technology**

A Dietetic Technician Practicum. Students gain hands-on experience in one of the following: A) Food Service Management; B) Clinical Nutrition; C) Community Nutrition. Prereq: permission of instructor and students adviser. 3 to 6 cr.

**FSM 295. Dietetic Seminar**

Preparation of a professional resume, skills and practice for the registration exam for dietetic technicians, overview of professional portfolios for continuing education in the field of dietetics. Prereq: majors only. Cr/F. 1 cr.



**FSM 296. Dietetic Technician Independent Study, Dietetic Technician Practicum**

For Dietetic Technician students who need to take practica at alternate times. There are two practica in the Dietetic Technician major: FSM 290 Clinical Nutrition Practicum 7 cr.; and FSM 260 Community Nutrition Practicum 5 cr. Prereq: permission. 3 to 6 cr.

**FSM 297. Restaurant Management Summer Internship**

Career-related internship intended to provide additional practical experience for the senior year. Minimum 12 weeks up to 16 weeks, 500-600 hours. Required for graduation and generally completed during the summer following freshman year. 3 cr.

---

**Forest Technology (FORT)**

*(For program description, see page 128.)*

**FORT 260. Forest Mapping**

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. Mapping work is closely coordinated with field work accomplished in Forest Surveying (FORT 266.) 1 lec/1 2-hr lab. 2 cr.

**FORT 261. Dendrology**

Identification and nomenclature of forest trees and shrubs which are important to the ecology and economy of the Northeastern forest. The identification of plant relationships with other plants, animals, soil, and site regimes. 1 lec/1 4-hr lab. 3 cr.

**FORT 263. Forest Ecology**

The interactions of forest trees with their environment, both as individuals and as tree communities; environmental problems affecting plant communities; the history and classification of North American forests. Study of soils as they affect forest distribution and tree growth. 2 lec/1 2-hr lab. 3 cr.

**FORT 264. Arboriculture**

Tree selection, care, and maintenance in the urban environment. Includes climbing, safety practices, pruning, transplanting, and fertilizing. Prereq: FORT 263 or permission. 1 lec/1 4-hr lab. 3 cr.

**FORT 265. Forest Orientation Seminar**

Seminar to prepare freshmen for study and placement in the broad area of forest technology. 1 lec. Cr/F. 1 cr.

**FORT 266. Forest Surveying**

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. Elementary office computations are taught. 2 lec/1 4-hr lab. 4 cr.

**FORT 267. Leadership, Supervision, and Safety Practices**

Fundamentals of leadership and supervision including effective communication, job organization, planning, personnel training and motivation, problem-solving and decision-making techniques, accident prevention, first aid, and CPR instruction. 2 lec. 2 cr.

**FORT 269. Wildlife Ecology and Conservation**

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. 3 cr.

**FORT 270. Applied Silviculture**

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 FORT 261 and 263. 3 lec/2-hr lab. 4 cr.

**FORT 272. Mensuration**

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 261 or instructor permission. 2 lec/1 4-hr lab. 4 cr.

**FORT 273. Management Operations and Analysis**

Forest appraisal and valuation methods, timber sale contracts, depreciation and depletion calculations, forest taxation. Essentials of forest regulation and management planning. 2 lec/1 lab. 3 cr.

**FORT 274. Industrial Forest Management Tour**

Concentrated field experience and intensive observations of industrial, private, and federal forest holdings, emphasizing forest management operations as currently practiced in New England. Two weeks of concentrated field study. Prereq: permission of curriculum chairperson. Cr/F. 2 cr.

**FORT 276. Forest Products**

Basics of structure and properties of wood as a raw material. Conversion of logs to lumber at Thompson School sawmill (student operated). 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/4-hr lab. 4 cr.

**FORT 277. Logging**

Harvesting methods: their physical layout and economics, relationship to silviculture, and protection. Maintenance of logging tools and machinery. Foremanship and woods safety are stressed. Prereq: permission. 2 lec/4-hr lab. 4 cr.

**FORT 278. Forest Insects and Diseases**

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/2-hr lab. 2 cr.

**FORT 279. Forest Fire Control and Use**

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. 4-hr lab. 2 cr.

**FORT 280. Aerial Photography Interpretation and Geographic Information Systems**

The use of aerial photographic interpretation as it applies to the identification and measurement of forest resources and applications in forest mapping.

Students use geographic information software to create maps for a variety of natural resource uses. 3 cr.

**FORT 283. Forestry Computer Applications**

Introduction to file management, word processing, spreadsheets, databases, email, and the internet. Students use software to solve forestry-related problems. 1 lec/1 lab 1 cr.

**FORT 291, FORT 292. Independent Studies in Forest Technology/Urban Tree Care**

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. 1 to 4 cr.

**FORT 297. Work Experience**

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.

---

**Horticultural Technology (HT)**

*(For program description, see page 129.)*

**HT 201. Freshman Seminar**

An introduction to the horticulture technology, the Thompson School, and the University: programs, expectations, advising, and resources. Survival skills for college including time management, study skills, and note-taking. Career preparation including portfolios, resumes, professional organizations, and continuing education. Special fee. 1 hr. lec. Cr/F. 1 cr.

**HT 204. Plant Propagation**

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. 4 cr.

**HT 205. Plants, People, Place**

An introduction to the New England bioregion through exploration of the interrelationships of plants and plant communities, humans and human culture, and the landforms and natural systems of New Hampshire. Includes field identification of common native and exotic plant species. Special fee. 1 lec/1 lab. 2 cr.

**HT 207. Plant Structure and Function**

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 lec/1 lab. 4 cr.

**HT 215. Soils and Land Use**

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. 2 cr.



**HT 217. Soils and Plant Nutrition**

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. 2 cr.

**HT 219. Computers in Horticulture**

Selection and use of microcomputers in horticulture: word processing, spreadsheets, database management, Power Point, and graphics. 1 lec/1 lab. 1 cr.

**HT 227A. Horticultural Facilities Management**

Layout, construction, management principles, and horticultural technique used on controlled growth structures, including greenhouses, cold frames, and lath houses. Includes practicum in daily operation of Thompson School horticultural facilities. Special fee. 1 lec/1 lab. 2 cr.

**HT 227B. Horticultural Facilities Management**

Layout, construction, management principles, and horticultural technique used on controlled growth structures, including greenhouses, cold frames, and lath houses. Includes practicum in daily operation of Thompson School horticultural facilities. Special fee. 1 lec/1 lab. 2 cr.

**HT 227C. Horticultural Facilities Management**

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. 1 cr.

**HT 227D. Horticultural Facilities Management**

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. 1 cr.

**HT 234. Pest Management**

Introduction to pests of horticultural plants, including diseases, insects, and weeds. Symptoms, morphology, identification, life cycles, impacts, and management measures. Emphasis on integrated pest management. Special fee. 3 lec/1 lab. 4 cr.

**HT 240. Introduction to Floral Design**

Basic arrangements, including symmetrical and asymmetrical, circular, triangular, and line pieces; and the basic corsage designs used by florists. Application of principles to designs during laboratory sessions. Special fee. 1 lec/1 lab. 2 cr.

**HT 244. Advanced Floral Design**

Color and its use; planning both wedding and sympathy floral pieces; comparing traditional and contemporary design techniques and materials; construction of bridal bouquets and other essential bridal designs, sympathy pieces and tropical/dried floral pieces during lab sessions. Prereq: HT 240 or permission. Special fee. 1 lec/1 lab. 2 cr.

**HT 250. Flower Show Design and Construction**

Design, construction, and maintenance of the Thompson School horticultural exhibit at a public flower show. May be repeated. Special fee. 1 rec. 1 cr.

**HT 251. Introduction to Design Communication**

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: HT 219. 1 lec/1 lab. 2 cr.

**HT 254. Irrigation Design**

Design, installation, and operation of irrigation systems in the greenhouse, nursery, field crops, and landscape. Special fee. 1 lec/1 lab. 3 cr.

**HT 256. Horticultural Pruning**

Basic pruning techniques for fruits and ornamentals: apples, peaches, raspberries, blueberries, grapes; deciduous and evergreen shrubs and trees; herbaceous materials. Prereq: HT 205 or equivalent. Special fee. 1 lec/1 lab. 2 cr.

**HT 257. Woody Landscape Plants**

Identification, morphology and classification of Woody plant materials of importance in ornamental horticulture in the Northeast including deciduous and evergreen trees, shrubs, vines and groundcovers. Woody plant selection for landscape situations. Special fee. Prereq: HT 205. 2 lec/1 lab. 3 cr.

**HT 258. Herbaceous Ornamental Plants**

A comprehensive study of herbaceous ornamental plants including morphology, classification, identification, and usage of common perennials, annuals, ferns, ornamental grasses, herbs, and bulbs used in the Northeast. Production, installation, and maintenance of herbaceous ornamentals is also included. Prereq: HT 205 or permission. Special fee. 1 lec/1 lab. 2 cr.

**HT 260. Grounds Maintenance**

Introduction to the principles and practices of maintaining public and private grounds—residential, commercial, institutional, recreational. Field work emphasized. Special fee. 4 hour lab/7 wks. May be repeated for a maximum of 2 credits. 1 cr.

**HT 263. Landscape Construction**

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 205, 215. 4 lec. 4 cr.

**HT 266. Garden Design and Culture**

Design, installation, and maintenance of flower gardens in New England. Includes perennial, annual, herb, bulb, and combination gardens. Also covers business aspects of gardening, including estimating. Field trips. Coreq: HT 258. Special fee. 3 lec/1 lab/7 wks. 2 cr.

**HT 270. Grounds Management**

Grounds management with emphasis on field organization and project supervision. Special fee. Prereq: HT 260. 1 lec/4-hr. Lab/7 wks. May be repeated for a maximum of 4 credits. 2 cr.

**HT 272. Landscape Design Studio**

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 263. 2 lec/4-hr lab. 4 cr.

**HT 275. Floricultural Crop Production**

Leading cut-flower crops, potted plants, and bulbous crops, including cultural requirements, crop timing, harvesting procedures, distribution systems, and marketing principles. Special fee. Prereq: permission. 2 lec/1 lab. 2 cr.

**HT 276. Bedding Plant Production**

Bedding plant production, cultural requirements, crop timing, marketing principles. Includes common annuals, perennials, vegetables, and herbs of the Northeast. Field trips. Special fee. Prereq: permission. 3 lec/1 lab/7 wks. 2 cr.

**HT 286. Fruit and Vegetable Production**

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. 3 cr.

**HT 288. Horticultural Business Management**

Business principles and practices in the formation, operation, and growth of horticultural enterprises. An introduction to marketing, accounting, personnel, and operation management. HT majors only. Special fee. 4 lec. 4 cr.

**HT 291, HT 292. Studies**

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. 1 to 3 cr.

**HT 293. Field Operations**

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. 1 to 3 cr.

**HT 294. Field Operations**

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. 1 to 3 cr.

**HT 297. Horticultural Work Experience**

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. 2 cr.



---

## TSAS Communication (COM)

**COM 209. Expository Writing and Reading**  
Weekly writing and individual conferences. Frequent reading assignments related to the writing. 3 lec/1 tutorial. 4 cr.

**COM 210. Public Speaking**

Frequent speaking exercises to develop the skill and confidence to speak in a variety of public situations. 2 lec. 2 cr.

**COM 211. Critical Reading**

Frequent readings of short nonfiction and fiction. Class discussions and writing assignments designed to develop skill in reading with critical discernment. 2 lec. 2 cr.

**COM 212. Technical Writing**

Practice in various forms of technical writing: technical instructions and descriptions, reports, proposals, business letters, and more, with particular emphasis on the importance of layout and design. 2 lec. 2 cr.

**COM 291, COM 292. Studies in Communications**

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. 1 to 3 cr.

---

## TSAS Mathematics (MTH)

**MTH 201. Math I**

Arithmetic of whole numbers, integers, decimals, percents, and fractions. Applications of mathematics, measurement and the metric system. Probability, problem solving and business graphing. 3 lec. 3 cr.

**MTH 202. Math II**

Creative reasoning and problem solving. Algebraic topics, powers, roots, equations, ratios, and proportions. Geometry topics, triangles, similar figures, polygons, measurement (English and Metric), linear functions, business functions and graphing. Prereq: pass a pretest. 3 lec. 3 cr.

**MTH 203. Algebra and Trigonometry**

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. 3 cr.

---

## TSAS Social Science (SSCI)

**SSCI 201. Human Relations**

Learn theories of human behavior and develop skills for applying these concepts in the creation of more effective interpersonal and professional relationships. 4 cr.

**SSCI 202. Social Issues**

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. 4 cr.

**SSCI 203. Environmental Issues and Society**

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. 2 cr.

**SSCI 204. Leadership Effectiveness and Group Performance**

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. 2 cr.

**SSCI 291, SSCI 292. Studies**

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. 1 to 4 cr.

# UNIVERSITY OF NEW HAMPSHIRE AT MANCHESTER

The following courses are normally offered only at the University of New Hampshire at Manchester. For more information, see page 131 or contact UNH Manchester at University Center, 400 Commercial Street, Manchester, NH 03101, phone (603) 641-4321; fax (603) 641-4305; TTD/TTY (603) 641-4308.

## Administration (ADM)

(For program description, see page 133.)

### ADM 400. Introduction to Business

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. 4 cr.

### ADM 430. Introduction to Business Statistics

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 639; MATH 644; PSYC 402; SOC 50. 4 cr.

### ADM 532. Introduction to Financial Accounting

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, 502, ADMN 502. 4 cr.

### ADM 533. Introduction to Managerial Accounting

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: ADM 532. 4 cr.

### ADM 601. Financial Management

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. 4 cr.

### ADM 610. Marketing Principles and Applications

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: ADM 400, ECN 412. 4 cr.

### ADM 620. Organizational Behavior

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. Special fee. 4 cr.

### ADM 650. Operations Management

Studies the operational issues and problems related to the design and implementation of an organization's production process. Topics include production planning and analysis, inventory and quality control, scheduling, and methods for evaluating production performance in both the goods and service sectors of the economy. Prereq: Completion of Introductory Business Core or permission. 4 cr.

### ADM 675. Special Topics Business Administration

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. 4 cr.

### ADM 685. Applications in Business Management

Selected topics. Topics will vary. Barring duplication of subject, may be repeated for credit. 4 cr.

### ADM 695. Independent Study in Business

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. 1 to 4 cr.

### ADM 701. Business, Government and Society

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: ADM 620 or permission. Writing intensive. 4 cr.

### ADM 750. Business Internship Seminar

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. 4 cr.

### ADM 760. Applied Senior Project

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: ADM 620 and senior standing or permission. 4 cr.

### ADM 770. Special Topics Senior Seminar

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. 4 cr.

## American Sign Language (ASL)

(For program description, see page 139.)

### ASL 435. American Sign Language I

Introduction to American Sign Language with emphasis on visual receptive and expressive use of language, as well as providing opportunities for other forms of 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. Limited to 15 students. Special fee. No credit if credit has been received for COMM 533. 4 cr.

### ASL 436. American Sign Language II

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. Prereq: ASL 435 or program evaluation. Limited to 15 students. No credit if credit has been received for COMM 733. 4 cr.

### ASL 531. American Sign Language III

Continuation of ASL 436. Expands on ground-work 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. 4 cr.

### ASL 532. American Sign Language IV

Continuation of ASL 531. Expands on the ground-work 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. 4 cr.

### ASL 599. Special Topics in American Sign Language/Deaf Studies

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 if topics differ. 1 to 4 cr.

### ASL 621. Advanced American Sign Language Discourse for Interpreters

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. 4 cr.



---

## Biological Science (BSCI)

**BSCI 405. Diversity of Life**

Survey of ecology, evolution, genetics, and the diversity of life. Emphasis on basic biological principles. For nonbiological science majors. Lecture and lab. Cannot be taken for credit after completion of BIOL 411, 413, or equivalent. No credit for students who have completed BIOL 405. Special fee. Lab. 4 cr.

**BSCI 406. Human Organism**

Survey of biological chemistry, molecular and cell biology, and major plant and animal systems. Emphasis on basic biological principles. For nonbiological science majors. Lecture and Lab. Cannot be taken for credit after completion of BIOL 412, 414, or equivalent. No credit for students who have completed BIOL 406. Special fee. Lab. 4 cr.

**BSCI 421. Diseases of the 21st Century**

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 is also discussed. This class is offered in the traditional classroom and online using Blackboard. Prereq: ENGL 401. 4 cr.

**BSCI 422. Biotechnology and Society**

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. Class is offered in the traditional classroom and online using Blackboard. 4 cr.

**BSCI 431. It's a Small World: Microbes, the True Masters of our Planet**

Students learn the role of microorganisms in their lives. Topics include the beneficial uses of microbes in ecosystems, medicine, industry, food, and agriculture. Several different diseases, their prevention, identification, and treatment are addressed in lectures. Laboratory includes microbiological techniques used to identify bacterial strains. Bacterial strains used in biological warfare are also covered. Special fee. 4 cr.

---

## Biology (BIOL)

**BIOL 413. Principles of Biology I**

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. 4 cr.

**BIOL 414. Principles of Biology II**

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. 4 cr.

**BIOL 520. Our Changing Planet**

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. 4 cr.

---

## Communication Arts (CA)

(For program description, see page 134.)

**CA 444. Manipulating Media: Exploring Image and Sound Aesthetics**

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. 4 cr.

**CA 450. Introduction to Public Speaking**

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. 4 cr.

**CA 501. Internship/Communication in the Urban Community**

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 adviser 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 adviser. 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. 1 to 4 cr.

**CA 502. Image and Sound**

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. 4 cr.

**CA 503. Techniques for News Reporting**

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. 4 cr.

**CA 504. Film Criticism**

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. 4 cr.

**CA 506. Gender**

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. 4 cr.

**CA 508. Conflict in Relational Communication**

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. 4 cr.

**CA 510. Language and Interaction**

Examines how identities, relationships, and social realities are constituted through language and interaction. Specific topics include perception, meaning, metaphor, power, gender, illness, and the environment. Prereq: CMN 457 or permission. 4 cr.

**CA 512. Scriptwriting**

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 plus either CMN 455 or 456; or permission. Writing intensive. 4 cr.

**CA 513. Radio News Production**

Theory and practice of producing news stories for radio. Covers the research, organization, and technical skills necessary to produce a basic three-and-half to four-minute radio piece that includes three interviews, a scene created with sound, instructions for a studio mix, and a host introduction. Intended for beginning and intermediate students who have a strong interest in news writing and news production. Prereq: ENGL 401, plus CMN 455; or permission. Special fee. Writing intensive. 4 cr.

**CA 514. Fundamentals of Video Production**

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 post-production practices on nonlinear editing systems. Prereq: ENGL 401, CA 502 or CA 444, CMN 455, or permission. Preference given to CA majors. Special fee. 4 cr.



**CA 515. Advanced Video Production**

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. 4 cr.

**CA 516. Speechwriting**

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. 4 cr.

**CA 520. Special Topics in Applied Communication**

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. 1 to 4 cr.

**CA 525. Media Programming**

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. 4 cr.

**CA 526. Organization of Newswork**

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. 4 cr.

**CA 527. History of Film**

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. 4 cr.

**CA 528. Media Policy and Law**

Nature, scope, history and current practice of federal regulation over broadcast and related telecommunications media. Emphasis on FCC policies and procedures in the United States with some coverage of comparative regulatory systems. Prereq: CMN 455 or permission. 4 cr.

**CA 531. History and Organization of Advertising**

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. 4 cr.

**CA 535. Marital Communication**

Introduces students to the study of communication in marital relationships. Examines the major theoretical orientations that characterize the marriage field and investigates the processes by which communication facilitates or hinders marital adjustment

and stability; understanding, and relationship satisfaction. Also explores popular cultural constructions of marriage and intimacy and how these influence personal expectations for marital relationships. Students need not be married to take or benefit from this course. Prereq: CMN 457, or permission. Writing intensive. 4 cr.

**CA 539. Communicating in Families**

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. 4 cr.

**CA 550. Special Topics in Communication Organization, History, and Policy**

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. 1 to 4 cr.

**CA 600. Research Methods in Media**

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 courses from both areas A and B for which CMN 455 is prerequisite or permission. Writing intensive. 4 cr.

**CA #601. Exploring Relationships**

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 courses from both areas A and B for which CMN 457 is prerequisite or permission. 4 cr.

**CA 610. Communication Technologies and Culture**

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 subcultural appropriations of media forms and content. Prereq: any two courses from both areas A and B for which CMN 455 is prerequisite or permission. Writing intensive. 4 cr.

**CA 611. Theories of Relational Communication**

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 courses from both areas A and B for which CMN 457 is prerequisite or permission. Writing intensive. 4 cr.

**CA 612. Narrative**

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 courses from both areas A and B for which CMN 457 is prerequisite or permission. Writing intensive. 4 cr.

**CA 614. Communication and Power**

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 constructionism, 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: CMN 457 and any two courses from areas A and B for which CMN 457 is a prerequisite. Writing intensive. 4 cr.

**CA 615. Film History/Theory and Method**

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 courses from both areas A and B for which CMN 455 is prerequisite or permission. Special fee. Writing intensive. 4 cr.

**CA 618. Documentary**

Exploration of the historical development, ethics, funding, sociocultural significance, and communication strategies of documentary film and video. May focus on a particular genre or genres. Prereq: any two courses from both areas A and B for which CMN 455 is prerequisite or permission. Special fee. Writing intensive. 4 cr.

**CA 720. Seminar**

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. 4 cr.

**CA 795. Independent Study**

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. 1 to 4 cr.



## Computer Information Systems (CIS)

(For program description, see page 135.)

### CIS 405. Introduction to Internet and Web Authoring

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. 4 cr.

### CIS 411. Introduction to Computer Applications

Beginning course on computer technology, specifically microcomputer systems. Emphasis is on 1) using computers to manage information for personal and professional applications and 2) the impact of computer information technology on today's society. Software applications used include word processing, spreadsheets, database, and graphics. Independent lab activities are a major part of the course content. No prior computer experience is required. No credit if credit has been received for DCE 491; 492; CS 401. 4 cr.

### CIS 425. Introduction to Computer Programming

An introduction to computer programming and problem solving. Introduces the programming process and algorithm development. Students learn the Visual Basic programming environment. Emphasis is on Graphical User Interface issues and their relation to sub-programs. Assignments are drawn from applications in a wide range of business contexts. No credit for students who have completed CS 505. 4 cr.

### CIS 510. Fundamentals of Computer Information Systems

Investigates the role and impact of computer applications on computer information systems in general and specifically as applied to business requirements. Surveys the components of a computer information system; explores computer information systems in areas such as manufacturing, medicine, education, and government; discusses the issues of computerizing information resources. Directs attention to computer information systems in business and identifies the need for and function of formal systems development methodologies. Prereq: CIS 411 or equivalent. Writing intensive. 4 cr.

### CIS 515. Multimedia: Introduction and Applications

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. 4 cr.

### CIS 520. Database Design and Development

Students will develop a database application using the relational model and DBMS. Special emphasis in understanding the steps involved in designing a database and using a relational model to implement the design. The design implementation starts from the conceptual design to the implementation of a database schema and user interfaces to the database. Students will use a commercial database management system, the database query language SQL. Considerations for database maintenance and security will be addressed as well as current trends in object oriented databases and eCommerce applications. Prereq: CIS 510. 4 cr.

### CIS 542. Operating System Applications

Introduction to operating system concepts with relevant lab experiences. Topics include the goals and objectives of operating systems; the management of memory, processing, files, and resources; and a survey of current operating components. Students will understand and apply basic operating system concepts and principles, learn an operating system in some detail, appreciate the design considerations involved in O/S development. Prereq: CIS 411, CIS 510, or permission. 4 cr.

### CIS 550. Networking Computers

Explores the fundamentals of data communications and networking requirements for an organization, including the standard layers of network organization; network technologies; and architectures and protocols for WAN, LAN, and Internet systems. Includes issues of security, design, management, and future developments, particularly in a business environment. Knowledge of computer hardware and operating systems is required. Prereq: CIS 510, CIS 542, or equivalent. 4 cr.

### CIS 560. Computer Law and Ethics

Examines the ethical and legal issues that face a computer professional. Surveys ethical theories and moral problems related to information technology. Students develop and articulate a personal point of view on computer 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 computerization such as intellectual property, privacy, computer reliability, and security; current U.S. and international laws relevant to computer and network usage. Case study analysis is a major component in course delivery. Prereq: CIS 510 or permission. Writing intensive. 4 cr.

### CIS 570. Web Applications Development

This course provides experience in design and coding of interactive business web sites. Students learn planning and design issues for an organization's application. Course covers advanced XHTML, CSS implementation, JavaScript, ASP.net, web tools for electronic commerce, options for adding security, and electronic payment to a web site. Students will code and manage an application on a web server. Prereq: CIS 405, CIS 425, CIS 510, or relevant experience and permission of the instructor. 4 cr.

### CIS 599. Special Topics

Topics covered will vary depending on contemporary computer topics, programmatic need, availability and expertise of faculty. Barring duplication of subject, may be repeated for credit. 1 to 4 cr.

### CIS 610. System Analysis and Design

Addresses procedures to analyze, evaluate, and articulate requirements for an information system to accomplish project goals. Implementing a

new information system, or enhancing an existing system, requires a formalized process to study an organization's needs; gather and analyze appropriate data; and report on existing systems, new systems requirements, and project priorities. The class will survey tools and techniques used in the analysis and design phases; emphasize documentation and procedures; and research trends in modeling and design software. Communication, group interaction, interviewing, and presentation skills are stressed to effectively articulate the analysis and design proposals. Open to majors who have completed Level 1 and Level 2 coursework. Writing intensive. 4 cr.

### CIS 620. Network Administration and Maintenance

Develops the theory of networks through practical application of administering and maintaining a LAN. Includes the routine tasks of a network administrator using a common network operating system. Routine tasks include: setup directory services, assign access privileges, tune network services, understand and implement network security, perform routine maintenance, and practice troubleshooting techniques. Prereq: Majors must complete Level 1 and Level 2 requirements, or permission. 4 cr.

### CIS 630. Application Programming Using JAVA

Students apply the basic concepts and techniques of object-oriented programming to an information processing application. The course reviews basic data structures such as lists, stacks, and queues. Control structures, file manipulation, recursion and an introduction to graphic user interface design are covered and applied to programming business applications. Introduces students to object-oriented design and analysis. Good programming style is stressed. Significant out of class programming is required. Prereq: Majors must complete Level 1 and Level 2 requirements, or permission. 4 cr.

### CIS 650. System Implementation with DBMS

This course provides practical experience in developing a detailed application for a subsystem of a computer information system. Students will implement a physical and logical design for the application using a DBMS. Topics include the conceptual, physical, and logical data models, design and project management tools. Students will specify the logical design for output, input, processing of the database as well as implement and evaluate the database application and will identify a security and maintenance plan. Emphasis will be on the implementation process, software tools, and development team through the completion of a computer information system. Prereq: Majors must complete Level 1 and Level 2 requirements, including CIS 520, CIS 610, or permission. 4 cr.

### CIS 680. Internship

Provides field-based learning opportunity through placement in a computer information system environment. Students will gain practical computer experience in a business or non-profit organization. Under the direction of a faculty adviser and workplace supervisor, the student is expected to contribute to the work of the organization. Students will create a portfolio of their professional activities. May be repeated for a maximum of 8 credits. Prereq: Majors must complete Level 1 and Level 2 requirements, or permission. 4 cr.



## Economics-UNHM (ECN)

### ECN 411. Introduction to Macroeconomic Principles

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. 4 cr.

### ECN 411W. Introduction to Macroeconomic Principles

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. 4 cr.

### ECN 412. Introduction to Microeconomic Principles

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. 4 cr.

### ECN 412W. Introduction to Microeconomic Principles

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. 4 cr.

### ECN 444. Power

What is "power"? How does it originate and influence events? Are there, or should there be, limits to power? How does power (or powerlessness) manifest itself within your life and community? This semester we will explore the concept of "power", including its sources, deployment and effects, using a variety of sources, methods, and disciplinary perspectives. To raise and address questions about power, we will carefully read, view, discuss and listen to primary source material related to our topic including texts, film, art and music. Course content includes the perspective of philosophers (Friedrich Nietzsche, Thomas Hobbes), dramatists (Samuel Beckett, Christopher Marlowe) scientists (Rene Descartes, Albert Einstein), essayists (Ralph Waldo Emerson), autoethnographers (Carolina Maria DeJesus), as well as the work of historians,

economists, psychologists, and scholars working in the fields of communication and gender studies. In addition students will design a service learning project(s) to research aspects of power and/or powerlessness within their life and community. Writing intensive. 4 cr.

### ECN 625. Regulation of Business

Examines the impact of governmental regulatory agencies and regulatory legislation on the operation of business in the United States. Topics include: the theory of regulation; the regulation of natural monopoly; antitrust economics; deregulation; social regulation, and interaction with regulatory agencies. Prereq: ADM 400, ECN 412. Not open to first year students except with instructor's permission. 4 cr.

### ECN 635. Money, Banking and Macroeconomic Activity

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. 4 cr.

### ECN 640. Business Law and Economics

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. 4 cr.

### ECN 650. Economics for Managers

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. 4 cr.

## Engineering Technology (ET)

(For program description, see page 136.)

### ET 601. Data Structures and Data Bases

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. 4 cr.

### ET 625. Technical Communications

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 pro-

gram of study so that proficiencies developed can be utilized in later courses. Writing intensive. 4 cr.

### ET 630. Analytical Methods in Engineering Technology

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. 3 cr.

### ET 639. Heating, Ventilation and Air Conditioning I

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. 4 cr.

### ET 640. Heating, Ventilation and Air Conditioning II

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. 4 cr.

### ET 641. Production Systems

Market forecasting; waiting line theory; manufacturing inventories and their control; production scheduling; quality control. Prereq: differential and integral calculus. 4 cr.

### ET 644. Mechanical Engineering Technology Concepts in Analysis and Design

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. 4 cr.

### ET 647. Advanced Perspectives on Programming

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. 4 cr.

### ET 667. Graphics and Animation

The fields of graphics and animation are critical to programming applications. Advanced display techniques of information are critical to the success of many programmed applications. Current technology will be used in intensive hands-on projects. Prereq: ET 601 or intermediate programming skills in two or more of the following languages: Java, C++, Visual Basic, Visual C++ Windows, Visual Basic.Net and C# as well as intermediate level skills in data structures or by permission. 4 cr.

### ET 671. Digital Systems

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. 4 cr.

### ET 674. Control Systems and Components

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. 4 cr.



**ET 675. Electrical Technology**

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. 4 cr.

**ET 677. Analog Systems**

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. 4 cr.

**ET 680. Communications and Fields**

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. 4 cr.

**ET 695. Independent Study**

Individual reading, writing, or laboratory work carried out under the tutelage of a faculty member. Prereq: approval of the adviser. 1 to 4 cr.

**ET 696. Topics in Mechanical Engineering**

New or specialized courses not covered in regular course offerings. Prereq: permission. May be repeated to a maximum of 4 credits. 1 to 4 cr.

**ET 697. Topics in Electrical Engineering Technology**

New or specialized courses not covered in regular course offerings. Prereq: permission. May be repeated for a maximum of 4 credits. 1 to 4 cr.

**ET 706. Internship**

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. 1 to 4 cr.

**ET 707. Object Oriented Design and Documentation**

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. 4 cr.

**ET 717. Network Security**

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. 4 cr.

**ET 733. Business Organization and Law**

Corporations; proprietorships; product liability; contracts; federal agencies; commercial paper; conditions of employment; business ethics; bankruptcy; U.C.C. Special fee. Writing intensive. 4 cr.

**ET 734. Economics of Business Activities**

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. 4 cr.

**ET #737. Web Server Databases**

Multiple tiered database design and commercial databases are the focus of study. Practical application programs provide hands-on experiences. Prereq: ET 627 or by permission. 4 cr.

**ET 745. Instrumentation**

Statistics of experimentation; quantity standards and measurement; design of experiments; use of laboratory gear including dynamometer; field trips. Prereq: differential and integral calculus; ET 644 or equivalent. Lab. 4 cr.

**ET 747. User Interface Design**

Standards in user interface design of programs applied to practical programming applications. Consistency in look and feel often forms the core of software certification requirements. Prereq: intermediate Graphic User Interface programming skills in one or more of the following languages: Java, Visual Basic, Visual C++ Windows, Visual Basic.Net and C# or permission. 4 cr.

**ET 751. Mechanical Engineering Technology Project**

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. 4 or 8 cr.

**ET 762. Illumination Engineering**

Radiation; spectra, wave, and particle nature of light; physics of light production, light sources and circuits, luminaires; science of seeing, color theory, control of light, measurements, light and health, lighting calculations. Prereq: MATH 426, PHYS 408 or equivalent. Lab. 4 cr.

**ET #763. Lighting and Design Applications**

Lighting design process, modeling, interior and exterior lighting calculation and design, flux transfer, form and configuration factors, lighting quality and aesthetics, daylighting calculations, lighting economics, lighting power and energy analysis, selected applications of light in interior and exterior spaces. Prereq: ET 762 or equivalent. 2 or 4 cr.

**ET 777. Advanced Distributed Programming Trends**

Distributed applications use a network or the Internet in a multi-tier architecture to distribute their presentation services, business logic, and data services. These applications often access many different data sources. The components contained in these applications typically participate in transactions and they can be shared by multiple users and multiple applications. Prereq: ET 647 or by permission. 4 cr.

**ET 783. Advanced Electronic Design Methods**

Design methods for analysis and synthesis of state-of-the-art circuits and systems, with real-world examples. A design project will be required. Laboratory work will form an important part of the course. Prereq: intro. analog and digital design. Special fee. Lab. 4 cr.

**ET 787. Artificial Intelligence and Expert Systems**

How to identify what an expert system is, and what an artificially intelligent system would be, if AI (artificial intelligence) actually existed beyond theory. Course explores some of the pitfalls that have plagued the AI community, such as why parallel processing has not provided the solution to bring theory to reality. Includes history behind AI, including connections to the human brain. Students create a mini expert system. Prereq: senior standing or by permission. 4 cr.

**ET 788. Introduction to Digital Signal Processing**

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. Prereq: ET 680 Communications and Fields or equivalent. 4 cr.

**ET 790. Microcomputer Technology**

Microcomputer systems design, including assembly language, interfacing, processor timing and loading, and interprocessor 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. 4 cr.

**ET 791. Electrical Engineering Technology Project**

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. 4 or 8 cr.

---

**English (ENG, ENGL)**

*(For program description, see page 136.)*

**ENG 301. Introduction to College Composition and Reading**

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. 4 cr.

**ENGL 400. English as a Second Language**

Improves the competence of foreign students in listening comprehension, speaking, reading, and writing. Recommended as preparation for ENGL 401. May be repeated up to a total of 16 cr. Writing intensive. Special fee. Cr/F. 1-16. cr.



**ENGL 401. Freshman English**

Training to write more skillfully and to read with more appreciation and discernment. Frequent individual conferences for every student. Special fee. Writing intensive. 4 cr.

**ENGL 401A. Freshman English for English as a Second Language Students**

A special section of Freshman English 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 problems 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 401A for credit. Special fee. Writing intensive. 4 cr.

**ENGL 419. Introduction to Critical Analysis**

Critical analysis of fiction, poetry, and drama. Frequent short papers. This course, or 529, is a prerequisite with a minimum grade of C for those intending to declare an English major. Writing intensive. 4 cr.

**ENGL 500. Writing about Reading: Writing about Nonfiction**

Emphasis on close reading of a variety of nonfiction sources and on intensive writing to develop interpretive skills. Prereq: ENGL 401 or permission. Special fee. Writing intensive. 4 cr.

**ENGL 501. Introduction to Creative Nonfiction**

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. 4 cr.

**ENGL 503. Persuasive Writing**

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. Special fee. Writing intensive. 4 cr.

**ENGL 511. Major Writers in English**

In-depth study and discussion of a few American and/or British writers. Topics and approaches vary depending on instructors. Writing intensive. 4 cr.

**ENGL 513, 514. Survey of British Literature**

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. 513: *Beowulf* through 18th Century. 514: 1800 to the present. Writing intensive. 4 cr.

**ENGL 515. Survey of American Literature**

From the beginning of American literature to the Civil War. For non-English majors ENGL 515 meets the group 4 requirement. Writing intensive. 4 cr.

**ENGL 516. Survey of American Literature**

From the Civil War to the present. Writing intensive. 4 cr.

**ENGL 517. Introduction to African American Literature and Culture**

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. 4 cr.

**ENGL 521. The Nature Writers**

Fiction, poetry, and nonfiction books on the natural environment. Such books as Thoreau's *Walden* or *Maine Woods*, Leopold's *Sand County Almanac*, Beston's *Outermost House*, Dillard's *Pilgrim at Tinker Creek*—books by naturalists who observe nature vividly and knowingly and who write out of their concern for the environment. Writing intensive. 4 cr.

**ENGL 595. Literary Topics:**

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. Writing intensive. 1-4 cr.

**ENGL 608. Arts and American Society: Women Writers & Artists 1850-Present**

Team-taught course studying the impact of gender definitions on the lives and works of selected American artists. Considers lesser-known figures such as Fannie Fern, Lilly Martin Spencer, and Mary Halleck Foote as well as better-known artists such as Willa Cather and Georgia O'Keeffe. Prereq: permission or one of the following: WS 401, HIST 566, ENGL 585, 586, 685, 785, or a 600-level art history course. (Also offered as ARTS 608, HIST 608, and HUMA 608.) Writing intensive. 4 cr.

**ENGL 627, 628. Writing Poetry**

Workshop in the fundamental techniques of poetry writing. Class discussion and criticism of poems written by students. Individual conferences with instructor. Prereq: ENGL 501 or equivalent. Written permission of instructor required for registration. May be repeated for credit with the approval of the department chairperson. Special fee. Writing intensive. 4 cr.

**ENGL 632. Fiction**

Modern novels and/or short stories. The way in which fiction communicates its meanings; the tools and methods at the fiction writer's disposal, primarily as they function in individual works. See course descriptions available in department office for further information. (Not offered each semester.) Writing intensive. 4 cr.

**ENGL 650. Studies in American Literature and Culture**

Special topics in American studies, varying from year to year. (Not offered every year.) Writing intensive. 4 cr.

**ENGL 657. Shakespeare**

Ten major plays representative of the main periods of Shakespeare's career and the main types of drama which he wrote (tragedy, comedy, history). Live and filmed performances included as available. Restricted to undergraduates and designed for both English majors and students majoring in other fields. Writing intensive. 4 cr.

**ENGL 685. Women's Literary Traditions**

Intensive study of themes, topics, and techniques in women's literature. Topics vary from year to year. Writing intensive. 4 cr.

**ENGL 693, 694. Special Topics in Literature**

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. 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.) Writing intensive. 4 cr.

**ENGL 710. Teaching Writing**

Introduction to various methods of teaching writing. Combines a review of theories, methods, and texts with direct observation of teaching practice. Writing intensive. 2 or 4 cr.

**ENGL 716. Curriculum, Materials, and Assessments in English as a Second Language**

Study of the problems in designing an effective teaching program for various types of ESL students. Competence and aptitude testing; choosing and adapting materials for ESL classes. Writing intensive. 4 cr.

**ENGL 742. American Literature, 1815-1865**

Fiction, nonfiction, and poetry in the period of romanticism, transcendentalism, nationalism. Individual works and cultural background. (Not offered every year.) Writing intensive. 4 cr.

**ENGL 743. American Literature, 1865-1915**

Fiction, nonfiction, and poetry in the period of realism, naturalism, industrialism, big money. Individual works and cultural background. Writing intensive. 4 cr.

**ENGL 744. American Literature, 1915-1945**

Fiction, poetry, and drama in the period of avant-garde and leftism, jazz age, and Depression. Individual works and cultural background. Writing intensive. 4 cr.

**ENGL 745. Contemporary American Literature**

A gathering of forms, figures, and movements since 1945. Individual works and cultural background. Writing intensive. 4 cr.

**ENGL 768. Literature of the Later Eighteenth Century**

Poetry, drama, fiction, letters, journals, essays, and biography from the period that culminated in the American and French Revolutions. Works by such figures as Henry Fielding, Samuel Johnson, Frances Burney, Laurence Sterne, William Blake, and Mary Wollstonecraft studied in historical context. Examples from the colonial world and the continent (in translation) when appropriate. Writing intensive. 4 cr.

**ENGL 771. English Victorian Period**

The English Victorian Period-Fiction, nonfiction and poetry from 1832-1900. Money, Science, and Love. Authors include the Brontes, Dickens, Hardy, Wilde, Tennyson. (Not offered every year.) Writing intensive. 4 cr.

**ENGL 773, 774. British Literature of the 20th Century**

Poets and novelists of the modernist and post-modernist periods. 773: W. B. Yeats, James Joyce, Virginia Woolf, E. M. Forster, D. H. Lawrence, and other modernists. 774: a selection of post-modernist or contemporary writers, such as William Golding, Doris Lessing, John Fowles, Philip Larkin, Seamus Heaney, Margaret Drabble, and others. Writing intensive. 4 cr.

**ENGL 791. English Grammar**

Survey of the grammar of English (pronunciation, vocabulary, sentence structure, punctuation, dialect variation, historical change) with special attention to the distinction between descriptive and prescriptive grammar and to the problems students have with formal expository writing. Writing intensive. 4 cr.



**ENGL 792. Teaching Secondary School English**

Methods of teaching language, composition, and literature in grades 7-12. Required of all students in the English teaching major. Open to others with permission. Writing intensive. 4 cr.

**ENGL 795. Independent Study**

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 16 credits. Writing intensive. 1-16 cr.

**ENGL 797, 798. Special Studies in Literature**

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. 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. Writing intensive. 2-6 cr.

---

**History (HIST)**

(For program description, see page 137.)

**HIST 410. Historical Survey of American Civilization**

Topical survey, within broad chronological divisions, of the development of American civilization since 1600. Not open to majors or minors who have elected HIST 405 or 406. Writing intensive. 4 cr.

**HIST 421. World History to the 16th Century**

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. 4 cr.

**HIST 422. World History in the Modern Era**

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 emergence of new states and changing societies throughout the world. 4 cr.

**HIST 435, 436. Western Civilization**

The classical origins and evolution of European civilization through the Renaissance, Reformation, and voyages of discovery. The rise of Europe to global supremacy in the 19th century and its transformation in the 20th century. 435W and 436W are writing intensive. 4 cr.

**HIST 497. Explorations in Historical Perspectives**

Seminar for freshmen and sophomores. 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. 4 cr.

**HIST 500. Introduction to Historical Thinking**

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. 4 cr.

**HIST 505, 506. African American History**

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. 505: Colonial America to the Civil War. 506: Reconstruction to the present. Writing intensive. 4 cr.

**HIST 511. History of New Hampshire**

From presettlement times to the present, emphasizing the use of locally available materials and sources. 4 cr.

**HIST 595. Explorations**

See department listings for semester topic. 1-4 cr.

**HIST 600. Advanced Explorations**

See department listings for semester topic. Barring duplication of subject, may be repeated for credit. 1-4 cr.

**HIST 603. The European Conquest of America**

Study of the social consequences of colonization, migration, and war in America, 1500-1775. Emphasis on the interaction of British colonies with competing European cultures (French, Dutch, Portuguese, and Spanish), with Native Americans, and with African American slaves. 4 cr.

**HIST 605. Revolutionary America, 1750-1788**

Examines the social, political, and cultural transformation of thirteen British colonies into the United States, up to the adoption of the Constitution. 4 cr.

**HIST 606. History of the Early Republic**

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. 4 cr.

**HIST 612. Emergence of Industrial America**

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. 4 cr.

**HIST 615, 616. 20th-Century America**

U.S. after 1900; cultural, political, and social factors causing major changes in American life. Semester I: Progressivism through the New Deal. Semester II: World War II to the present. 4 cr.

**HIST 617. The Vietnam War**

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. 4 cr.

**HIST 624. Topics in Modern United States Social History**

Advanced study of topics in U.S. social history since the Age of Jackson. Topics will vary; may include such examples as slavery and the antebellum South; reform movements in U.S. history; family history; labor history; the impact of war on American society; race in recent U.S. history. May be repeated as topics change. 4 cr.

**HIST 640. Holy War in the Holy Land: The Medieval Crusades**

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. 4 cr.

**HIST 641. Europe after the Black Death**

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 covered 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. 4 cr.

**HIST 651, 652. Topics in European Intellectual History**

Exploration of such major developments as ancient world views and cosmologies, the Renaissance, the Reformation, and the relationship between gender and intellectual history. Includes topics up to the Scientific Revolution. Since topics vary, students should check the department newsletter or office for course theme in any given term. May be repeated as topics change. 4 cr.

**HIST 656. 20th-Century Europe**

World War I, European totalitarianisms, World War II, the loss of European primacy, and the search for a new Europe. 4 cr.

**HIST 679 - Rights Revolution**

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. 4 cr.



**HIST 690. Introduction to Public History**

Introduction to the theory, methodology, and practices of public historians. Examines the history and contemporary practices of historians whose research and scholarship is aimed at public audiences through the creation of diverse media and interpretive frameworks. Encourages interdisciplinary thinking about history. 4 cr. Cr/F.

**HIST 691 - Internship**

Supervised internship with a governmental agency, private corporation, philanthropic institution, library, archives, museum, historical society, or other institution seeking individuals interested in historical research. 4 Cr/F.

**HIST 695. Independent Study**

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 History. For students showing a special aptitude in history who desire to study an area or subject for which no appropriate course is offered. Prereq: permission. 4-8 cr.

**HIST 698. Internship in Museum Studies**

Supervised position with a museum, historical society, archive, or other history-related site. Prereq: permission. Cr/F. 4 cr.

**HIST 797. Colloquium in History**

Selected topics in American, European, and non-Western history. Required of history majors. Students must select section in the department office at the time of registration. Writing intensive. 4 cr.

---

**Humanities (HUMA)**

(For program description, see page 137.)

**HUMA 411. Humanities I**

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. 4 cr.

**HUMA 412. Humanities II**

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. Special fee. Writing intensive. 4 cr.

**HUMA 519. Classical Greece**

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. 4 cr.

**HUMA 622. Studies of Freedom and Liberty**

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. 4 cr.

**HUMA 630. Development of Early Christianity**

Examines the emergence of Western Christianity. Explores primary literature relating to religious concepts and theological positions during the first centuries of the Church from the Pauline letters, through the period of Roman Emperor Constantine, culminating in the writings of Augustine, Bishop of Hippo. Considers both Christian and non-Christian texts and assesses the forces that helped to shape the fledgling religion. Gives special attention to social, political, and cultural influences. 4 cr.

**HUMA 632. Beginning and the End of the Western World: Genesis and Revelation in Western Humanities**

Genesis and Revelation examined for the biblical views of history and time in general and then an exploration of various interpretations of this material in Western thought. After a careful reading of the texts, students examine how themes in these biblical works have influenced art and architecture, literature, science, history, and culture. Advantageous for students in English, literature, history, and humanities as well as for individuals who want a non-doctrinal reading of selections from one of the most influential literary works in the West. Special fee. 4 cr.

**HUMA 640. Birth of Rock and Roll**

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. 4 cr.

**HUMA 645. American Culture and Communication Through the Life and Work of F. Scott Fitzgerald**

Investigates the development of 20th Century American culture and communication through the prism of F. Scott Fitzgerald. A major writer, social observer, employee of the advertising and film industries and prominent public figure, Fitzgerald's life and work provide a rich context for examining various dimensions of American culture and for exploring the nature of authorship as an aspect of communication. Topics covered include: modernity, the rise of mass media, consumerism, social class, imperialism, mechanization, gender, youth culture and generational identity. Prereq: One 400- or 500-level HUMA course. 4 cr.

**HUMA #660. Moral Dimensions of Economic Life**

Interdisciplinary examination of the moral implications of economic decisions, practices, issues, and events from ancient and modern perspectives. Topics include morality of trade, interest, profit, entrepreneurship, corporate takeovers, poverty, and wealth. Materials include philosophical and religious works (Aristotle, St. Thomas Aquinas), drama (Shakespeare), art and literature (Andy Warhol, Theodore Dreiser, F. Scott Fitzgerald), economics and history (Adam Smith, Jacob Viner), and films (Werner Herzog). 4 cr.

**HUMA 680. New England Culture: Roots and Branches**

Interdisciplinary examination of the richness, variety, and significance of selective periods of New England culture using literature, history, art and photographic images, music, artifacts, and oral histories. Subjects include Native American lore, European American contributions to regional culture, New England's literary tradition and influence on American culture. 4 cr.

**HUMA 795. Study of Creativity**

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. 4 cr.

**HUMA 796. Study of Contemporary Issues**

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. 4 cr.

---

**Nursing (NURS)**

(For program description, see page 138.)

**NURS 606. Seminar on Professional Nursing**

The role of health professionals from historical, social, political, economic, and technical viewpoints. Individual student examinations of values, attitudes and beliefs regarding professional role in relation to current nursing theory and practice. Open to RN students only by permission. Prereq: NURS 646. Special fee. Writing intensive. 7 cr.

**NURS 617. Nursing and Health Care Policy**

Examination of the nature and quality of health care delivery systems and health related social programs from a nursing perspective. Critical thinking skills and strategies needed by professional nurses to participate in health care planning and health care consumer advocacy for improved health services emphasized. Prereq: for RNs with at least one year of clinical experience or permission. 3 cr.

**NURS 622. Clinical Decision Making II**

Emphasizes the clinical decision making process in the nursing care of individuals, families, and communities across the lifespan and from diverse backgrounds. Builds upon the theoretical foundation developed in 619, Clinical Decision Making I. Students strengthen expertise in developing clinical judgments, interventions, and outcome evaluations. Skills predicated upon attending to and processing relevant information from clinical situations. Students apply knowledge from clinical nursing courses in a variety of ways. Prereq: second-semester junior Nursing majors; NURS 619; or RN student. 4 cr.

**NURS 645. Research**

Focuses on enhancing the student's ability to evaluate, read, comprehend, participate in, and apply research to the practice of nursing. RN students should take 645W. Pre- or Coreq: statistics. 645W is writing intensive. 4 cr.

**NURS 655. Community Health Nursing I: Population Health**

Explores role of community health nursing in health promotion, disease prevention, and long term care at the population level. Identifies population at risk and implications for aggregate level nursing care. Open to RN students only by permission. Prereq: NURS 606. Special fee. 3 cr.

**NURS 656. Community Health Nursing II: Individuals, Families, and Aggregates**

Explores a variety of contemporary topics relevant to community health and community health nursing



practice at the individual, family, and aggregate levels. Students have the opportunity to explore clinical focused roles of the community health in nurse in primary, secondary, and tertiary prevention of health problems in individuals, families, and aggregates at risk across the life span. Evolving roles and responsibilities of a variety of community health nurse specialists introduced. Students collaborate with multidisciplinary health professionals in planning, providing, and evaluating health services to these specific at risk populations. May be repeated. Prereq: registered nurses only; NURS 606; permission. Coreq: NURS 656C. Special fee. 2 cr.

### **NURS 656C. Community Health Nursing II/Clinical**

Experience in various clinical settings to provide opportunities for the development of the community health nursing role. Students collaborate with multidisciplinary health professionals in planning, providing, and evaluating health services to population at risk. Prereq: open to RN students only by permission. Coreq: NURS 656. 1 cr.

### **NURS 703. Nursing Leadership/Management and the Organizational Context**

Focuses on understanding ways in which the nurse can affect the organizations in which practice occurs and ways in which the organizations affect the individual's practice. Emphasizes issues of leadership; management; power; change; motivation; and interfacing of autonomous, dependent, and interdependent nursing functions in current and future health care delivery systems. Prereq: first semester senior nursing majors; NURS 622. 703W is writing intensive for RN students only. 4 cr.

### **NURS 719. Professional Nursing Practice: Transitions**

Provides opportunity for students to refine and integrate previously learned knowledge and skills into professional practice through a cooperatively designed learning experience/environment. Open to RN students only, by permission. Prereq: NURS 606, 655, 656, 656C. Special fee. 7 cr.

### **NURS 794. Special Topics**

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. 1-4 cr.

## **Psychology (PSYC)**

(For program description, see page 138.)

### **PSYC 401. Introduction to Psychology**

Psychology as a behavioral science; its theoretical and applied aspects. Content 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. 4 cr.

### **PSYC 402. Statistics in Psychology**

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; DS 420; EREC 525; HHS 540; MATH 639; MATH 644; SOC 502. 4 cr.

### **PSYC 502. Research Methods in Psychology**

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 402. Writing intensive. 4 cr.

### **PSYC 511. Sensation and Perception**

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 513. Cognitive Psychology**

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. 4 cr.

### **PSYC 521. Behavior Analysis**

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. 4 cr.

### **PSYC 531. Psychobiology**

Introduction to 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, 4 cr.

### **PSYC 553. Personality**

Major theories, methods of assessment, and research. Prereq: PSYC 401. 4 cr.

### **PSYC 561. Abnormal Behavior**

Causes, diagnosis, and treatment of abnormal behavior. Implications of varying theoretical viewpoints. Prereq: PSYC 401. 4 cr.

### **PSYC 571. The Great Psychologists**

Historical introduction to some of the great psychologists and their classic works. Group 8. 4 cr.

### **PSYC 581. Child Development**

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. 4 cr.

### **PSYC 582. Adult Development and Aging**

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. 4 cr.

### **PSYC 591. Special Topics in Psychology**

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.

### **PSYC 710. Visual Perception**

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; 502; 531; or permission. Writing intensive. 4 cr.

### **PSYC 711. Sensation and Perception**

Anatomy, physiology, psychophysics, and perceptual processes of the visual, auditory, gustatory, olfactory, and cutaneous senses. Topics include stimulus definition, psychophysics, sensory transduction, sensory and perceptual adaptation, neural coding of space, time, magnitude, and quality. Prereq: PSYC 402; 502; 531; or permission. Writing intensive. 4 cr.

### **PSYC 713. Psychology of Consciousness**

This course 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, Paiget, 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; 512; or 513; or permission. Writing intensive. 4 cr.

### **PSYC 741. Advanced Topics**

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 CI. A) Psychology as a Natural Science B) Cognition; C) Behavior Analysis; D) Biological/Sensory. Prereq: PSYC 402; 502; plus other prerequisites when offered; or permission. Writing intensive. 4 cr.

### **PSYC 758. Health Psychology**

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: 402; 502; or permission. Writing intensive. 4 cr.

### **PSYC 762. Counseling**

Theories of counseling; ethical considerations; professional and paraprofessional activities in a variety of work settings. Prereq: PSYC 402, 502; 553, or 561; or permission. Writing intensive. 4 cr.

### **PSYC 791. Advanced Topics**

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; 502; plus other prerequisites when offered; or permission. Writing intensive. 4 cr.



**PSYC 793. Internship**

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. Prereq: permission; PSYC major; PSYC 402; 502; 561; additional psychology courses desirable. 4-8 cr.

**PSYC 795. Independent Study**

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. 1-4 cr.

---

## Sign Language Interpreting (INTR)

(For program description, see page 139.)

**INTR 430. Introduction to Interpretation**

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 interlingual, process. Students engage in a research project related to course content. 4 cr.

**INTR 438. A Sociocultural Perspective on the Deaf Community**

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. 4 cr.

**INTR 439. Ethics and Professional Standards for Interpreters**

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. 4 cr.

**INTR 539. Comparative Linguistic Analysis for Interpreters**

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. 4 cr.

**INTR 540. Principles and Practices of Translation**

Introduction to theory and practice of translation. Students analyze pre-prepared interpretations and translations to discover how expert interpreters produce target language messages which are pragmatically equivalent to the source language messages. Particular attention paid to the form/meaning distinction. Students prepare translations from texts of their choosing. Pre- or Coreq: ASL 532. 4 cr.

**INTR 599. Special Topics**

Occasional offerings dependent on availability and interest of faculty. Barring duplication of subject, may be repeated for credit. 1 to 4 cr.

**INTR 630. Principles and Practices of Consecutive Interpretation**

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 producing a grammatically correct target language text which is equivalent to the source language text. Prereq: INTR 540. 4 cr.

**INTR 636. Principles of Simultaneous Interpretation**

Introduces the theory and practice of simultaneous interpretation. Particular attention is given to processes involved in translation from consecutive to simultaneous interpreting. The advantages and limitations of both types of interpreting are compared. Students apply theoretical information to the process of simultaneous interpreting. Students engage in a research project related to course content. Prereq: INTR 630. 4 cr.

**INTR 658. Deaf/Hearing Cultural Dynamics**

Deaf culture and mainstream American culture compared, contrasted, and analyzed from a variety of perspectives. Cultural interactions between deaf and hearing people are examined, and students will explore potential cultural conflicts between deaf and hearing people. This course is team taught by deaf and hearing instructors, and is conducted primarily in ASL. Students also engage in a research project related to course content. Prereq: ASL 532; INTR 438. 4 cr.

**INTR 732. Simultaneous Interpretation of Discussions, Speeches, and Reports**

Focuses on simultaneous interpretation of group discussions, speeches, and reports. Students 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. Writing intensive. 4 cr.

**INTR 734. Field Experience and Seminar I**

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. 4 cr.

**INTR 735. Field Experience and Seminar II**

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. 4 cr.

**INTR 798. Special Topics**

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. 4 cr.

---

## Independent Study (UMIS)

**UMIS 599. Independent Study**

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. 1 to 4 cr.

---

## Special Topics (UMST)

**UMST 500. Internship**

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. 1 to 4 cr.

**UMST 521. Tutor Development**

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. This course may be taken for 2- or 4-credits. Cannot be repeated. Prereq: permission of instructor is required. 2 or 4 cr.

**UMST 522. Tutor Development II**

This interdisciplinary course, team-taught by the director and assistant director of the learning center, expands and deepens undergraduate preparation for peer tutoring. Students study theories of adult development, learn additional approaches to tutoring in their discipline(s), and practice their tutoring and communication skills. Prereq: permission of instructor. Cannot be repeated. 2 or 4 cr.

**UMST 599. Special Topics**

Occasional offerings dependent on availability and interest of faculty, barring duplication of subject, may be repeated for credit. 1 to 4 cr.



# TRUSTEES AND ADMINISTRATIVE OFFICERS

---

## University System of New Hampshire Trustees

### Officers of the Board

#### *Chair of the Board*

Andrew E. Lietz  
Rye, N.H. (2001-2008)

#### *Vice Chair of the Board*

Edward C. Dupont  
Durham, N.H. (2003-2009)

#### *Secretary of the Board*

Edwinna C. Vanderzanden  
Rochester, N.H. (2001-2009)

### Members of the Board

The Honorable John H. Lynch  
*Governor of New Hampshire*  
Concord, N.H. (ex-officio)

Richard E. Ashooh  
Bedford, N.H. (2004-2007)

John D. Crosier  
Dover, N.H. (1998-2010)

George Epstein  
Conway, N.H. (2002-2010)

Helen F. Giles-Gee  
*President, Keene State University*  
Keene, N.H. (ex-officio)

Elizabeth K. Hoadley  
Concord, N.H. (2006-2008)

Karol A. LaCroix  
*President, Granite State College*  
Concord, N.H. (ex officio)

Peter F. Lamb  
Newmarket, N.H. (2003-2007)

John H. Lawson  
Amesbury, MA (2000-2008)

Joel W. Maiola  
Bow, N.H. (2004-2007)

John H. Moody  
Derry, N.H. (2003-2007)

J. Bonnie Newman  
*Interim President, University  
of New Hampshire*  
Durham, N.H. (ex-officio)

The Honorable Walter R. Peterson  
Peterborough, N.H. (1996-2008)

Stephen J. Reno, Ph.D.  
*Chancellor, University System*  
Durham, N.H. (ex officio)

Eugene A. Savage  
Barrington, N.H. (1999-2007)

Merle W. Schotanus  
Grantham, N.H. (1998-2009)

Anne M. Sprague  
Plainfield, N.H. (2005-2009)

Henry (Hank) B. Stebbins  
Manchester, N.H. (2006-2008)

Sara Jayne Steen  
*President, Plymouth State University*  
Plymouth, N.H. (ex-officio)

Elizabeth M. Tamposi  
Nashua, N.H. (2005-2009)

Stephen H. Taylor  
*Commissioner of Agriculture*  
Meriden, N.H. (ex officio)

Lyonel B. Tracy  
*Commissioner of Education*  
Portsmouth, N.H. (ex-officio)

### Student Trustees

Jeremy J. Foskitt  
*Plymouth State University*  
Plymouth, N.H. (2006-2007)

John Ouellette  
*Keene State College*  
Keene, N.H. (2006-2007)

---

## University Administration

*President*  
Mark W. Huddleston, Ph.D.

*Provost and Executive Vice President*  
Bruce L. Mallory, Ph.D.

*Vice President for Research*  
John D. Aber, Ph.D.

*Vice President for Finance and  
Administration*  
Dick Cannon, M.B.A.

*Vice President for Student and  
Academic Services*  
Mark Rubinstein, Ph.D.

*Vice President for University  
Communications and Marketing*  
Jennifer C. Murray, B.A.

### Academic Units

*Dean of the College of Liberal Arts*  
Marilyn Hoskin, Ph.D.

*Dean of the College of Engineering  
and Physical Sciences*  
Joseph Klewicki, Ph.D.

*Dean of the School of Health  
and Human Services*  
James F. McCarthy, Ph.D.

*Dean of the College of Life Sciences  
and Agriculture*  
William R. Trumble, Ph.D. (6/30/07)  
Thomas Brady, Ph.D. (7/1/07)  
*Dean Designate*

*Dean of the Whittemore School  
of Business and Economics*  
James Wible, Ph.D. (6/30/07)  
*Interim Dean*  
Daniel E. Innis, Ph.D. (7/1/07)  
*Dean Designate*

*Dean of the University of  
New Hampshire at Manchester*  
Kristin Woolever, Ph.D.

*Dean of the Graduate School*  
Harry J. Richards, Ph.D.

*Dean and Director of Cooperative  
Extension*  
John E. Pike, Ph.D.

*Director of the Thompson School  
of Applied Science*  
Regina Smick-Attisano, Ed.D.

*Dean of the Library*  
Claudia J. Morner, Ph.D.

---

Updated April, 2007



# FACULTY

*(This list is current as of January 1, 2007. The date of appointment appears in parenthesis following the faculty member's name.)*

**Aber, John D. (1987)**

Vice President for Research and Professor of Natural Resources and Earth, Oceans, and Space; B.S., Yale University, 1971; M.F.S., Yale School of Forestry, 1973; Ph.D., Yale University, 1976.

**Abrams, Eleanor D. (1994)**

Associate Professor of Education; B.S., University of Massachusetts at Amherst, 1983; Ph.D., Louisiana State University, 1993.

**Afolayan, Funso (1996)**

Associate Professor of History; B.A., University of Ife, Nigeria, 1980; M.A., Obafemi Awolowo University, Nigeria, 1984; Ph.D., *ibid.*, 1991.

**Alderman, Walter (2003)**

UNHM Lecturer of Business; B.S.B.A., Northeastern University, 1996; M.B.A., Bentley College, 2000.

**Alexander, Lee (2000)**

Research Associate Professor of Ocean Engineering; Ph.D., Yale University, 1986.

**Alibrio, Eugene P. (1999)**

Thompson School Associate Professor of Food Services Management; A.O.S., Culinary Institute of America, 1974; B.A., Rhode Island College, 1973; M.S., Rochester Institute of Technology, 1998.

**Amato-Wierda, Carmela C. (1995)**

Associate Professor of Materials Science; B.A., Harvard University, 1988; Ph.D., Rensselaer Polytechnic Institute, 1993.

**Ament, Lynette A. (2004)**

Associate Professor of Nursing; B.S.N., Loyola University, 1982; M.S.N., *ibid.*, 1987; Certificate, University of Illinois at Chicago, 1993; Ph.D., University of Wisconsin at Milwaukee, 1996.

**Ames, Raina S. (2003)**

Assistant Professor of Theatre and Dance; B.A., Western Illinois University, 1990; M.S.Ed., *ibid.*, 1999; M.F.A., Virginia Commonwealth University, 2002.

**Andrew, David S. (1976)**

Professor of Art History and the Humanities; B.A., University of Michigan at Ann Arbor, 1965; M.A., *ibid.*, 1968; Ph.D., Washington University, 1977.

**Andrew, Michael D. (1966)**

Professor of Education; B.S., Cornell University, 1960; A.M.T., Harvard University, 1961; Ed.D., *ibid.*, 1969.

**Annicchiarico, Michael J. (1991)**

Associate Professor of Music; B.M., University of New Hampshire, 1976; M.F.A., Brandeis University, 1981; Ph.D., *ibid.*, 1993.

**Ashwell, Thomas W. (2006)**

Lecturer in Kinesiology; B.A., University of Massachusetts at Amherst, 1988; M.A., *ibid.*, 1989; Ph.D., *ibid.*, 1994.

**+Babbitt, Kimberly J. (1996)**

Associate Professor of Wildlife Ecology; B.S., University of New Hampshire, 1984; M.S., Texas A & M University, 1988; Ph.D., University of Florida, 1996.

! Indicates part-time status

+ Indicates time devoted to Agricultural Experiment Station

\* Indicates time devoted to Cooperative Extension

**Baber, Kristine M. (1984)**

Associate Professor of Family Studies; B.A., Southern Illinois University at Carbondale, 1970; M.A., University of Connecticut, 1981; Ph.D., *ibid.*, 1983.

**Bachrach, David (2003)**

Assistant Professor of History; B.A., Carleton College, 1994; M.A., University of Notre Dame, 1997; Ph.D., *ibid.*, 2001.

**Bailey, Brigitte Gabcke (1987)**

Associate Professor of English; B.A., University of Virginia, 1977; A.M., Harvard University, 1980; Ph.D., *ibid.*, 1985.

**Baker, Alan L. (1972)**

Associate Professor of Plant Biology(Phycology); B.A., State University of New York at Binghamton, 1965; Ph.D., University of Minnesota, 1973.

**Baldwin, Kenneth C. (1982)**

Professor of Mechanical Engineering and Ocean Engineering and Director, Center for Ocean Engineering; B.S.M.E., Northeastern University, 1973; M.S.M.E., University of New Hampshire, 1977; Ph.D., University of Rhode Island, 1982.

**Ballestero, Thomas P. (1983)**

Associate Professor of Civil/Environmental Engineering; B.S.C.E., Pennsylvania State University, 1975; M.S.C.E., *ibid.*, 1977; Ph.D., Colorado State University, 1981.

**Balling, L. Christian (1967)**

Professor of Physics; B.A., Oberlin College, 1960; M.A., Harvard University, 1961; Ph.D., *ibid.*, 1965.

**Banach, Mary (1995)**

Associate Professor of Social Work; B.A., University of Wisconsin at Milwaukee, 1975; M.S.W., New York University, 1978; D.S.W., Columbia University, 1995.

**Banyard, Victoria L. (1995)**

Associate Professor of Psychology; B.A., Brown University, 1988; M.A., University of Michigan at Ann Arbor, 1990; Ph.D., *ibid.*, 1994.

**Barber, Heather (1993)**

Associate Professor of Kinesiology; B.S., St. Lawrence University, 1978; M.S., Pennsylvania State University, 1982; Ph.D., University of Oregon, 1992.

**Barcelona, Robert J. (2003)**

Associate Professor of Recreation Management and Policy; B.A., University of Mississippi, 1993; M.S., Indiana University at Bloomington, 1995; Ph.D., *ibid.*, 2001.

**Barkey, Dale P. (1987)**

Professor of Chemical/Environmental Engineering; B.A., Clark University, 1979; M.S., University of Cincinnati, 1982; Ph.D., University of California at Berkeley, 1987.

**Barnett, Carole K. (1994)**

Associate Professor of Management; B.A., University of Michigan at Ann Arbor, 1989; M.A., *ibid.*, 1992; Ph.D., *ibid.*, 1994.

**Barretto, Timothy E. (1986)**

Thompson School Associate Professor of Communications; B.A., University of New Hampshire, 1974; M.A., *ibid.*, 1982.

**Barrows, Clayton W. (2006)**

Professor of Hospitality Management; B.S., University of Massachusetts at Amherst, 1982; M.S., *ibid.*, 1987; Ed.D., *ibid.*, 1990.

**Bartlett, David S. (2001)**

Associate Director, Institute for the Study of Earth, Oceans, and Space, Director of N.H. Space Grant Program and Research Professor of Earth, Oceans, and Space; B.A., Amherst College, 1971; M.S., University of Delaware, 1976; Ph.D., *ibid.*, 1979.

**Bartos, Radim (1997)**

Associate Professor of Computer Science; M.S., Czech Technical University, 1987; M.S., University of Denver, 1996; Ph.D., *ibid.*, 1997.

**Basterra, Maria (2001)**

Assistant Professor of Mathematics; B.S., University of Texas at Austin, 1992; M.S., University of Chicago, 1993; Ph.D., *ibid.*, 1998.

**Bauer, Christopher F. (1981)**

Professor of 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. (2003)**

Assistant Professor of Economics; B.A., Drew University, 1996; M.A., Syracuse University, 1999; Ph.D., *ibid.*, 2001.

**Beane, Silas Robert, III (2003)**

Assistant Professor of Physics; Ph.D., University of Texas at Austin, 1994.

**Becker, Mimi Larsen (1993)**

Associate Professor of Natural Resources and Environmental Policy; B.A., Carleton College, 1957; M.A., Duke University, 1989; Ph.D., *ibid.*, 1996.

**Bedker, Patricia D. (1985)**

Associate Professor of Animal Science; B.S., University of Massachusetts at Amherst, 1974; M.S., University of New Hampshire, 1980; Ph.D., Cornell University, 1985.

**Belford, Mary Kathleen (1995)**

Lecturer in Spanish; B.S., California State College of Pennsylvania, 1970; M.A., West Virginia University, 1972.

**Bell, Brent (2005)**

Assistant Professor of Kinesiology; B.A., University of New Hampshire, 1989; M.S., New England College, 1996; Ph.D., University of New Hampshire, 2005.

**Bell, Erin S. (2003)**

Assistant Professor of Civil Engineering; B.S.C.E., Georgia Institute of Technology, 1996; M.S., Tufts University, 1998; Ph.D., *ibid.*, 2003.

**Beller-McKenna, Daniel (1998)**

Associate Professor of Music; B.A., Temple University, 1985; M.M., *ibid.*, 1988; M.A., Harvard University, 1991; Ph.D., *ibid.*, 1994.

**Bellinger, Christina (1991)**

Associate Professor, Librarian; B.A., Windham College, 1975; M.S.L.S., Simmons College, 1978; M.A., University of New Hampshire, 1997.

**Benassi, Victor A. (1982)**

Professor of Psychology; B.S., California State College, 1969; M.A., Queens College, City University of New York, 1973; Ph.D., City College of New York, 1974.

**Bennett, Albert B., Jr. (1967)**

Professor of Mathematics; B.S., Maine Maritime Academy, 1954; B.S., University of Maine at Orono, 1958; M.A., *ibid.*, 1959; Ed.D., University of Michigan at Ann Arbor, 1966.



**Benoit, Jean (1983)**

Professor of Civil Engineering; B.S., Ecole Polytechnique, University of Montreal, 1977; M.S., Stanford University, 1980; Ph.D., *ibid.*, 1983.

**Bérengruier, Nadine S. (1995)**

Associate Professor of French; D.E.U.G., Université De La Sorbonne, France, 1976; Licence, *ibid.*, 1980; M.A., University of Pittsburgh, 1983; Ph.D., Stanford University, 1988.

**Bernosky de Flores, Catherine H. (2006)**

Assistant Professor of Nursing; B.S.N., University of Connecticut, 1983; M.N., Louisiana State University Medical Center, 1990; Ph.D., University of Nebraska Medical Center, 2006.

**Bergeron, Linda Rene (1997)**

Associate Professor of Social Work; B.A., University of New Hampshire, 1973; M.S.W., University of Connecticut, 1981; Ph.D., Boston College, 1997.

**Bergeron, R. Daniel (1974)**

Professor of Computer Science; Sc.B., Brown University, 1966; Ph.D., *ibid.*, 1973.

**Berglund, Per (2003)**

Assistant Professor of Physics; B.Sc., University of Lund, Sweden, 1988; Ph.D., University of Texas at Austin, 1993.

**+Berlinsky, David L. (2001)**

Associate Professor of Zoology; B.S., Michigan State University, 1977; M.S., University of New Hampshire, 1981; Ph.D., University of Rhode Island, 1989.

**\*+Berndtson, William E. (1979)**

Professor of Animal Science; B.S., University of Connecticut, 1966; Ph.D., Cornell University, 1971.

**Bhattacharjee, Amitava (2003)**

Professor of Physics and Earth, Oceans, and Space; B.Sc., Indian Institute of Technology, India, 1975; M.S., University of Michigan at Ann Arbor, 1976; M.S.E., *ibid.*, 1978; M.A., Princeton University, 1979; Ph.D., *ibid.*, 1981.

**Birch, Francis S. (1972)**

Professor of Earth Sciences; A.B., Harvard University, 1958; M.S., University of Wisconsin at Madison, 1964; Ph.D., Princeton University, 1969.

**Birch, Thomas D. (1987)**

UNHM Associate Professor of Economics; B.A., Kenyon College, 1977; M.A., Indiana University at Bloomington, 1980; Ph.D., *ibid.*, 1983.

**Blum, Linda M. (1996)**

Associate Professor of Sociology and Women's Studies; B.A., University of California at Los Angeles, 1978; M.A., University of California at Berkeley, 1980; Ph.D., *ibid.*, 1987.

**+Bobilya, Dennis J. (1991)**

Associate Professor of Nutritional Sciences; B.S., Purdue University, 1982; M.S., Michigan State University, 1985; Ph.D., University of Missouri, 1989.

**Bochert, Mark L. (1997)**

Lecturer in Computer Science; B.A., University of Southern Maine, 1986; Ph.D., University of New Hampshire, 1995.

**Bolker, Jessica A. (1997)**

Associate Professor of Zoology; B.S., Yale University, 1986; Ph.D., University of California at Berkeley, 1993.

**Bolster, W. Jeffrey (1991)**

Associate Professor of History; B.A., Trinity College, 1976; M.A., Brown University, 1984; Ph.D., Johns Hopkins University, 1991.

**Bolton, Brian John (2006)**

Assistant Professor of Finance; B.B.A., Southern Methodist University, 1991; M.B.A., University of Texas at Austin, 1997; Ph.D., University of Colorado at Boulder, 2006.

**Borda, Jennifer L. (2002)**

Assistant Professor of Communication; B.A., Villanova University, 1995; M.A., Pennsylvania State University, 1998; Ph.D., *ibid.*, 2002.

**Bornstein, Steven P. (1989)**

Associate Professor of Communication Sciences and Disorders and Director of Audiology Clinic; B.S., Northeastern University, 1975; M.Ed., *ibid.*, 1977; Ph.D., University of Connecticut, 1981.

**Bothner, Wallace A. (1967)**

Professor of Geology; B.A., State University of New York at Binghamton, 1963; Ph.D., University of Wyoming, 1967.

**Boulton, Elizabeth P. (1988)**

Associate Professor of Animal Science; D.V.M., University of Georgia, 1980.

**Bowen, Heather (2005)**

Senior Lecturer of Recreation Management & Policy; B.S., Tufts University, 1991; M.B.A., Texas A & M University, 1997; Ph.D., *ibid.*, 2002.

**Boysen, Andrew A. (1998)**

Associate Professor of Music; B.M., University of Iowa, 1991; M.M., Northwestern University, 1993; D.M.A., Eastman School of Music, University of Rochester, 1998.

**Brady, Thomas E. (2007)**

Dean of the College of Life Sciences and Agriculture and Professor of Biochemistry and Molecular Biology; B.A., Beloit College, Wisconsin, 1967; M.S., Yale University, 1969; Ph.D., *ibid.*, 1972.

**Brabander, Richard M. (2006)**

Lecturer in History; B.A., Muhlenberg College, 1995; M.A., Villanova University, 1999; M.A., Brandeis University, 2003.

**Braswell, Bobby H. (2001)**

Research Assistant Professor of Earth, Oceans, and Space; B.S., University of Alabama, 1987; M.S., University of New Hampshire, 1990; Ph.D., *ibid.*, 1996.

**Brettschneider, Marla A. (1996)**

Associate Professor of Political Science and Women's Studies; B.A., State University of New York at Binghamton, 1986; M.A., New York University, 1988; Ph.D., *ibid.*, 1993.

**Brink, Judith A. (2001)**

Assistant Professor, Librarian; B.A., Ohio University, 1980; M.L.S., University of Pittsburgh, 1982; M.P.A., *ibid.*, 1991.

**Broido, Pamela E. (2003)**

Lecturer in Communication Sciences and Disorders; M.Ed., Western Maryland College, 1981.

**Bronstein, Arna Beth (1981)**

Associate Professor of Russian; B.A., Colgate University, 1975; M.A., University of Pennsylvania, 1979; Ph.D., *ibid.*, 1986.

**Broussard, Cynthia Anne (2000)**

Associate Professor of Social Work; B.A., University of Texas at Austin, 1974; M.S.W., Louisiana State University, 1977; Ph.D., Washington State University, 1986.

**Brown, Benjamin C. (1996)**

Associate Professor of Sociology; B.A., Earlham College, 1987; M.A., Emory University, 1992; Ph.D., *ibid.*, 1996.

**Brown, Deborah (1976)**

UNHM Professor of English; B.A., Wellesley College, 1963; M.Ed., University of New Hampshire, 1975; Ph.D., *ibid.*, 1976; M.F.A., Warren Wilson College, 1991.

**Brown, Roger S. (1974)**

Associate Professor of German and the Humanities; A.B., Emory University, 1966; M.A., University of Kansas, 1969; Ph.D., *ibid.*, 1971.

**Brown, Warren R. (1972)**

Associate Professor of Political Science and the Humanities; B.A., Willamette University, 1966; M.A., Claremont Graduate School and University Center, 1972; Ph.D., *ibid.*, 1976.

**Brunet, Stephen Andrew (1998)**

Associate Professor of Classics; B.A., Pomona College, 1976; M.A., University of Pittsburgh, 1978; Ph.D., University of Texas at Austin, 1998.

**Bryce, Julia G. (2003)**

Assistant Professor of Geochemistry; B.A., University of Virginia, 1993; Ph.D., University of California at Santa Barbara, 1998.

**Bstieler, Ludwig A. (2001)**

Assistant Professor of Marketing; M.B.A., University of Innsbruck, Austria, 1989; Ph.D., *ibid.*, 1997.

**Buckley, Louise A. (1994)**

Associate Professor, Librarian; B.A., St. John's University, 1979; M.A., *ibid.*, 1981; M.L.S., Rutgers University, 1992.

**Burdick, David M. (1992)**

Research Associate Professor of Marine Wetland Ecology and Restoration; B.S., Hobart College, 1977; Ph.D., Louisiana State University, 1988.

**+Burger, John F. (1977)**

Professor of Zoology; B.A., Grinnell College, 1962; M.Sc., University of Arizona, 1965; Ph.D., *ibid.*, 1971.

**Burke, Joanne D. (2004)**

Clinical Assistant Professor of Nutritional Sciences and Director of Dietetic Internship Program; B.S., University of Rhode Island, 1975; M.Ed., Tufts University, 1977; R.D., *ibid.*, 1977; Ph.D., University of New Hampshire, 2001.

**Byam, Martha A. (1992)**

Clinical Assistant Professor of Social Work; B.A., University of New Hampshire, 1975; M.S.W., University of Utah, 1979.

**+Byers, James E. (2001)**

Associate Professor of Zoology; B.S., Duke University, 1992; Ph.D., University of California at Santa Barbara, 1999.

**Bryant, Timothy (2005)**

Instructor of Communication Sciences and Disorders; B.S., Southern University, 1995; M.Ed., *ibid.*, 1998.

**Calarco, John R. (1981)**

Professor of Physics; B.S., George Washington University, 1963; M.S., University of Illinois at Urbana-Champaign, 1965; Ph.D., *ibid.*, 1969.

**Calculator, Stephen N. (1983)**

Professor of Communication Sciences and Disorders; B.A., State University of New York College at Oswego, 1974; M.S., State University of New York College at Geneseo, 1975; Ph.D., University of Wisconsin at Madison, 1980.

**Calder, Brian P. (2001)**

Research Assistant Professor of Electrical and Computer Engineering; M.Eng., Heriot-Watt University, 1994; Ph.D., *ibid.*, 1997.



- Campbell, Janet W. (1993)**  
Research Professor of Earth Sciences and Earth, Oceans, and Space; B.A., Mary Baldwin College, 1966; M.A., Vanderbilt University, 1968; Ph.D., Virginia Polytechnic Institute and State University, 1973.
- Cappiello, Joyce Dolphin (2004)**  
Assistant Professor of Nursing; B.S., Marycrest College, 1971; M.S., Boston College, 1977.
- Caramihalis, Charles A. (1984)**  
Thompson School Associate Professor of Food Services Management; B.S., University of New Hampshire, 1981; M.Oc.Ed., *ibid.*, 1987.
- +Carey, Gale B. (1989)**  
Professor of Nutritional Sciences; B.S., University of Massachusetts at Amherst, 1974; M.S., University of Wisconsin at Madison, 1976; Ph.D., University of California at Davis, 1981.
- Cariens, Benjamin S. (2002)**  
Assistant Professor of Art (Sculpture and Drawing); B.A., College of William and Mary, 1991; M.A., Harvard University, 1999; M.F.A., Boston University, 1993.
- Carney, John J. (1973)**  
Professor of Education; B.A., Seton Hall University, 1963; M.A., *ibid.*, 1967; Ph.D., Syracuse University, 1973.
- Carnicelli, Thomas A. (1967)**  
Professor of English; A.B., Princeton University, 1958; M.A., Harvard University, 1960; Ph.D., *ibid.*, 1966.
- Caron, Rosemary M. (2003)**  
Associate Professor of Health Management and Policy; B.A., Regis College, 1990; M.Ph., Boston University, 1997; Ph.D., Dartmouth College, 1995.
- Carr, Russell T. (1984)**  
Professor of Chemical/Environmental Engineering; B.S., Brigham Young University, 1980; M.S., University of Rochester, 1983; Ph.D., *ibid.*, 1984.
- Carr, Tom (2001)**  
Clinical Instructor of Recreation Management and Policy; B.S., University of New Hampshire, 1997.
- Carroll, Jennifer A. (2001)**  
Assistant Professor, Librarian; B.F.A., University of New Hampshire, 1991; M.S.L.S., Simmons College, 1999; M.B.A., University of New Hampshire, 2006.
- +Carroll, John E. (1974)**  
Professor of Environmental Conservation; A.B., Louisiana Technical University, 1966; M.A., Western Michigan University, 1968; Ph.D., Michigan State University, 1974.
- Carroll, Joshua (2006)**  
Assistant Professor of Recreation Management and Policy; B.S., Franklin Pierce College, 1994; M.S., Colorado State University, 2001; Ph.D., *ibid.*, 2005.
- Carter, Michael J. (1987)**  
Associate Professor of Electrical and Computer Engineering; B.S.E., University of Michigan at Ann Arbor, 1975; M.S., Stanford University, 1976; Ph.D., University of Michigan at Ann Arbor, 1984.
- Carter, Vernon Brooks (2003)**  
Assistant Professor of Social Work; Ph.D., Boston College, 2003.
- Celikkol, Barbaros (1969)**  
Professor of Mechanical Engineering and Ocean Engineering; B.A., Elon College, 1964; M.S., Stevens Institute of Technology, 1967; Ph.D., University of New Hampshire, 1972.
- Cerullo, John J. (1983)**  
UNHM Professor of History; B.A., University of Pennsylvania, 1971; M.A., *ibid.*, 1976; Ph.D., *ibid.*, 1980.
- Chagnon, Matthew C. (1980)**  
Thompson School Professor of Forest Technology; A.A.S., University of New Hampshire, 1979; B.S.F., *ibid.*, 1986; M.S.F., *ibid.*, 1988.
- Chamberlin, Kent A. (1985)**  
Professor of Electrical and Computer Engineering; B.S., Ohio University, 1974; M.S., *ibid.*, 1976; Ph.D., *ibid.*, 1982.
- +Chandler, Donald S. (1981)**  
Professor of Zoology and Curator; B.S., University of California at Davis, 1971; M.S., University of Arizona, 1973; Ph.D., Ohio State University, 1976.
- Chandran, Benjamin (2005)**  
Associate Professor of Physics and Earth, Oceans, & Space; B.A., Yale University, 1990; M.A., Princeton University, 1994; Ph.D., *ibid.*, 1997.
- Charpentier, Michel (1999)**  
Associate Professor of Computer Science; B.S., Institut National Polytechnique, 1990; M.S., *ibid.*, 1993; Ph.D., *ibid.*, 1997.
- Chasteen, N. Dennis (1972)**  
Professor of Chemistry; A.S., Flint Junior College, 1962; A.B., University of Michigan at Ann Arbor, 1965; M.S., University of Illinois at Urbana-Champaign, 1966; Ph.D., *ibid.*, 1969.
- Chaston, John M. (1989)**  
Associate Professor of Spanish; B.A., Brigham Young University, 1980; M.A., *ibid.*, 1982; Ph.D., University of Texas at Austin, 1987.
- Chavajay, J. Pablo (2002)**  
Assistant Professor of Psychology; Licenciada, Universidad de San Carlos, Spain, 1989; M.A., University of California at Santa Cruz, 1995; Ph.D., *ibid.*, 1999.
- Chavda, Roslyn (2006)**  
Assistant Professor of Political Science; B.A., Loyola University, 1991; M.P.A., Rutgers University, 1998; Ph.D., *ibid.*, 2004.
- Chen, Dora Wu (2005)**  
Assistant Professor of Family Studies and Associate Director, Child Study and Development Center; B.S., Michigan State University, 1981; M.S., Purdue University, 1982; Ph.D., University of Maryland, 1998.
- Chini, Gregory P. (1999)**  
Associate Professor of Mechanical Engineering; B.S., University of Virginia, 1993; M.S., Cornell University, 1996; Ph.D., *ibid.*, 1999.
- Chiu, Monica E. (1998)**  
Associate Professor of English; B.A., College of St. Catherine, 1987; M.A., University of Binghamton, England, 1992; Ph.D., Emory University, 1996.
- Christie, Drew (1981)**  
Associate Professor of Philosophy; B.A., Princeton University, 1974; M.S.L., Yale University Law School, 1978; Ph.D., Massachusetts Institute of Technology, 1983.
- Chu, Brian W.K. (2001)**  
Assistant Professor of Art (Painting/Drawing); B.F.A., Queens College, City University of New York, 1991; M.F.A., *ibid.*, 1993.
- Churchard, Timothy J. (1996)**  
Lecturer in Education; B.A., University of New Hampshire, 1967; M.Ed., Salem State College, 1980; C.A.G.S., University of New Hampshire, 1984.
- Churchill, Joan W. (1994)**  
Associate Professor of Theatre and Dance; B.A., Ripon College, 1966; M.F.A., Carnegie Mellon University, 1968.
- Cicccone, Stephen J. (2000)**  
Associate Professor of Finance; B.S., University of Florida, 1994; M.Acc., *ibid.*, 1994; Ph.D., Florida State University, 2000.
- Cioffi, Grant L. (1980)**  
Associate Professor of Education; A.B., Stanford University, 1973; Ph.D., University of Minnesota, 1980.
- Clairmont, Richard E. (1986)**  
Assistant Professor of Classics; B.A., University of New Hampshire, 1971; M.A., University of Virginia, 1973; Ph.D., Loyola University at Chicago, 1983.
- Clark, Mary Morris (1978)**  
Professor of English; B.A., University of New Hampshire, 1962; Ph.D., University of Massachusetts at Amherst, 1978.
- Claverie, Jerome P. (2002)**  
Research Associate Professor of Materials Science; Ph.D., California Institute of Technology, 1995.
- Clyde, William C. (1998)**  
Associate Professor of Geology; B.A., Princeton University, 1990; M.S., University of Michigan at Ann Arbor, 1993; Ph.D., *ibid.*, 1997.
- Cohen, Bert (1995)**  
Adjunct Faculty of Natural Resources; A.A., University of California at Los Angeles, 1957; B.A., *ibid.*, 1960; M.A., *ibid.*, 1961; M.F.A., *ibid.*, 1963.
- Cohn, Ellen S. (1978)**  
Professor of Psychology; B.A., Clark University, 1974; M.A., Temple University, 1976; Ph.D., *ibid.*, 1978.
- Cole, Denise A. (2007)**  
Clinical Assistant Professor of Nursing; A.A.S., Front Range Community College, 1982; B.S., State University of New York at New Paltz, 1992; M.S., State University of New York at Binghamton, 1994.
- Collins, John J. (1988)**  
Associate Professor of Biochemistry and Molecular Biology and Genetics; B.A., Colgate University, 1976; Ph.D., University of Wisconsin at Madison, 1984.
- Collins, Karen E. (2002)**  
Assistant Professor of Kinesiology; B.A., Princeton University, 1994; M.S., University of New Hampshire, 1998; Ph.D., University of North Carolina at Greensboro, 2002.
- Collins, Michael R. (1985)**  
Professor of Civil/Environmental Engineering; B.S.C.E., Virginia Polytechnic Institute and State University, 1970; M.S.S.E., *ibid.*, 1972; Ph.D., University of Arizona, 1985.
- Conaway, Carol B. (2003)**  
Assistant Professor of Communication and Women's Studies; A.B., Bryn Mawr College, 1970; S.M., Massachusetts Institute of Technology, 1981; Ph.D., *ibid.*, 1994.
- Condon, William A. (1976)**  
Professor of Animal Science; B.A., Merrimack College, 1965; M.S., University of Massachusetts at Amherst, 1968; Ph.D., *ibid.*, 1975.
- +Congalton, Russell G. (1991)**  
Professor of Remote Sensing & Geographic Information Systems; B.S., Cook College, Rutgers University, 1979; M.S., Virginia Polytechnic Institute and State University, 1981; Ph.D., *ibid.*, 1984.



**Connell, James (2002)**

Associate Professor of Physics and Earth, Oceans, and Space; B.A., Washington University, 1981; M.A., *ibid.*, 1983; Ph.D., *ibid.*, 1988.

**Connelly, Vincent J. (2004)**

Assistant Professor of Education; B.A., Loyola University, 1988; M.S.Ed., Johns Hopkins University, 1993; Ed.D., *ibid.*, 2004.

**Conroy, Andrew B. (1990)**

Thompson School Professor of Applied Animal Science; B.S., University of New Hampshire, 1986; M.S., Northwest Missouri State University, 1987; Ph.D., University of New Hampshire, 2001.

**Contarino, Michael (1993)**

UNHM Associate Professor of Political Science; B.A., Connecticut College, 1976; Ph.D., Harvard University, 1984.

**Conway, Karen Smith (1987)**

Professor of Economics; B.A., Eastern Illinois University, 1982; Ph.D., University of North Carolina at Chapel Hill, 1987.

**Cook, Jenni Carbaugh (2001)**

Assistant Professor of Music; D.M.A., University of Illinois at Urbana-Champaign, 2001.

**Cook, Raymond A. (1992)**

Associate Professor of Civil Engineering; A.B., University of Illinois at Urbana-Champaign, 1981; B.S.C.E., *ibid.*, 1981; M.S.C.E., Cornell University, 1991; Ph.D., *ibid.*, 1992.

**Cooper, Andrew B. (2002)**

Research Assistant Professor of the Ocean Process Analysis Laboratory, Institute for the Study of Earth, Oceans and Space, and Affiliate Assistant Professor of Natural Resources; B.A., Northwestern University, 1993; M.F.S., Yale University, 1995; Ph.D., University of Washington, 2000.

**Cooper, Barbara T. (1978)**

Professor of French; B.A., University of Wisconsin at Madison, 1966; M.A., *ibid.*, 1967; Ph.D., *ibid.*, 1974.

**Cooper, Vaughn (2004)**

Assistant Professor of Microbiology and Genetics; A.B., University of Massachusetts at Amherst, 1994; Ph.D., Michigan State University, 2000.

**Corriveau, Barry (2006)**

Assistant Clinical Professor of Animal Sciences; B.S., University of New Hampshire, 1974; M.Ed., *ibid.*, 1981.

**+Cote, Richard H. (1988)**

Professor of Biochemistry and Molecular Biology; B.S., Tufts University, 1974; Ph.D., University of Wisconsin at Madison, 1980.

**Couse, Leslie J. (2003)**

Assistant Professor of Education; B.S.Ed., State University of New York College at Cortland, 1980; M.S.Ed., State University of New York College at Brockport, 1985; M.S., Russell Sage College, 1993; Ph.D., Syracuse University, 2001.

**Craig, Patricia J. (1999)**

Clinical Assistant Professor of Recreation Management and Policy; B.S., University of Scranton, 1987; M.Ed., Temple University, 1997.

**Crepeau, Elizabeth L. (1981)**

Professor of Occupational Therapy; B.S., University of New Hampshire, 1966; M.A., *ibid.*, 1988; Ph.D., *ibid.*, 1994.

**Croce, Ronald V. (1986)**

Professor of Kinesiology; B.S., Brooklyn College, City University of New York, 1973; M.Ed., Temple University, 1975; Ph.D., University of New Mexico, 1983.

**Crosby, Peter R. (1987)**

Assistant Professor, Librarian; B.A., Keene State College, 1971; A.M.L.S., University of Michigan at Ann Arbor, 1974; A.A.S., University of New Hampshire, 1977.

**+Crow, Garrett E. (1975)**

Professor of Plant Biology (Systematics); A.B., Taylor University, 1965; M.S., Michigan State University, 1968; Ph.D., *ibid.*, 1974.

**Culligan, Kevin M. (2005)**

Research Assistant Professor of Biochemistry and Molecular Biology; B.S., University of California San Diego, 1994; Ph.D. Oregon State University, 2000.

**+Curran-Celentano, Joanne (1982)**

Associate Professor of Nutritional Sciences; B.S., Rutgers, The State University of New Jersey, 1976; M.S., *ibid.*, 1978; Ph.D., University of Illinois at Urbana-Champaign, 1982.

**Daley, Patrick J. (1988)**

Associate Professor of Communication; B.A., University of North Dakota, 1972; M.A., University of Iowa, 1975; Ph.D., *ibid.*, 1983.

**Daniel, Jo S. (2001)**

Assistant Professor of Civil Engineering; B.S., University of New Hampshire, 1994; M.S., North Carolina State University, 1996; Ph.D., *ibid.*, 2001.

**Davis, J. Matthew (1993)**

Associate Professor of Hydrogeology; B.S., Montana State University, 1987; M.S., New Mexico Institute of Mining and Technology, 1990; Ph.D., *ibid.*, 1994.

**+Davis, Thomas M. (1984)**

Professor of Plant Biology and Genetics; B.S., California Polytechnic State University, 1980; Ph.D., University of California at Davis, 1985.

**de Alba, Pedro A. (1977)**

Professor of Civil Engineering; C.E., National University of Mexico, 1965; M.E., University of California at Berkeley, 1969; Ph.D., *ibid.*, 1975.

**de la Rasilla, Carmen Garcia (2001)**

Assistant Professor of Spanish; Licenciatura, Universidad de Valladolid, Spain, 1985; Ph.D., *ibid.*, 1990; M.A., Johns Hopkins University, 1991; Ph.D., *ibid.*, 1996.

**de la Torre, Pilar (1989)**

Professor of Computer Science; B.S., University of Córdoba, Argentina, 1966; M.S., State University of New York at Buffalo, 1972; Ph.D., University of Maryland, 1987.

**De Moustier, Christian P. (2002)**

Professor of Electrical and Computer Engineering; M.S., University of California, 1981; Ph.D., *ibid.*, 1985.

**Deem, Melissa D. (2003)**

Associate Professor of Communication; B.A., Eastern Illinois University, 1987; M.A., Ohio University, 1988; Ph.D., University of Illinois at Urbana-Champaign, 1998.

**DeMitchell, Todd A. (1990)**

Professor of Education; B.A., LaVerne College, 1969; M.A.T., University of LaVerne, 1973; M.A., University of California at Davis, 1990; Ed.D., University of Southern California, 1979.

**+Denis, Clyde L. (1982)**

Professor of Biochemistry and Molecular Biology and Genetics; B.S., University of Illinois at Urbana-Champaign, 1973; M.S., University of Washington, 1976; Ph.D., *ibid.*, 1982.

**Denman, Margaret-Love G. (1992)**

Associate Professor of English; B.A., University of Mississippi, 1961; M.A., *ibid.*, 1967.

**DeTurk, Mark S. (1988)**

Associate Professor of Music; B.S.E., Princeton University, 1972; B.M., University of Wisconsin at Madison, 1975; M.M., Ohio State University, 1982; Ph.D., University of Wisconsin at Madison, 1988.

**deVries, Willem A. (1988)**

Professor of Philosophy; B.A., Haverford College, 1972; M.A., University of Pittsburgh, 1975; Ph.D., *ibid.*, 1981.

**Dibb, Jack E. (1991)**

Research Associate Professor of Earth Sciences and Earth, Oceans, and Space; B.S., University of Puget Sound, 1981; M.A., State University of New York at Binghamton, 1983; Ph.D., *ibid.*, 1988.

**Diefendorf, Jeffrey M. (1976)**

Professor of History; A.B., Stanford University, 1967; M.A., University of California at Berkeley, 1968; Ph.D., *ibid.*, 1975.

**Diller, Ann L. (1973)**

Professor of Education; B.A., Maryville College, 1960; M.A., Tulsa University, 1962; Ed.D., Harvard University, 1971.

**Dillon, Michele (2001)**

Professor of Sociology; B.Sc., University College, Dublin, 1980; M.Sc., *ibid.*, 1983; Ph.D., University of California at Berkeley, 1989.

**DiNapoli, Pamela P. (1999)**

Associate Professor of Nursing; B.S.N., Thomas Jefferson University of Allied Health, 1981; M.S.N., University of Pennsylvania, 1984; Ph.D., University of Massachusetts at Lowell, 2000.

**Dobbins, Lori E. (2002)**

Associate Professor of Music; B.A., San Jose State University, 1980; M.F.A., California Institute of the Arts, 1982; M.A., University of California at Berkeley, 1987; Ph.D., *ibid.*, 1990.

**Dolan, Elizabeth M. (1980)**

Associate Professor of Family Studies; B.A., University of California at Santa Barbara, 1971; M.A., Michigan State University, 1973; Ph.D., Virginia Polytechnic Institute and State University, 1980.

**Donahue, Ann E. (1998)**

UNHM Associate Professor, Library Science; B.A., University of New Hampshire, 1994; M.L.S., Southern Connecticut State University, 1995; D.L.M., Harvard University, 2005.

**Dorelli, John C. (2006)**

Research Assistant Professor of Physics and Earth, Oceans, and Space; B.Sc., Purdue University, 1993; Ph.D., University of Iowa, 1999.

**Dorfsman, Marco (1999)**

Associate Professor of Spanish; B.A., University of Illinois at Chicago, 1985; M.A., University of Wisconsin at Madison, 1988; Ph.D., *ibid.*, 1992.

**Dorsey, Kurk (1994)**

Associate Professor of History; B.A., Cornell University, 1987; M.A., Northwestern University, 1989; Ph.D., Yale University, 1994.

**Dorsey-Girard, Molly (2005)**

Assistant Professor of History; B.A., Stanford University, 1993; J.D., Harvard University, 1997; Ph.D., Yale University, 2002.

**Doucet, Lorraine D. (1987)**

UNHM Associate Professor of Biology/Lab Supervisor; B.A., Notre Dame College, 1961; M.S., Rivier College, 1968; Ph.D., Clark University, 1974.



**Drake, Allen D. (1983)**

Associate Professor of Electrical and Computer Engineering; B.S., University of Rhode Island, 1967; S.M., Massachusetts Institute of Technology, 1968; E.E., *ibid.*, 1969; A.M., Harvard University, 1971; Ph.D., Tufts University, 1978.

**Draper, Ralph W. (1985)**

Associate Professor of Mechanical Engineering Technology; B.S.M.E., University of Maine at Orono, 1965; M.S.M.E., *ibid.*, 1970.

**Drugan, Robert C. (1995)**

Associate Professor of Psychology; B.A., Susquehanna University, 1979; M.A., University of Colorado, 1981; Ph.D., *ibid.*, 1984.

**Drumheller, Grant (1986)**

Professor of Art (Painting/Drawing); B.F.A., Boston University, 1976; M.F.A., *ibid.*, 1978.

**Druskat, Vanessa Urch (2003)**

Associate Professor of Organizational Behavior and Management; B.A., Indiana University at Bloomington, 1982; M.A., Columbia University, 1988; Ph.D., Boston University, 1996.

**Drysdale, Alasdair D. (1976)**

Professor of Geography; B.A., University of Durham, England, 1971; M.A., *ibid.*, 1972; Ph.D., University of Michigan at Ann Arbor, 1977.

**Dubnick, Melvin (2005)**

Professor of Political Science and Director of MPA Program; B.S., Southern Colorado State College, 1968; M.A., University of Colorado; Ph.D., *ibid.*, 1974.

**+Ducey, Mark J. (1998)**

Associate Professor of Forest Biometrics and Management; B.A., Yale University, 1990; M.F.S., *ibid.*, 1992; Ph.D., *ibid.*, 1996.

**Duncan, Cynthia M. (2004)**

Professor of Health Management and Policy and Sociology; B.A., Stanford University, 1971; M.A., University of Kentucky, 1981; Ph.D., *ibid.*, 1985.

**Durant, Jennifer A. (2003)**

Research Assistant Professor of Biochemistry and Molecular Biology; Ph.D., University of New Hampshire (2003).

**Durant, Yvon G. (2000)**

Research Associate Professor of Materials Science; Ph.D., Université Claude Bernard, Lyon I, France, 1994.

**Durocher, Joseph F., Jr. (1986)**

Associate Professor of Hospitality Management; B.A., Columbia University, 1970; B.S., Cornell University, 1973; M.P.S., *ibid.*, 1974; Ph.D., *ibid.*, 1980.

**Dusek, R. Valentine (1966)**

Professor of Philosophy; B.A., Yale University, 1963; Ph.D., University of Texas at Austin, 1972.

**Eaton, Jeffrey A. (1994)**

Associate Clinical Professor of Nursing; Diploma, New Hampshire Hospital School of Nursing, 1978; B.S.N., Boston University, 1981; M.S.N., University of Lowell, 1989.

**Echt, Olof E. (1990)**

Professor of Physics; Diploma, Free University Berlin, Germany, 1975; Ph.D., University of Konstanz, Germany, 1979.

**Eckert, Robert T. (1978)**

Professor of Natural Resources; B.S., S.U.N.Y. College of Environmental Science and Forestry at Syracuse, 1967; M.S., *ibid.*, 1974; Ph.D., Ohio State University, 1978.

**Eckstein, Robert P. (2003)**

Lecturer in Psychology; B.S., City University of New York, 1998; M.S., Loyola University, 2000.

**Eggers, Walter F. (1989)**

Professor of English; B.A., Duke University, 1964; Ph.D., University of North Carolina at Chapel Hill, 1971.

**Eighmy, T. Taylor (1987)**

Research Professor of Civil/Environmental Engineering; B.S., Tufts University, 1980; M.S., University of New Hampshire, 1983; Ph.D., *ibid.*, 1986.

**Elmslie, Bruce T. (1989)**

Professor of Economics; B.S., Westminster College, Utah, 1983; Ph.D., University of Utah, 1988.

**Elson, Jean (2000)**

Lecturer in Sociology; B.A., Boston University, 1970; M.Ed., *ibid.*, 1971; M.A., Brandeis University, 1996; Ph.D., *ibid.*, 2000.

**Emison, Patricia A. (1987)**

Professor of Art History and the Humanities; B.A., Bryn Mawr College, 1978; M.A., Columbia University, 1980; M.Phil., *ibid.*, 1982; Ph.D., *ibid.*, 1985.

**England, Richard W. (1976)**

Professor of Economics and Natural Resources; B.A., Oakland University, 1965; M.A., University of Michigan at Ann Arbor, 1967; Ph.D., *ibid.*, 1974.

**Enoch, Jessica (2002)**

Assistant Professor of English; B.A., University of Iowa, 1996; M.A., Pennsylvania State University, 1999; Ph.D., *ibid.*, 2003.

**\*+Erickson, Peter S. (1997)**

Associate Professor of Animal Sciences and Extension Dairy Specialist; B.S., University of Massachusetts at Amherst, 1982; M.S., University of Maine at Orono, 1984; Ph.D., University of Illinois at Urbana-Champaign, 1989.

**Eshbach, Robert W. (1987)**

Associate Professor of Music; Certificate, University of Vienna, 1971; B.A., Yale University, 1973; M.M., New England Conservatory of Music, 1976.

**Etebari, Ahmad (1980)**

Professor of Finance; B.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. (2006)**

Clinical Assistant Professor of Nursing; B.S., University of New Hampshire, 2003; M.S., *ibid.*, 2005.

**Exline, Eleta (2005)**

Lecturer, Librarian; B.A., Smith College, 1995; M.S.L.S., Syracuse University, 2005; C.A.S., *ibid.*, 2005.

**+Fagerberg, Wayne R. (1984)**

Professor of Plant Biology (Cell Biology); B.S., University of Wyoming, 1967; M.S., University of South Florida, 1972; Ph.D., *ibid.*, 1975.

**Fahnestock, Mark A. (2002)**

Research Associate Professor of Earth, Oceans, and Space; B.S., University of Rochester, 1984; Ph.D., California Institute of Technology, 1991.

**Falvey, Janet Elizabeth (1984)**

Professor of Education; B.S., University of Maryland, 1977; M.A., University of New Hampshire, 1980; Ph.D., Pennsylvania State University, 1983.

**Fan, Stephen S.T. (1962)**

Professor of Chemical Engineering; B.S., Stanford University, 1957; M.S., *ibid.*, 1960; Ph.D., *ibid.*, 1962.

**Farag, Ihab H. (1976)**

Professor of Chemical/Environmental Engineering; B.S., Cairo University, Egypt, 1967; M.S., Massachusetts Institute of Technology, 1970; Sc.D., *ibid.*, 1976.

**Farrell, James M. (1988)**

Associate Professor of Communication; B.A., Bridgewater State College, 1979; M.A., University of Maine at Orono, 1982; Ph.D., University of Wisconsin at Madison, 1988.

**Farrugia, Charles J. (2002)**

Research Associate Professor of Physics and Earth, Oceans, and Space; B.S., University of Malta, 1966; M.S., University of Bern, Switzerland, 1978; Ph.D., *ibid.*, 1984.

**Feintuch, Burt H. (1988)**

Director of Center for the Humanities and Professor of English; B.A., Pennsylvania State University, 1971; M.A., University of Pennsylvania, 1972; Ph.D., *ibid.*, 1975.

**Feldman, David V. (1987)**

Associate Professor of Mathematics; B.A., Yale University, 1977; Ph.D., Wesleyan University, 1987.

**Fensom, Gail (1986)**

UNHM Assistant Professor of English; B.A., University of Rhode Island, 1970; M.A., Oklahoma State University, 1973.

**Ferber, Michael K. (1987)**

Professor of English and the Humanities; B.A., Swarthmore College, 1966; M.A., Harvard University, 1969; Ph.D., *ibid.*, 1975.

**Fernald, Peter S. (1966)**

Professor of Psychology; A.B., Amherst College, 1958; M.S., Springfield College, 1959; Ph.D., Purdue University, 1963.

**Fetzer, Susan J. (1996)**

Associate Professor of Nursing; B.A., University of Connecticut, 1973; B.S.N., *ibid.*, 1975; M.S.N., University of Alabama, 1980; M.B.A., New Hampshire College, 1990; Ph.D., Adelphi University, 1998.

**Finkel, Elizabeth A. (1999)**

Associate Professor of Education; B.S., George Washington University, 1981; M.S., University of Michigan at Ann Arbor, 1986; Ph.D., University of Wisconsin at Madison, 1993.

**Finkelhor, David (1992)**

Professor of Sociology; B.A., Harvard University, 1968; M.Ed., Harvard Graduate School of Education, 1971; Ph.D., University of New Hampshire, 1978.

**Fisher, Carol J. (1993)**

Lecturer in Theatre and Dance; B.A., University of South Florida, 1979; M.A., Arizona State University, 1981.

**Fisher, Lester A. (1968)**

Professor of English; B.A., University of Maine at Orono, 1966; M.A., University of New Hampshire, 1970; Ph.D., Brown University, 1976.

**Fitzpatrick, Ellen (1997)**

Professor of History; B.A., Hampshire College, 1974; Ph.D., Brandeis University, 1981.

**Flesher, Kenneth L. (1990)**

Thompson School Associate Professor of Civil Technology; B.S., University of Pittsburgh, 1981; M.S.C.E., University of New Hampshire, 1994.

**Fleszar, Aleksandra (1979)**

Associate Professor of Russian; B.A., State University of New York at Buffalo, 1969; M.A., Ohio State University, 1972; Ph.D., *ibid.*, 1984.



**Fletcher, E. Scott (1996)**

Associate Professor of Education; B.A., Ripon College, 1981; M.A., University of Wisconsin at Madison, 1985; Ph.D., University of Colorado, 1997.

**Flores, Catherine H. (2006)**

Assistant Professor of Nursing; B.S.N., University of Connecticut, 1983; M.N., Louisiana State University, 1990; Ph.D., University of Nebraska, 2006.

**Forbes, Terry (1987)**

Research Professor of Physics and Earth, Oceans and Space; B.S., Purdue University, 1968; M.S., University of Colorado, 1970; Ph.D., *ibid.*, 1978.

**Forest, David A. (1979)**

Associate Professor of Electrical Engineering Technology; B.S.E.E., Northeastern University, 1968; M.S.E.E., *ibid.*, 1974.

**Fortin, Jeffrey A. (2006)**

Lecturer in History; B.A., Boston University, 1996; M.A., University of New Hampshire, 2006; Ph.D., *ibid.*, 2006.

**Fowler, Benjamin P. (1987)**

Thompson School Associate Professor of Applied Business Management; B.A., Campus Free College, Boston, 1976; M.B.A., University of New Hampshire, 1978; C.A.G.S., *ibid.*, 1993.

**+Foxall, Thomas L. (1984)**

Professor of Animal Science; B.S., Lebanon Valley College, 1968; M.S., University of Bridgeport, 1977; Ph.D., University of New Hampshire, 1980.

**Fraas, Michael (2003)**

Assistant Professor of Communication Sciences and Disorders; Ph.D., University of Cincinnati, 2003.

**Frankel, Barbara R. (1988)**

Associate Professor of Family Studies and Director, Marriage and Family Therapy Program; B.A., University of Wisconsin at Madison, 1970; M.S.W., Kent State University, 1976; Ph.D., Purdue University, 1988.

**Frankfurter, David (1995)**

Professor of History and Religious Studies; B.A., Wesleyan University, 1983; M.T.S., Harvard Divinity School, 1986; M.A., Princeton University, 1988; Ph.D., *ibid.*, 1990.

**Freedman, Diane P. (1992)**

Professor of English; A.B., Cornell University, 1977; M.A.T., *ibid.*, 1978; M.A., Boston University, 1982; Ph.D., University of Washington, 1989.

**+Frey, Serita D. (2002)**

Associate Professor of Soil Microbial Ecology; B.S., University of Virginia, 1988; M.S., *ibid.*, 1992; Ph.D., Colorado State University, 1999.

**Frierson, Cathy A. (1991)**

Professor of History; B.A., University of North Carolina at Chapel Hill, 1975; A.M., Harvard University, 1978; Ph.D., *ibid.*, 1985.

**Fries, Mary K. (2002)**

Assistant Professor of Education; B.A., University of South Florida, 1979; M.Ed., *ibid.*, 1994; C.A.S., Harvard University, 1996; Ph.D., Boston College, 2002.

**Frolking, Stephen E. (1995)**

Research Associate Professor of Earth Sciences and Earth, Oceans, and Space; B.S., University of New Hampshire, 1980; M.S., *ibid.*, 1983; Ph.D., *ibid.*, 1993.

**Fuld, Kenneth (1979)**

Professor of Psychology; B.A., Northeastern University, 1971; Ph.D., Dartmouth College, 1976.

**Fussell, Barry K. (1987)**

Professor of Mechanical Engineering; B.S., Ohio State University, 1975; M.S., *ibid.*, 1980; Ph.D., *ibid.*, 1987.

**Galvin, Antoinette B. (1997)**

Research Associate Professor of Physics and Earth, Oceans, and Space; B.S., Purdue University, 1974; M.S., University of Maryland, 1976; Ph.D., *ibid.*, 1982.

**Gardner, Kevin H. (1999)**

Associate Professor of Civil/Environmental Engineering and Director, Environmental Research Group; B.S., Union College, 1989; M.S., Clarkson University, 1991; Ph.D., *ibid.*, 1996.

**Garland, Virginia E. (1988)**

Associate Professor of Education; B.A., University of South Carolina, 1969; M.A.T., Harvard University, 1972; Ph.D., University of Connecticut, 1981.

**Garofalo, Piero (1999)**

Associate Professor of Italian; B.A., University of Wisconsin at Madison, 1988; M.A., University of California at Berkeley, 1991; Ph.D., *ibid.*, 1996.

**Gass, Michael A. (1981)**

Professor of Kinesiology; B.A., St. Olaf College, 1978; M.A., University of Northern Colorado, 1979; Ph.D., University of Colorado, 1986.

**Ge, Liming (1998)**

Professor of Mathematics; B.S., Peking University, 1984; M.S., Qufu Normal University, 1987; Ph.D., University of Pennsylvania, 1995.

**Geeslin, William E. (1972)**

Associate Professor of Mathematics; B.A., University of Texas at Austin, 1967; M.S., Stanford University, 1970; Ph.D., *ibid.*, 1973.

**Gibson, Brett M. (2003)**

Assistant Professor of Psychology; B.A., University of Minnesota, 1991; M.S., Bucknell University, 1995; Ph.D., University of Nebraska at Lincoln, 1999.

**Gilbert, William A. (1994)**

Research Associate Professor of Biochemistry and Molecular Biology and Hamel Professor of Innovation and Technology; B.S., University of Florida, 1974; Ph.D., *ibid.*, 1978.

**Gildersleeve, Michael (1996)**

Instructor of Computer Science; B.A., Dartmouth College, 1989; M.S., University of New Hampshire, 2002.

**Gingras, Rene J. (1980)**

Thompson School Associate Professor of Horticultural Technology; B.S., University of New Hampshire, 1975; M.S., Virginia Polytechnic Institute and State University, 1977.

**+Giraud, Kelly L. (2001)**

Associate Professor of Community Development and Natural Resources; B.A., Ithaca College, 1992; M.S., West Virginia University, 1996; Ph.D., Colorado State University, 1999.

**Gittell, Ross J. (1993)**

Professor of Management; A.B., University of Chicago, 1979; M.B.A., University of California at Berkeley, 1981; Ph.D., Harvard University, 1989.

**Givan, Curtis V. (1990)**

Professor of Plant Biology (Plant Biochemistry); A.B., Stanford University, 1960; A.M., *ibid.*, 1961; Ph.D., Harvard University, 1968.

**Glass, Christopher W. (2005)**

Research Professor of Earth, Oceans, and Space; B.Sc., The Queens University, 1979; Ph.D., University of Glasgow, 1982.

**Gold, Janet (1995)**

Associate Professor of Spanish; B.A., Albertus Magnus College, 1971; M.A., Worcester State College, 1981; Ph.D., University of Massachusetts at Amherst, 1990.

**Goldberg, Michael D. (1991)**

Associate Professor of Economics; B.S., Lehigh University, 1980; Ph.D., New York University, 1991.

**Goldstein, Gary S. (1987)**

UNHM Associate Professor of Psychology; B.A., State University of New York at Buffalo, 1971; M.A., University of New Hampshire, 1976; Ph.D., *ibid.*, 1980.

**Golinski, Jan V. (1990)**

Professor of History and the Humanities; B.A., Cambridge University, England, 1979; Ph.D., The University of Leeds, England, 1983.

**Goodman, Raymond J., Jr. (1982)**

Professor of Hospitality Management; B.B.A., Southwest Texas State University, 1967; M.P.S., Cornell University, 1975; Ph.D., *ibid.*, 1979.

**Goodridge, Lyndon E. (1990)**

Professor of Environmental and Resource Economics; B.S., University of Georgia, 1965; M.S., *ibid.*, 1966; Ph.D., Purdue University, 1971.

**Goodspeed, Charles H. (1978)**

Associate Professor of Civil Engineering and Director, Transportation Research and Computation Group; B.S.C.E., Worcester Polytechnic Institute, 1967; M.S.C.E., *ibid.*, 1969; Ph.D., University of Cincinnati, 1972.

**Goodwin, Casey S. (2006)**

Lecturer in Music; B.M., University of New Hampshire, 2001; M.A., *ibid.*, 2006.

**Gottwald, Sheryl (1997)**

Assistant Professor of Communication Sciences and Disorders; B.S., Northeastern University, 1976; M.S., Pennsylvania State University, 1979; Ph.D., Temple University, 1990.

**Gould, Eliga H. (1993)**

Associate Professor of History; A.B., Princeton University, 1983; M.Sc., University of Edinburgh, 1987; M.A., Johns Hopkins University, 1988; Ph.D., *ibid.*, 1992.

**Graham, Karen J. (1987)**

Professor of Mathematics; B.A., State University of New York College at Cortland, 1975; M.A., State University of New York at Albany, 1978; M.S., University of New Hampshire, 1983; Ph.D., *ibid.*, 1986.

**Graham, Suzanne E. (2004)**

Assistant Professor of Education; B.S., Brown University, 1985; Ed.M., Harvard Graduate School of Education, 1990; Ed.D., *ibid.*, 1997.

**Gravink, Jill (1993)**

Clinical Assistant Professor of Recreation Management and Policy; B.S., University of New Hampshire, 1989.

**Greenberg, Arthur (2000)**

Professor of Chemistry; B.S., Fairleigh Dickinson University, 1967; A.M., Princeton University, 1971; Ph.D., *ibid.*, 1971.

**Greenslade, Margaret E. (2007)**

Assistant Professor of Chemistry; B.S., Bryn Mawr College, 1998; Ph.D., University of Pennsylvania, 2005.

**Grenier, Michelle A. (2000)**

Assistant Professor of Kinesiology; B.S., University of Massachusetts at Amherst, 1978; M.S., University of New Hampshire, 1995; Ph.D., *ibid.*, 2004.



- Gress, David L. (1974)**  
Professor of Civil Engineering; B.S., Purdue University, 1966; M.S., *ibid.*, 1968; Ph.D., *ibid.*, 1976.
- Griffin, Robert J. (2003)**  
Assistant Professor of Atmospheric Chemistry and Earth Sciences and Earth, Oceans, and Space; B.S., Tufts University, 1993; M.S., California Institute of Technology, 1997; Ph.D., *ibid.*, 2000.
- Grinberg, Eric L. (2003)**  
Professor of Mathematics; B.A., Cornell University, 1978; M.A., Harvard University, 1980; Ph.D., *ibid.*, 1983.
- Grinde, Roger B. (1993)**  
Associate Dean of the Whittemore School of Business and Economics and Associate Professor of Management Science; B.A., Carroll College, 1984; M.S., Oregon State University, 1986; Ph.D., Pennsylvania State University, 1993.
- Griswold, Lou Ann (1987)**  
Associate Professor of Occupational Therapy; B.S., Colorado State University, 1979; M.S., *ibid.*, 1986; Ph.D., University of New Hampshire, 1995.
- Grizzle, Raymond E. (2000)**  
Director of the Jackson Estuarine Laboratory and Research Associate Professor of Zoology; B.S., Florida State University, 1972; M.S., University of Central Florida, 1981; Ph.D., Rutgers University, 1988.
- Gross, Charles W. (1986)**  
Professor of Marketing; B.A., Michigan State University, 1965; M.B.A., *ibid.*, 1967; Ph.D., University of Colorado, 1972.
- Gross, Todd S. (1988)**  
Professor of Mechanical Engineering; B.S., Carnegie Mellon University, 1975; Ph.D., Northwestern University, 1981.
- Gullace, Nicoletta F. (1995)**  
Associate Professor of History; B.A., University of Rochester, 1983; M.A., University of California at Berkeley, 1987; Ph.D., *ibid.*, 1993.
- Gullion, Laurie (2002)**  
Clinical Assistant Professor of Kinesiology; B.A., University of Massachusetts at Amherst, 1976; M.S., *ibid.*, 1991.
- Gumprecht, Blake (2003)**  
Assistant Professor of Geography and American Studies; B.S., University of Kansas, 1983; M.L.I.S., Louisiana State University, 1990; M.A., California State University at Los Angeles, 1995; Ph.D., University of Oklahoma, 2000.
- Gupta, Nivedita R. (2002)**  
Assistant Professor of Chemical Engineering; B.Tech., Indian Institute of Technology at Bombay, India, 1993; Ph.D., Pennsylvania State University, 1999.
- Gwebu, Kholekile L. (2006)**  
Assistant Professor of Decision Sciences; B.S., National University of Lesotho, Lesotho, Africa, 1998; M.B.A., Kent State University, 2002; Ph.D., *ibid.*, 2006.
- Hackett, Robin (2001)**  
Assistant Professor of English; B.A., University of California at Davis, 1986; M.A., Sonoma State University, 1993; Ph.D., City University of New York, 2000.
- Hadwin, Donald W. (1977)**  
Professor of Mathematics; B.S., Michigan State University, 1967; M.A., University of Wisconsin at Madison, 1968; Ph.D., Indiana University at Bloomington, 1975.
- Hageman, Elizabeth H. (1971)**  
Professor of English; B.S., Simmons College, 1963; M.A., Columbia University, 1964; Ph.D., University of North Carolina at Chapel Hill, 1971.
- Hagner, David C. (2002)**  
Research Professor of Education; B.A., Fordham University, 1970; M.A., University of Cincinnati, 1974; M.S., Syracuse University, 1978; Ph.D., *ibid.*, 1980.
- +Halstead, John M. (1988)**  
Professor of Environmental and Resource Economics; B.A., University of Notre Dame, 1976; M.S., University of Massachusetts at Amherst, 1981; Ph.D., Virginia Polytechnic Institute and State University, 1989.
- Hamilton, Lawrence C. (1977)**  
Professor of Sociology; B.A., University of California at Santa Barbara, 1970; M.A., University of Colorado, 1974; Ph.D., *ibid.*, 1978.
- Hamilton, Sarah (2003)**  
Teacher/Trainer; B.S., University of New Hampshire, 1998.
- +Haney, James F. (1972)**  
Professor of Zoology; A.B., Miami University, Ohio, 1961; M.A., *ibid.*, 1963; Ph.D., University of Toronto, Canada, 1970.
- Hanson, M. Katharine (1990)**  
Thompson School Associate Professor of Social Science; B.A., Connecticut College, 1973; M.Ed., University of New Hampshire, 1976.
- Hardy, Stephen H. (1988)**  
Professor of Kinesiology and Affiliate Professor of History; A.B., Bowdoin College, 1970; M.S., University of Massachusetts at Amherst, 1976; M.A., *ibid.*, 1978; Ph.D., *ibid.*, 1980.
- Harkless, Gene E. (1985)**  
Associate Professor of Nursing; B.S.N., Duke University, 1976; M.S.N., Vanderbilt University, 1980; D.N.Sc., Boston University, 1991.
- Harper, James M.E. (2003)**  
Professor of Physics; B.A., Harvard University, 1968; Ph.D., Stanford University, 1975.
- Harper, Valerie L. (1989)**  
Associate Professor, Librarian; B.A., University of Rhode Island, 1980; M.S.L.S., Simmons College, 1982; M.A., Northeastern University, 1990.
- Harrigan, Jane T. (1985)**  
Professor of English; B.A., Boston College, 1975; M.A., Syracuse University, 1976.
- Harris, Benjamin (2001)**  
Professor of Psychology and Affiliate Professor of History; B.A., Hampshire College, 1971; M.A., Vanderbilt University, 1973; Ph.D., *ibid.*, 1975.
- Harris, J. William (1985)**  
Professor of History; B.S., Massachusetts Institute of Technology, 1968; M.A., Johns Hopkins University, 1976; Ph.D., *ibid.*, 1982.
- +Harris, Larry G. (1969)**  
Professor of Zoology; A.B., University of California at Berkeley, 1965; Ph.D., *ibid.*, 1970.
- Hart, John L. (1985)**  
Thompson School Professor of Horticultural Technology; A.B., New College, 1969; M.S., University of Michigan at Ann Arbor, 1974; M.L.A., University of Massachusetts at Amherst, 1994.
- Hartley, Troy (2004)**  
Research Assistant Professor of Resource Economics and Development; B.S., University of Vermont, 1986; M.A., George Mason College, 1992; Ph.D., University of Michigan at Ann Arbor, 1988.
- Haskins, Robert (2004)**  
Assistant Professor of Music; B.M., Johns Hopkins University, 1982; M.M., Guildhall School of Music and Drama, London, England, 1994; M.A., Eastman School of Music, University of Rochester, 1996; D.M.A., *ibid.*, 1997; Ph.D., *ibid.*, 2004.
- Hatcher, Philip J. (1986)**  
Professor of Computer Science; B.S., Purdue University, 1978; M.S., *ibid.*, 1979; Ph.D., Illinois Institute of Technology, 1985.
- Hayman, Melissa (2005)**  
Lecturer in Kinesiology; B.S., St. Lawrence University, 2003; M.S., University of New Hampshire, 2005.
- Hebert, David J. (1967)**  
Professor of Education; B.S., University of Maine at Orono, 1962; M.Ed., Duquesne University, 1964; Ph.D., Kent State University, 1967.
- Helms, Edgar J., Jr. (2003)**  
Clinical Professor of Health Management and Policy; B.A., Drew University, 1967; M.A., University of New Hampshire, 1971.
- Henn, Mark J. (1994)**  
Lecturer in Psychology; B.A., College of Wooster, 1983; M.A., University of New Hampshire, 1986; Ph.D., *ibid.*, 1993.
- Hennessey, Barry J. (1979)**  
Associate Professor, Librarian; B.A., University of Wisconsin at Madison, 1967; Ph.D., Harvard University, 1972; M.S.L.S., Simmons College, 1974.
- Henny, Karen N. (1996)**  
Instructor of Kinesiology; B.S., University of New Hampshire, 1988; A.S., N.H. Technical Institute, 1993.
- Henry, Robert M. (1980)**  
Associate Dean of the College of Engineering and Physical Sciences and Associate Professor of Civil Engineering; B.S.C.E., University of Pennsylvania, 1973; M.S.C.E., *ibid.*, 1974; Ph.D., *ibid.*, 1980.
- Hepp, Ellen M. (2004)**  
Lecturer in Computer Science; B.A., University of Delaware, 1977; M.S., University of New Hampshire, 1995.
- Herold, Marc W. (1975)**  
Associate Professor of Economics; B.S., Swiss Federal Polytechnic University, 1967; M.B.A., University of California at Berkeley, 1970; Ph.D., *ibid.*, 1979.
- Hersman, F. William (1984)**  
Professor of Physics; B.A., University of Cincinnati, 1977; B.S., *ibid.*, 1977; Ph.D., Massachusetts Institute of Technology, 1982.
- Hertz, Susan Margaret (1986)**  
Associate Professor of English; B.A., University of New Hampshire, 1978.
- Hibschweiler, Rita A. (1988)**  
Professor of Mathematics; B.A., State University of New York at Buffalo, 1979; M.A., *ibid.*, 1981; Ph.D., State University of New York at Albany, 1988.
- Hight, Eleanor M. (1992)**  
Associate Professor of Art History; B.A., Skidmore College, 1970; A.M., Harvard University, 1977; Ph.D., *ibid.*, 1986.
- Hiller, Marc D. (1979)**  
Associate Professor of Health Management and Policy; B.S., University of Pittsburgh, 1972; M.P.H., *ibid.*, 1974; Dr.P.H., *ibid.*, 1978.



**Hinson, Edward K. (1985)**

Associate Professor of Mathematics; B.S., University of Florida, 1979; M.S., Northwestern University, 1982; Ph.D., *ibid.*, 1985.

**Hludik, Francis C., Jr. (1988)**

Instructor of Electrical and Computer Engineering; B.S., University of New Hampshire, 1982; M.S., *ibid.*, 1985.

**Hobbie, Erik A. (2002)**

Research Assistant Professor of Complex Systems Research Center, Institute for the Study of Earth, Oceans and Space, and Affiliate Assistant Professor of Natural Resources; B.S., Yale University, 1987; M.S., University of Virginia, 1994; Ph.D., *ibid.*, 1997.

**Holcombe, Julee (2006)**

Assistant Professor of Photography and Digital Imaging; B.F.A., University of New Mexico, 1998; M.F.A., Maryland Institute College of Art, 2004.

**Holtrop, Maurik (2002)**

Assistant Professor of Physics; B.S., University of New Hampshire, 1987; Ph.D., Massachusetts Institute of Technology, 1995.

**Hood, Craig A. (1981)**

Professor of Art(Painting/Drawing); B.A., Pennsylvania State University, 1979; M.F.A., Indiana University at Bloomington, 1981.

**Hopkins, Lori (1997)**

Associate Professor of Spanish; B.A., University of Virginia, 1984; M.A., University of Wisconsin at Madison, 1987; Ph.D., *ibid.*, 1993.

**Hornstein, John F. (2001)**

Assistant Professor of Education; B.A., Colby College, 1973; M.Ed., Tufts University, 1976; Ed.D., Harvard University, 1999.

**Hoskin, Marilyn (1995)**

Dean of the College of Liberal Arts and Professor of Political Science; B.A., Mount Holyoke College, 1967; M.A., University of California at Los Angeles, 1968; Ph.D., *ibid.*, 1973.

**Houston, Barbara E. (1991)**

Professor of Education; B.A., University of Western Ontario, Canada, 1963; M.A., *ibid.*, 1966; Ph.D., *ibid.*, 1977.

**Howard, Theodore E. (1982)**

Professor of Forestry Economics and Director, Center for International Education; B.S., University of Maine at Orono, 1972; M.F., Duke University, 1974; Ph.D., Oregon State University, 1982.

**+Howell, W. Hunting (1980)**

Professor of Zoology; B.A., Otterbein College, 1969; M.S., University of Rhode Island, 1975; Ph.D., *ibid.*, 1980.

**Hoza, Jack E. (1994)**

UNHM Assistant Professor of Sign Language Interpretation and Director of Sign Language Interpretation Program; B.A., University of Northern Colorado, 1978; M.S., Western Maryland College, 1991; Ph.D., Boston University, 2001.

**+Hrabak, Estelle M. (1995)**

Associate Professor of Plant Biology and Genetics; B.S., Michigan State University, 1978; Ph.D., University of Wisconsin at Madison, 1992.

**Huang, Ju-Chin (1998)**

Associate Professor of Economics; B.S., National Taiwan University, Taipei, Republic of China, 1985; M.Sc., North Carolina State University, 1988; Ph.D., *ibid.*, 1994.

**Huff, Lloyd (2003)**

Research Professor of Ocean Engineering; Ph.D., University of Rhode Island, 1976.

**Hult, Kenneth T. (1990)**

Clinical Assistant Professor of Kinesiology; B.S., Fairleigh Dickinson University, 1966; M.S., University of New Hampshire, 1969; A.S., N.H. Technical Institute, 1988.

**Hurt, George C. (1998)**

Associate Professor of Natural Resources and Earth, Oceans, and Space; B.A., Middlebury College, 1990; M.S., University of Connecticut, 1992; M.A., Princeton University, 1994; Ph.D., *ibid.*, 1997.

**Innis, Daniel E. (2007)**

Dean of the Whittmore School of Business and Economics and Professor of Marketing; B.B.A., Ohio University, 1985; M.B.A., Miami University, 1986; Ph.D., The Ohio State University, 1991.

**Irani, Afshad J. (1998)**

Associate Professor of Accounting; B.A., College of Wooster, 1990; Ph.D., Pennsylvania State University, 1998.

**Isenberg, Philip A. (1991)**

Research Professor of Physics and Earth, Oceans, and Space; B.S., Massachusetts Institute of Technology, 1971; M.S., University of Chicago, 1974; Ph.D., *ibid.*, 1977.

**Jackson, R. Michael (2001)**

Lecturer in Communication; B.A., University of Arkansas, 1986; M.A., Central Washington University, 1993; Ph.D., Rensselaer Polytechnic Institute, 2002.

**Jacobs, Jennifer M. (2003)**

Associate Professor of Civil/Environmental Engineering; Sc.B., Brown University, 1987; M.S., Tufts University, 1993; Ph.D., Cornell University, 1997.

**Jacoby, A. Robb (1961)**

Professor of Mathematics; S.B., University of Chicago, 1941; S.M., *ibid.*, 1942; Ph.D., *ibid.*, 1946.

**Jacoby, Sally (1996)**

Associate Professor of Communication; B.S., Northwestern University, 1969; B.A., Tel Aviv University, 1978; M.A., University of Birmingham, England, 1986; Ph.D., University of California at Los Angeles, 1998.

**Jacques, Janine (2005)**

UNHM Lecturer of Computer Information Systems; B.A., Boston University, 1987; M.B.A., Bentley College, 1996; M.C.I.S., Boston University Metropolitan College, 1998.

**Jago, Barbara J. (1998)**

UNHM Associate Professor of Communication Arts; B.A., Smith College, 1981; M.A., University of South Florida, 1993; Ph.D., *ibid.*, 1998.

**Jahnke, Leland S. (1977)**

Professor of Plant Biology(Physiology); B.A., University of Minnesota, 1961; M.A., *ibid.*, 1966; M.S., *ibid.*, 1968; Ph.D., *ibid.*, 1973.

**Jambeck, Jenna R. (2005)**

Research Assistant Professor of Civil/ Environmental Engineering; B.S., University of Florida, 1996; M.E., *ibid.*, 1998; Ph.D., *ibid.*, 2004.

**James, Beverly (1987)**

Professor of Communication; B.A., Florida Atlantic University, 1979; Ph.D., University of Iowa, 1983.

**Janson-Sand, Colette H. (1981)**

Associate Professor of Nutritional Sciences and Director of Didactic Program in Dietetics; B.S., Bridgewater State College, 1967; M.S., University of New Hampshire, 1970; Ph.D., *ibid.*, 1980.

**Jerard, Robert (1988)**

Professor of Mechanical Engineering; B.S., University of Vermont, 1969; M.S., Massachusetts Institute of Technology, 1970; Ph.D., University of Utah, 1977.

**Johnson, Brian L. (1976)**

Instructor of Computer Science; B.S., University of New Hampshire, 1967; M.S., *ibid.*, 1979; Ph.D., *ibid.*, 1992.

**Johnson, Jeffrey B. (2004)**

Research Assistant Professor of Geology; B.S., Stanford University, 1995; M.S., *ibid.*, 1996; Ph.D., University of Washington, 2000.

**Johnson, Joel E. (2005)**

Assistant Professor of Geology; B.S., University of Minnesota, 1996; M.S., University of Illinois, 1998; Ph.D., Oregon State University, 2004.

**Johnson, Linda B. (1996)**

Associate Professor, Librarian; B.A., University of Arizona, 1971; M.L.S., *ibid.*, 1974; M.A., University of Santa Clara, 1988.

**Johnson, Nancy M. (1995)**

Thompson School Associate Professor of Applied Nutrition; B.S., University of New Hampshire, 1979; M.Ed., University of Maine at Orono, 1984.

**Johnson, Paul C. (1979)**

Associate Professor of Natural Resources; B.S., Emory and Henry College, 1968; Ph.D., Cornell University, 1974.

**Johnson, Richard P. (1985)**

Professor of Chemistry; B.S., Syracuse University, 1972; Ph.D., *ibid.*, 1976.

**Johnson, William C. (2006)**

Assistant Professor of Finance; B.S., Rensselaer Polytechnic Institute, 1995; M.B.A., State University of New York at Buffalo, 2002; Ph.D., Michigan State University, 2006.

**Jolley, Robert E. (1979)**

Associate Professor of Social Work; B.A., Allegheny College, 1966; M.S.S.S., Boston University School of Social Work, 1972; Ph.D., Smith College, 1983.

**Jones, Lisa M. (2001)**

Research Assistant Professor of Psychology; B.A., University of Virginia, 1992; M.A., University of Rhode Island, 1997; Ph.D., *ibid.*, 1999.

**Jones, Stephen H. (1989)**

Research Associate Professor of Natural Resources and Marine Science; B.S., University of Maine at Orono, 1976; M.S., University of Wisconsin at Madison, 1980; Ph.D., *ibid.*, 1983.

**Jorgensen, Cheryl M. (2002)**

Research Assistant Professor of Education; B.S., Springfield College, 1974; M.P.H., University of Pittsburgh, 1975; Ph.D., Pennsylvania State University, 1982.

**Kaen, Fred R. (1973)**

Professor of Finance; B.S., Lehigh University, 1963; M.B.A., University of Michigan at Ann Arbor, 1967; Ph.D., *ibid.*, 1972.

**Kalinowski, Michael F. (1980)**

Associate Professor of Family Studies; B.A., Bennington College, 1970; M.Ed., University of Massachusetts at Amherst, 1972; Ed.D., *ibid.*, 1976.



- Kantor, Glenda Kaufman (1990)**  
Research Associate Professor of Sociology; B.S., Temple University, 1971; M.S., University of Pennsylvania, 1975; Ph.D., University of Illinois at Chicago, 1984.
- Kaufman, Allen M. (1983)**  
Professor of Business Administration; B.A., University of Wisconsin at Madison, 1971; Ph.D., Rutgers, The State University of New Jersey, 1980.
- Kaufmann, Richard L. (1963)**  
Professor of Physics; B.S., California Institute of Technology, 1957; M.S., Yale University, 1958; Ph.D., *ibid.*, 1960.
- Kaye, David J. (1996)**  
Associate Professor of Theatre and Dance; B.S., Castleton State College, 1984; M.F.A., Brandeis University, 1993.
- Kayser, John R. (1969)**  
Associate Professor of Political Science; B.A., University of New Hampshire, 1962; M.A., Ohio State University, 1964; Ph.D., Claremont Graduate School and University Center, 1969.
- Kazura, Kerry (1995)**  
Associate Professor of Family Studies; B.A., University of Southern Maine, 1989; M.S., Auburn University, 1992; Ph.D., *ibid.*, 1995.
- Kelsey, Kim (2001)**  
Clinical Assistant Professor of Social Work; B.A., Fairleigh Dickinson University, 1976; M.S.W., University of Maryland, 1995.
- Kempster, William G. (1999)**  
Associate Professor of Music; B.A., University of New England, 1977; D.M.A., University of Alberta, Canada, 1999.
- Kenefick, Robert W. (1995)**  
Associate Professor of Kinesiology; B.S., Southern Connecticut State University, 1988; B.A., *ibid.*, 1988; M.S., *ibid.*, 1990; Ph.D., University of Connecticut, 1995.
- Kenick, Sarah (2006)**  
UNHM Assistant Professor of Chemistry; B.S., Worcester Polytechnic Institute, 1993; M.Ed., University of New Hampshire, 1999; Ph.D., *ibid.*, 2006.
- Kenney, Linda (2006)**  
Lecturer in Computer Science; B.A., University of Dayton, 1970; M.A., University of Pittsburgh, 1973; M.S., State University of New York, Albany, 1988.
- Kerns, Georgia M. (1991)**  
Associate Professor of Education; B.S.Ed., University of Delaware, 1969; M.Ed., *ibid.*, 1975; M.Ed., University of New Hampshire, 1983; Ph.D., University of Kansas, 1987.
- Kidwell, Mardi J. (2003)**  
Assistant Professor of Communication; B.A., University of California at Santa Cruz, 1986; M.A., University of California at Santa Barbara, 1998; Ph.D., *ibid.*, 2003.
- Kieronski, Roberta (1983)**  
UNHM Assistant Professor of Mathematics; B.S., Southern Connecticut State University, 1969; M.S., University of New Hampshire, 1971.
- Kies, Arlene P. (1992)**  
Lecturer in Music; B.M., New England Conservatory of Music, 1971; M.M., *ibid.*, 1974.
- Kies, Christopher (1979)**  
Professor of Music; B.M. Composition and B.M. Piano, New England Conservatory of Music, 1973; M.F.A., Brandeis University, 1977; Ph.D., *ibid.*, 1984.
- Kinghorn, Deborah A. (2000)**  
Associate Professor of Theatre and Dance; B.A., State University of New York College at Fredonia, 1976; M.F.A., Trinity College, 1981.
- Kinner, Nancy E. (1983)**  
Professor of Civil/Environmental Engineering; A.B., Cornell University, 1976; M.S.C.E., University of New Hampshire, 1980; Ph.D., *ibid.*, 1983.
- Kinsey, Brad Lee (2001)**  
Assistant Professor of Mechanical Engineering; B.S., University of Michigan at Ann Arbor, 1992; M.S., Northwestern University, 1998; Ph.D., *ibid.*, 2001.
- Kirkpatrick, John T. (1984)**  
Associate Dean of the College of Liberal Arts and Clinical Professor of Sociology; B.A., Colby College, 1977; M.A., University of New Hampshire, 1979; Ph.D., *ibid.*, 1983.
- Kistler, Lynn M. (2002)**  
Associate Professor of Physics and Earth, Oceans, and Space; B.S., Harvey Mudd College, 1981; Ph.D., University of Maryland, 1987.
- Klein, Anita S. (1985)**  
Associate Professor of Biochemistry and Molecular Biology and Genetics and Plant Biology; B.A., University of Rochester, 1975; Ph.D., Michigan State University, 1981.
- Klenotic, Jeffrey F. (1992)**  
UNHM Associate Professor of Communication Arts; B.A., Pennsylvania State University, 1985; M.A., University of Massachusetts at Amherst, 1988; Ph.D., *ibid.*, 1995.
- Klewicki, Joseph C. (2005)**  
Dean of the College of Engineering and Physical Sciences and Professor of Mechanical Engineering; B.S., Michigan State University, 1983; M.S., Georgia Institute of Technology, 1985; Ph.D., Michigan State University, 1989.
- Konzett, Delia C. (2003)**  
Assistant Professor of English; B.A., Georgia State University, 1989; M.A., University of Chicago, 1991; Ph.D., *ibid.*, 1997.
- Kovach, Adrienne I. (2004)**  
Research Assistant Professor of Natural Resources; Ph.D., North Carolina State University, 1998.
- Kraft, L. Gordon (1978)**  
Professor of Electrical and Computer Engineering; B.S., University of Pennsylvania, 1971; M.S., University of New Hampshire, 1973; Ph.D., University of Connecticut, 1977.
- Krasner, James (1989)**  
Associate Professor of English; B.A., Hampshire College, England, 1983; M.A., University of Pennsylvania, 1985; Ph.D., *ibid.*, 1989.
- Krysiak, Barbara H. (1995)**  
Associate Professor of Education; B.S., University of Lowell, 1958; M.Ed., Boston University, 1963; C.A.G.S., Northeastern University, 1974; Ed.D., *ibid.*, 1981.
- Krzanowski, James E. (1985)**  
Professor of Mechanical Engineering; B.E., Stevens Institute of Technology, 1978; M.S., Massachusetts Institute of Technology, 1981; Ph.D., *ibid.*, 1983.
- Kucharek, Harold (2006)**  
Research Associate Professor of Physics and Earth, Oceans, and Space; B.S., University of New Hampshire, 1983; Ph.D., Dartmouth College, 1997.
- Kun, Andrew L. (2000)**  
Associate Professor of Electrical and Computer Engineering; B.S., University of New Hampshire, 1992; M.S., *ibid.*, 1994; Ph.D., *ibid.*, 1997.
- Kuntz, Aline M. (1988)**  
Associate Professor of Political Science; B.A., California State University at Sacramento, 1978; M.A., Cornell University, 1981; Ph.D., *ibid.*, 1987.
- Kushner, Richard I. (1989)**  
Lecturer in Psychology; B.A., American International College, 1969; M.A., University of New Hampshire, 1972; Ph.D., *ibid.*, 1974.
- LaCourse, John R. (1980)**  
Professor of Electrical and Computer Engineering; B.A., University of Connecticut, 1974; M.S., *ibid.*, 1977; Ph.D., *ibid.*, 1981.
- Laflamme, David J. (2003)**  
Research Assistant Professor of Health Management and Policy; B.S., Plymouth State College, 1989; M.P.H., Tulane University, 1997; Ph.D., Johns Hopkins University, 2003.
- Laird, Jo (1979)**  
Associate Professor of Geology; B.A., University of California at San Diego, 1969; Ph.D., California Institute of Technology, 1977.
- Lane, David M. (1985)**  
Associate Professor, Librarian; B.A., University of New Hampshire, 1973; M.S., *ibid.*, 1974; M.L.S., Syracuse University, 1983; Ph.D., Duke University, 1979.
- Lane, Peter J. (2003)**  
Associate Professor of Strategic Management and Technology; B.A., University of New Hampshire, 1981; M.B.A., University of Massachusetts at Amherst, 1992; Ph.D., University of Connecticut, 1996.
- Lanier, Douglas M. (1990)**  
Associate Professor of English; B.A., Stetson University, 1977; M.A., Duke University, 1980; Ph.D., *ibid.*, 1988.
- Lannamann, John (1982)**  
Associate Professor of Communication; B.S., Babson College, 1977; M.A., University of Massachusetts at Amherst, 1980; Ph.D., *ibid.*, 1983.
- Laudano, Andrew P. (1986)**  
Associate Professor of Biochemistry and Molecular Biology; B.S., Southern Connecticut State University, 1974; M.S., *ibid.*, 1976; Ph.D. University of California at San Diego, 1981.
- Larkin, Edward T. (1986)**  
Associate Professor of German and the Humanities; B.A., St. Peter's College, 1971; M.A., St. John's University, 1980; M.A., University of Houston, 1980; Ph.D., University of Pennsylvania, 1986.
- +Laue, Thomas M. (1984)**  
Professor of Biochemistry and Molecular Biology; B.A., Johns Hopkins University, 1971; Ph.D., University of Connecticut, 1981.
- LeBlanc, Ronald D. (1988)**  
Professor of Russian and the Humanities; B.S., U.S. Air Force Academy, 1971; B.A., University of Washington, 1977; M.A., *ibid.*, 1979; Ph.D., *ibid.*, 1984.
- Lee, David (2001)**  
Clinical Instructor of Recreation Management and Policy; B.S., University of New Hampshire, 1996.
- Lee, Lina (1996)**  
Associate Professor of Spanish; B.A., Fu Jen Catholic University, 1979; M.A., North Texas State University, 1986; Ph.D., University of Texas at Austin, 1992.
- Lee, Martin A. (1984)**  
Professor of Physics and Earth, Oceans, and Space; B.S., Stanford University, 1966; Ph.D., University of Chicago, 1971.



**+Lee, Thomas D. (1980)**

Associate Professor of Forest Ecology; B.S., S.U.N.Y. College of Environmental Science and Forestry at Syracuse, 1973; M.S., University of Alberta, Canada, 1976; Ph.D., University of Illinois at Urbana-Champaign, 1980.

**Leichtman, Michelle D. (2002)**

Associate Professor of Psychology; B.A., Wellesley College, 1985; M.A., Cornell University, 1991; Ph.D., *ibid.*, 1994.

**Leighton, Martha (2005)**

A.D.N., New Hampshire Technical Institute, 1995; B.S., University of New Hampshire, 1999; M.S., *ibid.*, 2005.

**Lenharth, William H. (2000)**

Research Associate Professor of Electrical and Computer Engineering and Director, Research Computing Center; B.S., St. Louis University, 1969; M.S., University of New Hampshire, 1974; Ph.D., *ibid.*, 1978.

**Lerch, Barbara A. (1982)**

Associate Professor, Librarian; B.A., University of Maine at Orono, 1969; M.L.S., University of Pittsburgh, 1972; M.A., University of New Hampshire, 1982.

**Lessard, Mark R. (2004)**

Research Associate Professor of Physics and Earth, Oceans, and Space; Ph.D., Dartmouth College, 1997.

**Lesser, Michael (1993)**

Research Professor of Zoology; B.A., University of New Hampshire, 1983; M.S., *ibid.*, 1985; Ph.D., University of Maine at Orono, 1989.

**Leverly, Steven B. (2002)**

Associate Professor of Chemistry; B.A., Northeastern University, 1971; M.S., *ibid.*, 1976; Ph.D., University of Washington, 1993.

**Levesque, Pamela J. (2006)**

Clinical Assistant Professor of Nursing; B.S., University of New Hampshire, 1991; M.S., Northeastern University, 1995.

**Lewis, Frederick C. (1976)**

Associate Professor of Communication Sciences and Disorders; B.S., Southern Connecticut State University, 1963; M.S., *ibid.*, 1967; Ph.D., Ohio University, 1970.

**Lewis, James B. (1989)**

Associate Professor of Health Management and Policy; B.A., University of Pittsburgh, 1972; M.M., Northwestern University, 1974; Sc.D., Johns Hopkins University, 1985.

**Li, Changsheng (1992)**

Research Professor of Complex Systems Research Center, Institute for the Study of Earth, Oceans and Space, and Affiliate Professor of Natural Resources; B.S., University of Science and Technology of China, 1964; M.S., Chinese Academy of Sciences, 1981; Ph.D., University of Wisconsin and Chinese Academy of Science, 1988.

**Li, Jun (2004)**

Assistant Professor of Entrepreneurship and Strategy; B.A., Texas A & M University, 1995; M.A., *ibid.*, 1999; Ph.D., *ibid.*, 2004.

**Li, Linyuan (2002)**

Assistant Professor of Mathematics; B.S., Xuzhou Teachers College, 1985; M.S., East China Normal University, 1988; M.S., University of New Mexico, 1997; Ph.D., Michigan State University, 2002.

**Licciardi, Joseph M. (2002)**

Assistant Professor of Earth Sciences; B.A., State University of New York College at Geneseo, 1992; M.S., Oregon State University, 1995; Ph.D., *ibid.*, 2000.

**Lieber, Rochelle (1981)**

Professor of English; A.B., Vassar College, 1976; Ph.D., Massachusetts Institute of Technology, 1980.

**Limber, John E. (1971)**

Associate Professor of Psychology; B.S., University of Illinois at Urbana-Champaign, 1962; Ph.D., *ibid.*, 1969.

**Linder, Ernst (1987)**

Professor of Mathematics; ETH., University of Zurich, Switzerland, 1978; M.S., Union College, 1980; Ph.D., Pennsylvania State University, 1987.

**Lindsay, Bruce E. (1976)**

Professor of Environmental and Resource Economics; B.A., King's College, 1971; M.S., University of Massachusetts at Amherst, 1973; Ph.D., *ibid.*, 1976.

**+Litvaitis, John A. (1985)**

Professor of Wildlife Ecology; B.S., University of New Hampshire, 1975; M.S., Oklahoma State University, 1978; Ph.D., University of Maine at Orono, 1984.

**+Litvaitis, Marianne Klausner (1987)**

Associate Professor of Zoology; B.S., Clemson University, 1980; M.S., *ibid.*, 1982; Ph.D., University of Maine at Orono, 1985.

**Litvinenko, Yuri E. (2001)**

Research Assistant Professor of Physics and Earth, Oceans, and Space; Diploma, Moscow Institute of Physics and Technology, Russia, 1991; Ph.D., Moscow State University, Russia, 1994; Ph.D., University of New Hampshire, 1996.

**Lockwood, Mary Katherine (2001)**

Clinical Associate Professor of Zoology; B.S. Davidson College, 1977; M.S. The Pennsylvania State University, 1980; Ph.D., University of California, Los Angeles, 1989.

**Lofgren, Ingrid (2004)**

Lecturer in Nutritional Sciences; B.S., University of Connecticut, 1995; M.P.H., University of Massachusetts at Amherst, 2000; Ph.D., University of Connecticut, 2004.

**Lofty, John S. (1991)**

Professor of English; B.Ed., London University, England, 1969; M.A., Tennessee State University, 1978; Ph.D., University of Michigan at Ann Arbor, 1986.

**Lopate, Clifford (2002)**

Research Associate Professor of Physics and Earth, Oceans, and Space; B.A., Swarthmore College, 1982; S.M., University of Chicago, 1983; Ph.D., *ibid.*, 1989.

**Loranger, Ann L. (1992)**

Associate Professor of Education; A.B., Emmanuel College, 1962; M.Ed., University of New Hampshire, 1972; Ed.D., Boston University, 1988.

**Loranger, Paul M. (2004)**

Lecturer in Education; B.A., St. Anselm College, 1965; M.Ed., University of New Hampshire, 1971; C.A.G.S., *ibid.*, 1977.

**Lord, Susan A. (1995)**

Clinical Assistant Professor of Social Work; B.A., University of New Hampshire, 1975; M.S.W., Smith College, 1979; Ph.D., University of New Hampshire, 2004.

**+Loy, J. Brent (1967)**

Professor of Plant Biology and Genetics; B.S., Oklahoma State University, 1963; M.S., Colorado State University, 1965; Ph.D., *ibid.*, 1967.

**Lu, Yan (1996)**

Associate Professor of History; B.A., Fudan University, Shanghai, 1982; M.A., Michigan State University, 1989; M.A., Cornell University, 1993; Ph.D., *ibid.*, 1996.

**Lugalla, Joe L.P. (1994)**

Professor of Anthropology; B.A., University of Dar-es-Salaam, Tanzania, 1982; M.A., *ibid.*, 1983; Ph.D., Bremen University, Germany, 1990.

**Lukens, Nancy (1985)**

Professor of German and Women's Studies; B.A., College of Wooster, 1967; M.A., University of Chicago, 1968; Ph.D., *ibid.*, 1973.

**Lutcavage, Maryellen M. (2003)**

Research Associate Professor of Zoology; B.A., University of Pennsylvania, 1977; M.A., College of William and Mary, 1981; Ph.D., University of Miami, 1987.

**Lyon, Alynn J. (2003)**

Assistant Professor of Political Science; B.A., New Mexico State University, 1991; M.A., *ibid.*, 1993; Ph.D., University of South Carolina, 1999.

**Machanic, William (2006)**

Lecturer in Marketing; B.A., University of Vermont, 1968; M.B.A., Boston University, 1970.

**MacFarlane, Lisa Watt (1987)**

Director, University Honors Program and Professor of English; B.A., Princeton University, 1979; M.A., University of Michigan at Ann Arbor, 1982; Ph.D., *ibid.*, 1987.

**Macarty, Matthew J. (2006)**

Lecturer in Decision Sciences; B.S., University of New Hampshire, 1997; M.B.A., *ibid.*, 2002.

**MacLeod, Leslie N.H. (2004)**

Clinical Professor of Health Management and Policy; B.S., Boston College, 1964; M.Sc., Dartmouth College, 1997; Ed.D., University of Massachusetts at Amherst, 1984.

**Mair, Robert G. (1985)**

Professor of Psychology; A.B., Brown University, 1972; Sc.M., *ibid.*, 1975; Ph.D., *ibid.*, 1979.

**Malarte-Feldman, Claire-Lise (1984)**

Professor of French; Licence, Université Paul Valéry, France, 1971; Maîtrise, *ibid.*, 1972; Ph.D., University of California at Davis, 1984.

**Malley, James P. (1988)**

Professor of Civil/Environmental Engineering; B.S., Rutgers, The State University of New Jersey, 1980; B.S.C.E., University of Massachusetts at Amherst, 1987; M.S., *ibid.*, 1984; Ph.D., *ibid.*, 1988.

**Mallory, Bruce L. (1979)**

Provost and Executive Vice President for Academic Affairs and Professor of Education; B.A., Allegheny College, 1971; M.Ed., *ibid.*, 1972; Ph.D., George Peabody College, 1979.

**Malone, Mary (2006)**

Assistant Professor of Political Science; B.A., St. Joseph's College, 1995; M.A., University of Pittsburgh, 2000; Ph.D., *ibid.*, 2004.

**Manalo, Alberto B. (1986)**

Associate Dean of the College of Life Sciences and Agriculture and Associate Professor of Environmental and Resource Economics; B.S., University of the Philippines, 1976; M.S., Kansas State University, 1978; Ph.D., *ibid.*, 1986.



**Mangan, Michael A. (2004)**

Lecturer in Psychology; B.S., Oregon State University, 1985; M.A., University of New Hampshire, 1997; Ph.D., *ibid.*, 2000.

**Mao, Huiting (2001)**

Research Assistant Professor of Earth, Oceans, and Space; B.S., Nanjing University, P.R. China, 1989; M.S., Chinese Academy of Sciences, P.R. China, 1992; Ph.D., State University of New York at Albany, 1999.

**March, Thomas A. (1977)**

Thompson School Professor of Agricultural Mechanization; B.S., Cornell University, 1974; M.P.S., *ibid.*, 1977.

**Margolin, Aaron B. (1988)**

Professor of Microbiology; B.S., University of Arizona, 1982; Ph.D., *ibid.*, 1986.

**Marone, Adele (2005)**

Clinical Assistant Professor and Director, Medical Laboratory Science Program; M.S., University of New Hampshire, 2006.

**Marschner, Sarah Jane (1994)**

Lecturer in Theatre and Dance; B.A., University of Rhode Island, 1972; M.Ed., University of New Hampshire, 1978.

**Marti-Olivella, Jaume (2003)**

Assistant Professor of Spanish; Licenciatura, Universidad de Barcelona, Spain, 1976; M.A., University of Illinois at Urbana-Champaign, 1978; Ph.D., *ibid.*, 1988.

**Martin, Mary E. (1998)**

Research Assistant Professor, Complex Systems Research Center, Institute for the Study of Earth, Oceans and Space, and Affiliate Assistant Professor of Natural Resources; B.S., University of New Hampshire, 1988; Ph.D., *ibid.*, 1994.

**Marx, Jerry D. (1995)**

Associate Professor of Social Work; B.S., University of Southern Maine, 1981; M.S.W., Boston College, 1984; Ph.D., *ibid.*, 1994.

**Masucci, Peter F. (2005)**

Lecturer in Marketing; B.S., Boston University, 1970; M.B.A., Clark University, 1984.

**Mathews, Dennis E. (1998)**

Research Assistant Professor of Plant Biology; B.A., Indiana University at Bloomington, 1976; M.A., *ibid.*, 1982; Ph.D., University of Wisconsin at Madison, 1988.

**+Mathieson, Arthur C. (1965)**

Professor of Plant Biology (Phycology); B.A., University of California at Los Angeles, 1960; M.A., *ibid.*, 1961; Ph.D., University of British Columbia, 1965.

**Mathur, Virendra K. (1974)**

Professor of Chemical/Environmental Engineering; B.S., Banaras Hindu University, India, 1953; M.S., University of Missouri at Rolla, 1961; Ph.D., *ibid.*, 1970.

**Matsuda, Aya (2000)**

Assistant Professor of English; B.A., International Christian University, Tokyo, 1995; M.A., Purdue University, 1997; Ph.D., *ibid.*, 2000.

**Matsuda, Paul Kei (2001)**

Assistant Professor of English; B.A., University of Wisconsin at Stevens Point, 1993; M.A., Miami University, Ohio, 1995; Ph.D., Purdue University, 2000.

**Mautz, William W. (1969)**

Professor of Wildlife Ecology; B.S., University of Wisconsin at Eau Claire, 1965; M.S., Michigan State University, 1967; Ph.D., *ibid.*, 1969.

**Mayer, John D. (1989)**

Professor of Psychology; B.A., University of Michigan at Ann Arbor, 1975; M.A., Case Western Reserve University, 1979; Ph.D., *ibid.*, 1982.

**Mayer, Larry A. (2000)**

Professor of Earth Sciences and Ocean Engineering; B.S., University of Rhode Island, 1973; Ph.D., University of California at San Diego, 1979.

**Maynard, Nelson (2005)**

Research Professor of Physics and Earth, Oceans, and Space; B.S., University of New Hampshire, 1960; Ph.D., *ibid.*, 1966.

**Mayne, Howard R. (1985)**

Professor of Chemistry; B.Sc., University of Manchester, England, 1974; M.Sc., *ibid.*, 1975; Ph.D., *ibid.*, 1977.

**McBride, Mekeel (1979)**

Professor of English; B.A., Mills College, 1972.

**McCarthy, John F. (2002)**

UNHM Assistant Professor of Business; B.A., University of Massachusetts at Amherst, 1979; M.B.A., Babson College, 1981; D.B.A., Boston University, 2002.

**McCarthy, Patrick F. (2006)**

UNHM Lecturer of American Sign Language; B.A., Gallaudet University, 1979; M.S., Western Maryland College, 1985.

**McConnell, Mark L. (1991)**

Associate Professor of Physics and Earth, Oceans, and Space; B.S., Case Western Reserve University, 1980; Ph.D., University of New Hampshire, 1987.

**McConnell, Maryse Searls (1973)**

Associate Professor of Art (Ceramics, Sculpture and Drawing); B.F.A., Cleveland Institute of Art, 1971; M.F.A., Alfred University, 1973.

**McConnell, Michael (1976)**

Associate Professor of Art (Sculpture); B.F.A., Ohio University, 1970; M.F.A., *ibid.*, 1974.

**+McDowell, William H. (1989)**

Professor of Water Resources Management and Director, Water Resources Research Center; B.A., Amherst College, 1975; Ph.D., Cornell University, 1982.

**McGaughy, Jill A. (2004)**

Assistant Professor of Psychology; B.A., Bradley University, 1991; M.A., Ohio State University, 1993; Ph.D., *ibid.*, 1998.

**McGrath, Robert J. (2002)**

Assistant Professor of Health Management and Policy; B.S., University of New Hampshire, 1996; M.S., Harvard University, 1998; Ph.D., Brandeis University, 2006.

**McHugh, John Philip (1986)**

Associate Professor of Mechanical Engineering; B.S., University of Michigan at Ann Arbor, 1978; M.S., *ibid.*, 1981; Ph.D., *ibid.*, 1986.

**McHugh, Susan M. (2005)**

Clinical Assistant Professor of Nursing; B.S., Northeastern University, 1990; M.S., *ibid.*, 1995.

**McKibben, R. Bruce (2002)**

Research Professor of Physics and Earth, Oceans, and Space; B.A., Harvard University, 1965; M.S., University of Chicago, 1967; Ph.D., *ibid.*, 1972.

**McKinsey, Martin (2002)**

Assistant Professor of English; B.A., Hampshire College, 1977; M.A., Syracuse University, 1990; M.A., University of Virginia, 1998; Ph.D., *ibid.*, 2002.

**McMahon, Gregory (1988)**

Associate Professor of History; B.A., University of Kansas, 1975; M.A., Miami University, Ohio, 1979; Ph.D., Oriental Institute of the University of Chicago, 1988.

**McNamara, Paul (1990)**

Associate Professor of Philosophy; B.A., City College of New York, 1976; M.A., University of Missouri at Columbia, 1980; Ph.D., University of Massachusetts at Amherst, 1990.

**McNamee, Sheila (1982)**

Professor of Communication; B.A., University of Massachusetts at Amherst, 1978; M.A., *ibid.*, 1980; Ph.D., *ibid.*, 1982.

**McPhee, Pam (1987)**

Clinical Assistant Professor of Kinesiology; B.S., University of New Hampshire, 1983; M.S.W., University of Connecticut, 1987.

**McWilliam, Paula L. (2003)**

Clinical Assistant Professor of Nursing; B.S., Palm Beach Atlantic College, 1988; B.S.N., Barry College, 1991; Certificate, West Virginia University, 1995; M.S., State University of New York at Stony Brook, 1998; Ph.D., Nova Southeastern University.

**Mebert, Carolyn J. (1979)**

Associate Professor of Psychology; B.A., Boston University, 1974; Ph.D., *ibid.*, 1978.

**Melton, Jeffrey S. (2002)**

Research Assistant Professor of Civil Engineering; B.A., Hamilton College, 1991; M.S., University of New Hampshire, 1994; Ph.D., Dartmouth College, 1999.

**Meredith, Dawn C. (1987)**

Associate Professor of Physics; B.S., St. John's University, 1980; M.S., California Institute of Technology, 1984; Ph.D., *ibid.*, 1987.

**Merenda, Michael J. (1977)**

Professor of Strategic Management; B.A., B.S., Northeastern University, 1970; M.B.A., *ibid.*, 1972; Ph.D., University of Massachusetts at Amherst, 1978.

**Merrill, Susan C. (1996)**

Assistant Professor of Occupational Therapy; B.A., University of Pennsylvania, 1976; M.A., University of Southern California, 1983.

**Merton, Andrew H. (1972)**

Professor of English; B.A., University of New Hampshire, 1967.

**Messner, Richard A. (1985)**

Associate Professor of Electrical and Computer Engineering; B.S., Clarkson University, 1979; M.S., *ibid.*, 1981; Ph.D., *ibid.*, 1985.

**Mettauer, Patrice T. (2001)**

UNHM Assistant Professor of Communication Arts; B.A., State University of New York College at Oneonta, 1978; M.A., University of Rhode Island, 1980; Ph.D., University of Denver, 1991.

**Metten, Jeffrey S. (2002)**

Research Associate Professor of Civil/Environmental Engineering; B.A., Hamilton College, 1991; M.S., University of New Hampshire, 1994; Ph.D., Dartmouth College, 1999.

**Metting, Fred (1986)**

UNHM Associate Professor of English; B.S., Ohio University, 1968; M.A., Kent State University, 1971; Ph.D., University of New Hampshire, 1976.

**Meyrowitz, Joshua (1979)**

Professor of Communication; B.A., Queens College, City University of New York, 1972; M.A., *ibid.*, 1974; Ph.D., New York University, 1978.



**Middleton, Michael J. (2001)**

Associate Professor of Education; A.B., Harvard University, 1987; Ed.M., *ibid.*, 1990; Ph.D., University of Michigan at Ann Arbor, 2000.

**Miller, Glen P. (1995)**

Professor of Chemistry; B.Sc., Clarkson University, 1987; Ph.D., *ibid.*, 1991.

**Miller, John P. (1992)**

Associate Professor of Kinesiology; B.S., Brooklyn College, City University of New York, 1981; M.S., Long Island University, 1983; Ph.D., University of Maryland, 1992.

**Miller, Lisa C. (1993)**

Associate Professor of English; B.A., University of New Hampshire, 1980; M.A., *ibid.*, 1988.

**Miller, W. Thomas, III (1979)**

Professor of Electrical and Computer Engineering; B.S., Pennsylvania State University, 1972; M.S., *ibid.*, 1974; Ph.D., *ibid.*, 1977.

**+Minocha, Subhash C. (1974)**

Professor of Plant Biology and Genetics; B.Sc., Punjab University, India, 1968; M.Sc., *ibid.*, 1969; Ph.D., University of Washington, 1974.

**Mitchell, Kimberly J. (2001)**

Research Assistant Professor of Psychology; B.A., Rhode Island College, 1994; M.A., *ibid.*, 1996; Ph.D., University of Rhode Island, 1999.

**Möbius, Eberhard (1990)**

Professor of Physics and Earth, Oceans, and Space; Diploma, Ruhr-Universität, Bochum, Germany, 1973; Ph.D., *ibid.*, 1977.

**Mohr, Robert D. (2001)**

Assistant Professor of Economics; B.A., University of Virginia, 1993; M.S., University of Texas at Austin, 1998; Ph.D., *ibid.*, 2001.

**Moody, Thomas P. (2000)**

Research Assistant Professor of Biochemistry and Molecular Biology; B.S., University of New Hampshire, 1987; Ph.D., *ibid.*, 1994.

**Moore, Berrien, III (1969)**

Director of the Institute for the Study of Earth, Oceans, and Space and Associate Professor of Mathematics and Professor of Earth, Oceans, and Space; B.S., University of North Carolina at Chapel Hill, 1963; Ph.D., University of Virginia, 1969.

**Moore, Joseph J. (1975)**

Director of Preveterinary Programs and Director, New Hampshire State Veterinary Diagnostic Lab; B.S., Trinity College, 1966; V.M.D., University of Pennsylvania, 1970.

**Moore, Sean D. (2003)**

Assistant Professor of English; B.A., University of Massachusetts at Amherst, 1991; M.A., Georgetown University, 1995; Ph.D., Duke University, 2003.

**Moran, Catherine L. (2003)**

Lecturer in Sociology; B.A., University of New England, 1994; M.A., London School of Economics, 1996; Ph.D., University of New Hampshire, 2004.

**Morgan, Ann L. (1981)**

Associate Professor of Recreation Management and Policy; B.A., Hanover College, 1974; M.S., Pennsylvania State University, 1976; Re.D., Indiana University at Bloomington, 1981.

**Morin, Robert R. (1965)**

Assistant Professor, Librarian; B.A., University of New Hampshire, 1963; M.S.L.S., Simmons College, 1965.

**Morner, Claudia J. (1995)**

Professor, Librarian and Dean of the University Library; B.A., University of Minnesota, 1975; M.S.L.S., Simmons College, 1978; Ph.D., Boston College, 1993.

**Morrell, Jesse Stabile (2003)**

Lecturer in Nutritional Sciences; B.S., University of New Hampshire, 1999.

**+Morris, Douglas E. (1984)**

Associate Professor of Environmental and Resource Economics; B.S., Oklahoma State University, 1968; M.S., *ibid.*, 1969; Ph.D., *ibid.*, 1972.

**Morrison, John R. (2003)**

Research Assistant Professor of Earth, Oceans, and Space; B.Sc., University of Wales, England, 1993; Ph.D., *ibid.*, 1998.

**Moses, Jennifer K. (1990)**

Associate Professor of Art(Painting/Drawing); B.F.A., Temple University, 1984; M.F.A., Indiana University at Bloomington, 1988.

**Moses, Mark D. (2005)**

Assistant Professor of Family Studies; B.A., Northeastern University, 1971; Ph.D., Ohio University, 1979.

**Moyer, Judith N. (2001)**

Research Assistant Professor of History; B.A., University of New Hampshire, 1968; M.A., *ibid.*, 1994; Ph.D., *ibid.*, 2000.

**Moynihan, Mary M. (2002)**

Adjunct Associate Professor and Research Associate in Women's Studies; B.A., University of Akron, 1970; M.A., *ibid.*, 1974; Ph.D., Kent State University, 1979.

**Moynihan, Robert G. (1978)**

Thompson School Professor of Civil Technology; B.S.C.E., University of New Hampshire, 1968; M.B.A., University of Akron, 1973.

**Mulligan, Shelley E. (1996)**

Associate Professor of Occupational Therapy; M.S., Colorado State University, 1990; Ph.D., University of Washington, 1997.

**Murphy, Sharon B. (2005)**

Clinical Assistant Professor of Social Work; Ph.D., Arizona State University, 1998.

**Nagy, Naomi G. (1996)**

Associate Professor of English; B.A., Dartmouth College, 1989; Ph.D., University of Pennsylvania, 1996.

**Nardone, H. Gay (1982)**

Associate Professor of Theatre and Dance; B.F.A., Boston Conservatory of Music, 1974; M.F.A., *ibid.*, 1990.

**Naumes, William (1989)**

Associate Professor of Business Administration; B.S., Cornell University, 1967; M.B.A., *ibid.*, 1968; Ph.D., Stanford University, 1971.

**+Neefus, Christopher D. (1998)**

Associate Professor of Plant Biology and Biometrics; B.S., Boston University, 1971; Ph.D., University of New Hampshire, 1982.

**Nelson, Edwin (1994)**

Lecturer in Accounting; B.S., Boston University, 1959; M.B.A., Indiana University at Bloomington, 1960.

**Newkirk, Thomas R. (1977)**

Professor of English; B.A., Oberlin College, 1970; M.Ed., University of Massachusetts at Boston, 1973; Ph.D., University of Texas at Austin, 1977.

**Niland, Karen S. (2005)**

Lecturer of Nursing; B.S., University of New Hampshire, 1989; M.S., *ibid.*, 1999.

**Ng, Chung-Sang (2003)**

Research Assistant Professor of Physics and Earth, Oceans, and Space; B.S., Chinese University of Hong Kong, 1986; M.Phil., *ibid.*, 1988; Ph.D., Auburn University, 1994.

**Nikshych, Dmitri A. (2001)**

Associate Professor of Mathematics; B.S., National Technical University of Ukraine, 1994; M.S., *ibid.*, 1996; Ph.D., University of California at Los Angeles, 2001.

**Niman, Neil B. (1985)**

Associate Professor of Economics; B.A., University of California at Santa Cruz, 1978; M.A., University of California at Riverside, 1980; Ph.D., University of Texas at Austin, 1985.

**Nimmo, John W. (2003)**

Associate Professor of Family Studies and Executive Director, Child Study and Development Center; B.A., South Australian College of Education, 1985; M.A., Pacific Oaks College, 1992; Ed.D., University of Massachusetts at Amherst, 1992.

**Nisbet, Jan A. (1987)**

Associate Professor of Education and Director Institute on Disability; B.S., Simmons College, 1977; M.S., University of Wisconsin at Madison, 1980; Ph.D., *ibid.*, 1982.

**Niser, John C. (2006)**

Associate Professor of Hospitality Management; Ph.D., Anglia Polytechnic University, U.K., 1999.

**Nordgren, Eric A. (1964)**

Professor of Mathematics; B.Ch.E., Polytechnic Institute of Brooklyn, 1956; Ph.D., University of Michigan at Ann Arbor, 1964.

**O'Brien, Edward J. (1988)**

Professor of Psychology; B.A., Framingham State College, 1978; M.A., State University of New York College at Oswego, 1980; Ph.D., University of Massachusetts at Amherst, 1984.

**O'Sullivan, Jeanne H. (1997)**

Clinical Associate Professor of Communication Sciences and Disorders; B.A., Bates College, 1976; M.Ed., Northeastern University, 1979.

**Ogembo, Justus M. (2000)**

Associate Professor of Education and Anthropology; B.A., Kenyatta University, Nairobi Kenya, 1986; M.A., University of Nairobi, 1990; Ph.D., Harvard University, 1997.

**Oil, Karen R. (1995)**

Assistant Professor of Social Work; B.A., State University of New York at Stony Brook, 1980; M.S.W., Simmons College, 1986.

**Oja, Sharon N. (1977)**

Professor of Education; B.A., Macalester College, 1966; M.A., University of Minnesota, 1971; Ph.D., *ibid.*, 1978.

**Ollinger, Scott V. (2001)**

Assistant Professor of Natural Resources and Earth, Oceans, and Space; B.S., State University of New York College at Purchase, 1989; M.S., University of New Hampshire, 1992; Ph.D., *ibid.*, 2000.

**Onosko, Joseph J. (1989)**

Associate Professor of Education; B.S., University of Wisconsin at Madison, 1979; M.A., *ibid.*, 1984; Ph.D., *ibid.*, 1988.

**Orhon, Mehmet (2001)**

Lecturer in Mathematics; B.Sc., University of Newcastle, 1965; Ph.D., University of Wales, England, 1968.



- Orovich, Nicholas N. (1980)**  
Professor of Music; B.M., University of Wisconsin at Madison, 1976; M.M., New England Conservatory of Music, 1978.
- Ortmann, Martha H. (1992)**  
Assistant Professor of Social Work; B.S.Ed., University of Texas at Austin, 1969; M.S.W., Simmons College, 1980.
- Paglia, Alison K. (1998)**  
UNHM Associate Professor of Psychology; B.A., Texas Tech University, 1992; M.A., *ibid.*, 1994; Ph.D., *ibid.*, 1998.
- Park, Jeong Eun (2004)**  
Assistant Professor of Marketing; B.A., Korea University, Korea, 1993; M.S., *ibid.*, 1995; Ph.D., University of Alabama, 2004.
- Paterson, Susanne F. (1999)**  
UNHM Associate Professor of English; B.A., University of East Anglia, 1989; M.A., Purdue University, 1992; Ph.D., University of Texas at Austin, 2001.
- Peaper, Ruth E. (1997)**  
Clinical Associate Professor of Communication Sciences and Disorders and Director of Clinical Programs; B.A., Bellarmine College, 1970; M.Ed., University of Virginia, 1992.
- Pekarić-Nad, Neda M. (2002)**  
Lecturer in Electrical and Computer Engineering; B.S., University of Novi Sad, Yugoslavia, 1978; M.S., University of Belgrade, Yugoslavia, 1981; Ph.D., *ibid.*, 1984.
- Pekins, Peter J. (1987)**  
Professor of Wildlife Ecology; B.A., State University of New York College at Plattsburgh, 1976; M.S., University of New Hampshire, 1981; Ph.D., Utah State University, 1988.
- Pelletier, Donna M. (2004)**  
Clinical Assistant Professor of Nursing; B.S., University of Massachusetts at Amherst, 1977; M.S., University of New Hampshire, 2000.
- Pennock, Jonathan R. (2002)**  
Director of the UNH Marine Program and Associate Professor of Natural Resources; B.A., Earlham College, 1978; M.S., University of Delaware, 1981; Ph.D., *ibid.*, 1983.
- Peracchi, Kelly (2004)**  
Lecturer in Psychology; B.A., St. Anselm College, 1999; M.A., University of New Hampshire, 2001; Ph.D., *ibid.*, 2004.
- Perkins, Donna M. (2005)**  
Clinical Assistant Professor of Justice Studies; Ph.D., University of New Hampshire, 2003.
- Pescosolido, Anthony T. (2002)**  
Assistant Professor of Organizational Behavior and Management; B.A., Harvard University, 1991; Ph.D., Case Western Reserve University, 2001.
- Petty, Guy E. (1978)**  
Thompson School Professor of Civil Technology; B.Arch., Pennsylvania State University, 1969.
- Phan, Loan T. (2004)**  
Assistant Professor of Education; B.S., University of Washington, 1994; M.A., University of Nevada at Reno, 1998; Ph.D., *ibid.*, 2001.
- Pillemer, David B. (2003)**  
Professor of Psychology; B.A., University of Chicago, 1972; Ed.D., Harvard Graduate School of Education, 1979.
- Piotrowski, Thaddeus M. (1972)**  
UNHM Professor of Sociology; B.A., St. Francis College, 1963; M.A., University of Pennsylvania, 1969; Ph.D., *ibid.*, 1972.
- +Pistole, Thomas G. (1971)**  
Professor of Microbiology; Ph.B., Wayne State University, 1964; M.S., *ibid.*, 1966; Ph.D., University of Utah, 1969.
- Planalp, Roy P. (1987)**  
Associate Professor of Chemistry; S.B., Massachusetts Institute of Technology, 1979; Ph.D., University of California at Berkeley, 1983.
- Plante, Amy S. (1987)**  
Clinical Associate Professor of Communication Sciences and Disorders; B.S., University of New Hampshire, 1980; M.S., *ibid.*, 1982.
- Plante, Catherine A. (1991)**  
Associate Professor of Accounting; B.A., University of Cincinnati, 1983; M.A., University of Missouri at Columbia, 1985; Ph.D., Ohio State University, 1991; C.P.A..
- Pohl, Karsten (2000)**  
Associate Professor of Physics; Diploma, Ludwig-Maximilians University, Munich, Germany, 1990; Ph.D., University of Pennsylvania, 1997.
- Polasky, Janet L. (1981)**  
Professor of History and Women's Studies; B.A., Carleton College, 1973; M.A., Stanford University, 1974; Ph.D., *ibid.*, 1978.
- Pollard, James E. (1970)**  
Associate Professor of Plant Biology(Physiology); A.B., Duke University, 1965; Ph.D., University of Florida, 1969.
- Portnoy, Neil (2006)**  
Lecturer in Mathematics; B.A., University of Southern Maine, 1992; Ph.D., University of New Hampshire, 1998.
- Potter, Sharyn J. (1998)**  
Associate Professor of Sociology; B.S., State University of New York, 1989; M.P.H., Emory University, 1994; Ph.D., *ibid.*, 1998.
- Powell, Lou G. (1981)**  
Professor of Recreation Management and Policy; B.S., Winthrop College, 1972; M.S., Florida State University, 1975; Re.D., Indiana University at Bloomington, 1981.
- Poworoznek, Emily (1995)**  
Associate Professor, Librarian; B.A., State University of New York College at Purchase, 1982; M.S., University of New Hampshire, 1986; M.L.S., University of Rhode Island, 1993.
- Prelli, Lawrence J. (1985)**  
Professor of Communication and Affiliate Professor of Natural Resources; B.S., State University of New York College at Brockport, 1977; M.A., State University of New York at Albany, 1979; M.S., University of New Hampshire, 1998; Ph.D., Pennsylvania State University, 1984.
- Pringle, James M. (2001)**  
Assistant Professor of Oceanography and Earth, Oceans, and Space; B.A., Dartmouth College, 1990; Ph.D., Massachusetts Institute of Technology, 1998.
- Pszenny, Alexander A P (2001)**  
Research Associate Professor of Earth, Oceans, and Space; B.S., Boston College, 1974; M.S., *ibid.*, 1978; Ph.D., University of Rhode Island, 1987.
- Pugh, Robert M. (2004)**  
UNHM Senior Lecturer of English and Director of ESOL; B.A., Dartmouth College, 1966; M.A., William Paterson College, 1986; Ph.D., University of New Hampshire, 1994.
- Pugh, Stephen R. (1993)**  
UNHM Associate Professor of Biology; B.A., Ripon College, 1976; M.S., University of North Dakota, 1980; Ph.D., Boston University, 1989.
- Pulkkinen, Cindy (1999)**  
Lecturer in Spanish; B.A., University of Texas at Austin, 1983; M.A., University of New Hampshire, 1997.
- Quigley, Donald W. (1978)**  
Thompson School Professor of Forest Technology; B.S., University of New Hampshire, 1976; M.S., *ibid.*, 1978.
- Quin, Langdon C. (1998)**  
Associate Professor of Art(Painting/Drawing); B.A., Washington and Lee University, 1970; M.F.A., Yale University, 1976.
- Quinn, Timothy J. (1989)**  
Associate Professor of Kinesiology; B.S., Bradley University, 1979; M.A., Michigan State University, 1983; Ph.D., *ibid.*, 1987.
- Raeder, Joachim (2003)**  
Associate Professor of Physics and Earth, Oceans, and Space; Ph.D., University of Koln, 1989.
- Ramadanovic, Petar (1999)**  
Associate Professor of English; B.A., University of Belgrade, Yugoslavia, 1989; M.A., State University of New York at Binghamton, 1993; Ph.D., *ibid.*, 1997.
- Ramsey, David L. (1991)**  
Associate Professor of Theatre and Dance; B.P.A., Plymouth State College, 1972; M.F.A., University of North Carolina at Greensboro, 1977.
- Ramsey, Philip J. (1998)**  
Instructor of Mathematics; B.S., University of New Hampshire, 1974; M.S., Southern Illinois University at Carbondale, 1986; Ph.D., Virginia Polytechnic Institute and State University, 1989.
- Raymond, Daniel J. (1994)**  
Lecturer in Theatre and Dance; B.A., Beloit College, 1971; M.A.T., University of New Hampshire, 1980.
- Reardon, Lawrence C. (1993)**  
Associate Professor of Political Science; B.A., Johns Hopkins University, 1979; M.I.A., Columbia University, 1983; Ph.D., *ibid.*, 1991.
- Rebellion, Cesar (2002)**  
Assistant Professor of Sociology; B.A., Rice University, 1996; M.A., Emory University, 1999; Ph.D., *ibid.*, 2002.
- Reid, R. Daniel (1987)**  
Associate Professor of Operations Management; B.A., University of Maryland, 1976; M.B.A., Angelo State University, 1978; Ph.D., Ohio State University, 1987.
- Reilly, Ruth A. (1996)**  
Clinical Assistant Professor of Nutritional Sciences and Director of Nutrition M.S. Program; B.S., Florida State University, 1965; M.O.E., University of New Hampshire, 1989; Ph.D., *ibid.*, 1998.
- Reinertsen, Priscilla S. (1991)**  
Lecturer in Sociology; B.A., University of New Hampshire, 1965; M.A., *ibid.*, 1967; Ph.D., *ibid.*, 1975.
- Reinhold, Vernon N. (1998)**  
Research Professor of Biochemistry and Molecular Biology and Chemistry; B.S., University of New Hampshire, 1959; M.S., *ibid.*, 1961; Ph.D., University of Vermont, 1965.



- Resch, John P. (1972)**  
UNHM Professor of History; B.A., Denison University, 1962; M.A., Ohio State University, 1965; Ph.D., *ibid.*, 1969.
- Reyna, Stephen P. (1973)**  
Professor of Anthropology; A.B., Columbia College, 1965; Ph.D., Columbia University, 1972.
- Rhiel, Mary E. (1986)**  
Associate Professor of German and Women's Studies; B.S., University of Wisconsin at River Falls, 1971; M.A., University of Wisconsin at Madison, 1978; Ph.D., *ibid.*, 1988.
- Richards, Harry J. (1979)**  
Dean of the Graduate School and Associate Professor of Education; B.A., State University of New York at Potsdam, 1968; M.S., State University of New York at Albany, 1969; Ph.D., Florida State University, 1978.
- Richman, David M. (1988)**  
Professor of Theatre and Dance; B.A., Harvard University, 1972; Ph.D., Stanford University, 1978.
- Ripley, David K. (1992)**  
Associate Professor of Music; A.B., Harvard University, 1970; M.M., New England Conservatory of Music, 1977.
- Robb, Judith A. (1982)**  
Associate Professor of Education; A.B., Connecticut College, 1967; M.A., University of South Florida, 1969; Ed.D., University of Rochester, 1982.
- \*Roberts, John M. (1979)**  
Associate Professor of Plant Biology(Turf) and Extension Specialist, Turf; B.S., Washington State University, 1974; M.S., Purdue University, 1975; Ph.D., *ibid.*, 1977.
- Robertson, Charles L. (1978)**  
Professor of Theatre and Dance and Director of Dance; B.F.A., International University School of Performing Arts, 1969; M.F.A., *ibid.*, 1971.
- Robertson, Mary Adamo (2002)**  
Instructor of Community Development; B.B., Western Illinois University, 1982; MURP, University of Illinois at Urbana-Champaign, 1989.
- +Robertson, Robert A. (1993)**  
Associate Professor of Tourism Planning and Development; B.A., Western Illinois University, 1981; M.A., Oregon State University, 1984; Ph.D., University of Illinois at Urbana-Champaign, 1990.
- Rock, Barrett N. (1987)**  
Professor of Natural Resources and Earth, Oceans and Space; B.S., University of Vermont, 1966; M.S., University of Maryland, 1970; Ph.D., *ibid.*, 1972.
- Rodgers, Frank G. (1985)**  
Professor of Microbiology; B.Sc., University of Surrey, England, 1969; M.I.Biol., Institute of Biology, London, England, 1977; Ph.D., University of Surrey, England, 1977.
- Rodriguez, Julia E. (1999)**  
Associate Professor of History and Women's Studies; B.A., New School for Social Research, 1989; M.A., *ibid.*, 1992; M.Phil., Columbia University, 1995; Ph.D., *ibid.*, 1999.
- Rogers, Juliette M. (1990)**  
Associate Professor of French; B.A., Oberlin College, 1983; Ph.D., Duke University, 1990.
- Rosenberg, Andrew A. (2000)**  
Professor of Natural Resources Policy and Management and Earth, Oceans, and Space; B.S., University of Massachusetts at Amherst, 1978; M.S., Oregon State University, 1980; Ph.D., Dalhousie University, Canada, 1984.
- Ross, William E. (1990)**  
Professor, Librarian; B.A., East Carolina University, 1977; M.A., University of Maryland, 1980; M.L.S., *ibid.*, 1980; Ph.D., American University, 1992.
- Roudabush, Alice D. (2002)**  
Veterinary Pathologist; B.S., Virginia Tech, 1981.
- Royce, Peter W. (1983)**  
Instructor of Quantitative Methods; B.S., University of New Hampshire, 1971; M.B.A., *ibid.*, 1983.
- Rucinska, Barbara Dziurla (1999)**  
Senior Lecturer of Electrical and Computer Engineering; M.S., Technical University of Gdansk, Poland, 1971; Ph.D., University of New Hampshire, 1991.
- Rucinski, Andrzej (1984)**  
Professor of Electrical and Computer Engineering and Earth, Oceans, and Space; M.S., Technical University of Odessa, Ukraine, 1973; Ph.D., Technical University of Gdansk, Poland, 1982.
- Rush, Lee P. (1996)**  
Clinical Assistant Professor of Social Work; B.S.W., Syracuse University, 1980; M.S.W., Boston College, 1982.
- Russell, Robert D. (1975)**  
Associate Professor of Computer Science; B.A., Yale University, 1965; M.S., Stanford University, 1967; Ph.D., *ibid.*, 1972.
- Ryan, James M. (1984)**  
Professor of Physics and Earth, Oceans, and Space; B.S., University of California at Riverside, 1970; M.S., University of California at San Diego, 1974; Ph.D., University of California at Riverside, 1978.
- Saavedra, Richard (2005)**  
Associate Professor of Organizational Behavior; B.S., University of Texas at El Paso, 1977; M.A., *ibid.*, 1980; Ph.D., University of Michigan at Ann Arbor, 1987.
- Sable, Janet R. (1989)**  
Professor of Recreation Management and Policy; B.A., University of Michigan at Ann Arbor, 1975; M.S., Northeastern University, 1981; Ed.D., Boston University, 1988.
- Safford, Thomas G. (2007)**  
Assistant Professor of Sociology; B.A., University of North Carolina, 1989; M.A., Stanford University, 1995; Ph.D., Cornell University, 2004.
- Salloway, Jeffrey Colman (1988)**  
Professor of Health Management and Policy; B.A., Tufts University, 1963; A.M., Boston University, 1965; Ph.D., *ibid.*, 1969.
- Saltzberg, Christine W. (2006)**  
Assistant Professor of Nursing; Diploma, Charity Hospital of Louisiana, 1971; B.S., Alfred University, 1989; M.S., University of Rochester, 1991; Ph.D., Cornell University, 2002.
- Saltzberg, Donna M. (2006)**  
Assistant Professor of Nursing; B.S., Alfred University, 1989; M.S., University of Rochester, 1991; Ph.D., Cornell University, 2002.
- Salvio, Paula M. (1992)**  
Associate Professor of Education; B.A., Marymount College, 1981; M.A., Wesleyan University, 1983; Ph.D., University of Rochester, 1989.
- Salyer, Lucy E. (1989)**  
Associate Professor of History; B.A., University of California at San Diego, 1979; M.A., University of California at Berkeley, 1983; Ph.D., *ibid.*, 1989.
- Sample, Ruth J. (1995)**  
Associate Professor of Philosophy; B.A., Oberlin College, 1986; M.A., University of Pittsburgh, 1995; Ph.D., *ibid.*, 1995.
- Sansom, Dana M. (1986)**  
Thompson School Associate Professor of Horticultural Technology; A.A.S., Thompson School of Applied Science, 1977; B.S., University of New Hampshire, 1983; M.O.E., *ibid.*, 1985.
- Saturno, William A. (2003)**  
Assistant Professor of Anthropology; B.A., University of Arizona, 1991; A.M., Harvard University, 1995; Ph.D., *ibid.*, 2000.
- Savage, Terry M. (1976)**  
UNHM Associate Professor of Philosophy; B.A., University of New Hampshire, 1969; M.A., Boston University, 1975; Ph.D., *ibid.*, 1978.
- Scharff, Robert C. (1970)**  
Professor of Philosophy; A.B., University of Illinois at Urbana-Champaign, 1961; M.A., Northwestern University, 1965; Ph.D., *ibid.*, 1970.
- Schiller, Nina Glick (1991)**  
Professor of Anthropology; B.A., New York University, 1966; Ph.D., Columbia University, 1975.
- Schlenrich, Udo (2002)**  
Associate Professor of Hospitality Management and Director, W. Rosenberg International Center of Franchising; B.S., Cornell University, 1970; Ph.D., University of Strathclyde, England, 2001.
- Schmidt, Torsten (1988)**  
Associate Professor of Economics; M.A., University of Florida, 1984; Ph.D., *ibid.*, 1990.
- Schnepf, Scott (1981)**  
Professor of Art(Painting/Drawing/Printmaking); B.A., Augustana College, 1977; M.F.A., Kansas State University, 1981.
- Schram, Thomas H. (1990)**  
Associate Professor of Education; B.A., Dartmouth College, 1978; B.A., University of Wyoming, 1982; M.Ed., University of Oregon, 1987; Ph.D., *ibid.*, 1990.
- Schuh, Mary C. (2002)**  
Research Assistant Professor of Education; B.S., State University of New York College at Geneseo, 1984; M.S., Syracuse University, 1987; Ph.D., University of New Hampshire, 2002.
- +Schwab, Charles G. (1975)**  
Professor of Animal Science; B.S., University of Wisconsin at Madison, 1969; M.S., *ibid.*, 1970; Ph.D., *ibid.*, 1974.
- +Scott, Michelle P. (1990)**  
Professor of Zoology; B.A., Wellesley College, 1961; M.A., Harvard University, 1980; Ph.D., *ibid.*, 1984.
- Scott, William H. (1970)**  
Thompson School Professor of Applied Business Management; B.S., Drexel University, 1961; M.Ed., University of New Hampshire, 1973.
- Seaman, Jayson O. (2006)**  
Assistant Professor of Kinesiology; B.S., New England College, 1994; M.S., University of New Hampshire, 1999; Ph.D., *ibid.*, 2006.



- Seavey, John W. (1980)**  
Professor of Health Management and Policy; A.B., Bates College, 1966; M.A., University of Arizona, 1968; M.P.H., Harvard University, 1979; Ph.D., University of Arizona, 1973.
- Sedory, Daniel R. (1988)**  
Associate Clinical Professor of Kinesiology; B.S., University of Pittsburgh, 1982; M.S., University of Arizona, 1984.
- Seidel, Lee F. (1977)**  
Professor of Health Management and Policy; A.B., Hobart College, 1967; M.P.A., Pennsylvania State University, 1972; Ph.D., *ibid.*, 1976.
- Seiler, David E. (1972)**  
Professor of Music; B.M., University of Wisconsin at Madison, 1961; M.M., *ibid.*, 1965.
- Seitz, W. Rudolf (1976)**  
Professor of Chemistry; A.B., Princeton University, 1965; Ph.D., Massachusetts Institute of Technology, 1970.
- Senier, Siobhan (2000)**  
Associate Professor of English; A.B., Bowdoin College, 1987; M.A., University of Illinois at Urbana-Champaign, 1992; Ph.D., *ibid.*, 1997.
- Savern, David H. (1998)**  
Lecturer, Librarian; B.A., University College, Swansea, Wales, 1975; Post Graduate Diploma, Loughborough University, England, 1979.
- Sharkey, Judy (2001)**  
Assistant Professor of Education; B.A., Franklin Pierce College, 1984; M.A.T., School for International Training, 1990; Ph.D., Pennsylvania State University, 2000.
- Shea, Christine M. (1994)**  
Associate Professor of Technology and Operations Management; B.B.A., Wilfrid Laurier University, Waterloo, Ontario, 1980; M.B.A., *ibid.*, 1984; Ph.D., University of Western Ontario, Canada, 1994.
- Shen, Junhao (2004)**  
Lecturer in Mathematics; B.A., Nanjing University, 1996; Ph.D., University of Pennsylvania, 2004.
- Shepard, Harvey K. (1969)**  
Professor of Physics; B.S., University of Illinois at Urbana-Champaign, 1960; M.S., California Institute of Technology, 1962; Ph.D., *ibid.*, 1966.
- Sheriff, Robin E. (2003)**  
Associate Professor of Anthropology; Ph.D., Graduate Center of the City University of New York, 1997.
- Sherman, Sarah Way (1984)**  
Associate Professor of English; B.A., Marlboro College, 1972; Ph.D., Brown University, 1983.
- Shetty, Sandhya (1988)**  
Associate Professor of English; B.A., Nowrosjee Wadia College, Poona, India, 1977; M.A., University of Poona, India, 1979; M.A., University of Rochester, 1982; Ph.D., *ibid.*, 1987.
- Shippee-Rice, Raelene (1979)**  
Associate Professor of Nursing; Diploma, Cook County Hospital School of Nursing, 1960; B.S.N., Carroll College, 1964; M.S., University of Rochester, 1979; Ph.D., Brandeis University, 1990.
- Shore, Barry (1974)**  
Professor of Business Administration and Academic Director Graduate Business Programs; B.S.E.E., Tufts University, 1960; M.B.A., University of Massachusetts at Amherst, 1963; Ph.D., University of Wisconsin at Madison, 1968.
- Shore, Samuel D. (1965)**  
Professor of Mathematics; B.S., Juniata College, 1959; M.A., Pennsylvania State University, 1961; Ph.D., *ibid.*, 1964.
- Short, Frederick T. (1989)**  
Research Professor of Natural Resources and Marine Science; B.A., Plymouth State College, 1972; M.S., University of Rhode Island, 1976; Ph.D., University of Alaska at Fairbanks, 1981.
- Short, Kevin M. (1994)**  
Professor of Mathematics; B.A., University of Rochester, 1985; M.S., *ibid.*, 1985; Ph.D., Imperial College of Science & Technology, London, 1988.
- Shubov, Marianna A. (2004)**  
Professor of Mathematics; M.S., St. Petersburg State University, Russia, 1972; Ph.D., *ibid.*, 1985.
- Shump, Karl (2004)**  
Lecturer in Computer Science; B.A., Kansas State University, 1971; M.S., Michigan State University, 1973; Ph.D., *ibid.*, 1976.
- Siggelakis, Susan J. (1988)**  
Associate Professor of Political Science; B.A., Rutgers University, 1979; M.A., Johns Hopkins University, 1983; Ph.D., *ibid.*, 1988.
- Sigler, Allison (2005)**  
Clinical Instructor of Kinesiology; B.S., Northeastern University, 2000; M.S., *ibid.*, 2002.
- Simic, Charles D. (1973)**  
Professor of English; B.A., New York University, 1967.
- Simmons, Douglas C. (1998)**  
Assistant Professor of Occupational Therapy; B.S., State University of New York at Buffalo, 1989; M.S., University of New Hampshire, 1998; Ph.D., Nova Southwestern University, 2005.
- Simos, Evangelos O. (1977)**  
Professor of Economics; B.S., Athens Graduate School of Business and Economics, 1972; M.A., Northern Illinois University, 1974; Ph.D., *ibid.*, 1977.
- Sitkoff, Harvard (1976)**  
Professor of History; A.B., Queens College, City University of New York, 1961; M.A., Columbia University, 1962; Ph.D., *ibid.*, 1975.
- Sivaprasad, Kondagunta U. (1969)**  
Professor of Electrical and Computer Engineering; B.E., University of Madras, India, 1956; M.S., Harvard University, 1958; Ph.D., *ibid.*, 1963.
- Sive, Barkley C. (2002)**  
Research Assistant Professor of Earth, Oceans, and Space; B.S., University of California at Irvine, 1993; M.S., *ibid.*, 1995; Ph.D., *ibid.*, 1998.
- Slomba, Elizabeth A. (1999)**  
Associate Professor, Librarian and University Archivist; B.A., Mount Holyoke College, 1991; M.A., University of Virginia, 1993; M.L.S., University of Maryland, 1998.
- +Small, Deena J. (2002)**  
Assistant Professor of Medical Laboratory Science; B.S., University of Maine at Orono, 1992; Ph.D., *ibid.*, 1998.
- Smith, Andrew E. (2005)**  
Research Associate Professor of Political Science; Ph.D., University of Cincinnati, 1997.
- Smith, Charles W., III (2003)**  
Research Professor of Physics and Earth, Oceans, and Space; B.S., University of Maryland, 1977; M.S., College of William and Mary, 1979; Ph.D., *ibid.*, 1981.
- Smith, David R. (1979)**  
Professor of Art History; A.B., Washington University, 1968; M.A., Columbia University, 1971; M.Phil., *ibid.*, 1978; Ph.D., *ibid.*, 1978.
- Smith, Nicholas J. (2002)**  
Assistant Professor of Philosophy; B.A., Vassar College, 1994; J.D., State University of New York at Buffalo, 1997; Ph.D., Vanderbilt University, 2002.
- Smith, Robert Scott (2000)**  
Associate Professor of Classics; B.A., Mary Washington College, 1993; A.M., University of Illinois at Urbana-Champaign, 1996; Ph.D., *ibid.*, 2000.
- Sohl, Jeffrey E. (1983)**  
Professor of Business Administration and Director of Center for Venture Research; B.E., Villanova University, 1972; M.B.A., University of Maryland, 1974; Ph.D., *ibid.*, 1983.
- Solorzano, Eleanne M. (1999)**  
Associate Professor of Business Statistics; B.S., University of Florida, 1993; M.S., *ibid.*, 1995; Ph.D., University of South Carolina, 1999.
- Sonnenmeier, Rae M. (1996)**  
Research Assistant Professor of Communication Sciences and Disorders; B.S.Ed., State University of New York College at Buffalo, 1980; M.A., State University of New York at Buffalo, 1984; Ph.D., *ibid.*, 1999.
- +Sower, Stacia A. (1982)**  
Professor of Biochemistry and Molecular Biology; B.A., University of Utah, 1973; M.S., Oregon State University, 1978; Ph.D., *ibid.*, 1980.
- Sowers, Jeannie (2006)**  
Assistant Professor of Political Science; B.A., Harvard University, 1989; M.A., Princeton University, 1996; Ph.D., *ibid.*, 2003.
- Spaenburg, Henk (2006)**  
Affiliate Associate Professor of Electrical and Computer Engineering; MSEE, Delft University of Technology, The Netherlands, 1970; Ph.D., Electrical and Computer Engineering, Syracuse University, 1979.
- Sparr, Ted M. (1989)**  
Professor of Computer Science; B.S., Ohio Wesleyan University, 1963; M.S., Texas A & M University, 1969; Ph.D., *ibid.*, 1972.
- Sparrow, John E. (1993)**  
UNHM Associate Professor of Psychology; B.S., State University of New York College at Oswego, 1983; M.A., University of New Hampshire, 1986; Ph.D., *ibid.*, 1990.
- Stapleton, Jane (2005)**  
Adjunct Instructor and Research Associate in Women's Studies; B.A., Wilkes College, 1986; M.A., University of New Hampshire, 1989.
- Stewart, Elizabeth A. (2006)**  
Clinical Assistant Professor of Occupational Therapy; B.S., University of New Hampshire, 1988; M.S., New England College, 2005.
- Stibler, Robert (1978)**  
Professor of Music; B.S., Susquehanna University, 1970; M.M., Catholic University of America, 1973; D.M.A., *ibid.*, 1979.
- Stine, William Wren (1984)**  
Associate Professor of Psychology; B.S., Georgia Institute of Technology, 1977; M.S., *ibid.*, 1982; Ph.D., *ibid.*, 1983.
- Stone, Joyce (1987)**  
Lecturer of Medical Laboratory Science; B.A., Northeastern University, 1971.



**Stoykovich, Elisa F. (1985)**

Lecturer in Spanish; B.A., Universidad de Barcelona, Spain, 1967; M.A., University of New Hampshire, 1972; M.A., *ibid.*, 1974.

**Straus, Murray A. (1968)**

Professor of Sociology; B.A., University of Wisconsin at Madison, 1948; M.S., *ibid.*, 1949; Ph.D., *ibid.*, 1956.

**Sullivan, Elise R. (2001)**

Clinical Assistant Professor of Microbiology; B.S., University of Miami (Fla.), 1992; Ph.D., University of Maryland, 1999.

**Sullivan, Mary Jane (2001)**

Clinical Assistant Professor of Communication Sciences and Disorders; M.S., George Washington University, 1984.

**Sundberg, Donald C. (1978)**

Director, Nanostructured Polymers Research Center; B.S., Worcester Polytechnic Institute, 1965; Ph.D., University of Delaware, 1970.

**Swartz, Erik E. (2000)**

Associate Professor of Kinesiology; B.S., St. Bonaventure University, 1995; M.A., Western Michigan University, 1996; Ph.D., University of Toledo, 2000.

**Swift, M. Robinson (1976)**

Professor of Mechanical Engineering and Ocean Engineering; B.S., University of New Hampshire, 1971; Ph.D., *ibid.*, 1974.

**Tagliaferro, Anthony R. (1978)**

Professor of Nutritional Sciences; B.S., Boston College, 1968; M.S., Lehigh University, 1972; Ph.D., Cornell University, 1978.

**Talbot, Robert W. (1988)**

Research Professor of Earth Sciences and Earth, Oceans, and Space; B.S., Florida Institute of Technology, 1975; M.S., University of Wisconsin at Madison, 1977; Ph.D., *ibid.*, 1981.

**Tapply, Claire (2004)**

Technical Specialist/Medical Technologist; B.S., Merrimack College, 1970.

**Tate, Stefanie (2001)**

Assistant Professor of Accounting; B.S., Wake Forest University, 1990; Ph.D., Michigan State University, 2001.

**Taylor, James T. (1977)**

Professor of Zoology; B.S., University of Tennessee, 1966; M.S., *ibid.*, 1968; Ph.D., Oregon State University, 1977.

**+Taylor, Robert L., Jr. (1984)**

Professor of Animal Science and Genetics; B.A., Carson-Newman College, 1975; M.S., Auburn University, 1978; Ph.D., Mississippi State University, 1981.

**Tebbetts, Diane R. (1972)**

Professor, Librarian and Associate University Librarian; B.A., University of New Hampshire, 1965; M.S.L.S., Simmons College, 1972; M.A., Boston University, 1978; D.A., Simmons College, 1985.

**Tedesco, Edward F. (2004)**

Research Associate Professor of Physics and Earth, Oceans, and Space; Ph.D., New Mexico State University, 1979.

**Tenczar, Anthony (2001)**

UNHM Assistant Professor of Communication Arts; B.A., University of Massachusetts at Amherst, 1978; M.F.A., University of Texas at Austin, 1996.

**Thein, May-Win L. (1999)**

Associate Professor of Mechanical Engineering; B.S., Lehigh University, 1991; M.S., *ibid.*, 1992; Ph.D., Oklahoma State University, 1999.

**Thomas, W. Kelley (2002)**

Associate Professor of Biochemistry and Molecular Biology and Genetics and Hubbard Chair; Co-Director, Hubbard Center for Genome Studies; B.S., University of Redlands, 1981; M.S., Simon Fraser University, Canada, 1984; Ph.D., *ibid.*, 1988.

**Thompson, Janet L. (2005)**

Lecturer in Education; B.A., California State University at Chico, 1976; M.A., University of New Hampshire, 1982; Doctoral Candidate, Lesley College, 2006.

**Thompson, Thelma B. (1999)**

Associate Professor, Librarian; B.S., University of Vermont, 1970; M.S., *ibid.*, 1972; M.A., University of Iowa, 1988.

**Thomsen, Linda J. (1995)**

Lecturer in Spanish; B.A., University of Connecticut, 1975; M.A., University of New Hampshire, 1988.

**+Tisa, Louis S. (1994)**

Associate Professor of Microbiology and Genetics; B.Sc.(Hon.), University of Windsor, Canada, 1976; M.Sc., *ibid.*, 1979; Ph.D., University of Wisconsin at Madison, 1987.

**Tobin, Gerard A. (2007)**

Assistant Professor of Nursing; B.S.N., London University, London, England, 1989; M.S.N., Kings College, London, England, 1991; Ph.D., Trinity College, Dublin, Ireland, 2005.

**Tomellini, Sterling A. (1985)**

Professor of Chemistry; B.S., University of Rhode Island, 1979; Ph.D., Rutgers, The State University of New Jersey, 1985.

**Tooch, David E. (1985)**

Thompson School Associate Professor of Applied Business Management; A.A.S., Thompson School of Applied Science, 1976; B.S.F., University of New Hampshire, 1978; M.B.A., Plymouth State College, 1981.

**Torbert, Roy B. (1989)**

Director, Space Science Center and Professor of Physics and Earth, Oceans and Space; B.A., Princeton University, 1971; Ph.D., University of California at Berkeley, 1979.

**+Townson, David H. (1997)**

Associate Professor of Animal Science; B.S., Michigan State University, 1983; M.S., University of Wisconsin at Madison, 1988; Ph.D., Ohio State University, 1993.

**Tracy, Susanne M. (2005)**

Assistant Professor of Nursing; B.S.N., Niagra University, 1967; M.N., University of South Carolina, 1975; M.A., Rivier College, 1992; Ph.D., University of Rhode Island, 2005.

**Triplett, Timm A. (1981)**

Associate Professor of Philosophy; B.A., Antioch College, 1972; M.A., University of Massachusetts at Amherst, 1980; Ph.D., *ibid.*, 1982.

**Troy, William (2006)**

UNHM Lecturer of Business; B.A., University of Massachusetts at Amherst, 1976; M.B.A., Cornell University, 1983.

**Trubowitz, Rachel (1986)**

Associate Professor of English; B.A., Barnard College, 1976; M.A., Columbia University, 1977; M.Phil., *ibid.*, 1980; Ph.D., *ibid.*, 1985.

**Trumble, William R. (1999)**

Professor of Biochemistry and Molecular Biology; B.S., Washington State University, 1976; Ph.D., University of Texas at Dallas, 1981.

**Trzaskoma, Stephen M. (1999)**

Associate Professor of Classics; A.B., Stanford University, 1991; A.M., University of Illinois at Urbana-Champaign, 1993; Ph.D., *ibid.*, 1998.

**+Tsang, Paul C. (1989)**

Associate Professor of Animal Science; B.A., Cornell University, 1978; Ph.D., Boston University, 1986.

**Tsukrov, Igor I. (1997)**

Associate Professor of Mechanical Engineering; B.S., Dnepropetrovsk University, Ukraine, 1986; M.S., Tufts University, 1993; Ph.D., *ibid.*, 1996.

**Tucker, Corinna Jenkins (2000)**

Associate Professor of Family Studies; B.A., Clark University, 1992; M.S., Pennsylvania State University, 1995; Ph.D., *ibid.*, 1998.

**Tucker, James (1992)**

Associate Professor of Sociology; B.S., University of Virginia, 1981; M.A., *ibid.*, 1987; Ph.D., *ibid.*, 1992.

**Turner, Heather A. (1991)**

Professor of Sociology; B.A., University of Western Ontario, Canada, 1985; Ph.D., University of California at San Francisco, 1990.

**Tuttle, Steven D. (1981)**

Thompson School Associate Professor of Applied Business Management; A.A.S., Thompson School of Applied Science, 1976; B.S., University of New Hampshire, 1979; M.Ed., *ibid.*, 1984.

**Urquhart, Peter W. (1989)**

Associate Professor of Music; B.A., Princeton University, 1974; M.M., Westminster Choir College, 1978; M.A., Smith College, 1982; Ph.D., Harvard University, 1988.

**Vagts, Peggy A. (1978)**

Professor of Music; B.M., Morningside College, 1976; M.M., University of Wisconsin at Madison, 1978.

**Van Gundy, Karen (2001)**

Assistant Professor of Sociology; B.S., Virginia Polytechnic Institute and State University, 1994; M.A., University of Cincinnati, 1998; Ph.D., University of Miami (Fla.), 2001.

**Van Zandt, Cynthia J. (1998)**

Associate Professor of History; B.A., University of Virginia, 1984; M.A., University of Connecticut, 1991; Ph.D., *ibid.*, 1998.

**Vandemark, Douglas C. (2005)**

Research Associate Professor of Earth, Oceans, and Space; B.S., Hope College, 1984; M.S., University of Massachusetts at Amherst, 1988; Ph.D., University of New Hampshire, 2005.

**Vandever, Stacy D. (1998)**

Associate Professor of Political Science; B.A., University of Maryland, 1994; Ph.D., *ibid.*, 1997.

**Varki, Elizabeth (1997)**

Associate Professor of Computer Science; M.S., Villanova University, 1992; Ph.D., Vanderbilt University, 1997.

**Varner, Ruth K. (2003)**

Research Assistant Professor of Earth, Oceans, and Space; B.A., Hartwick College, 1991; M.S., University of New Hampshire, 1993; Ph.D., *ibid.*, 2000.

**Vasquez, Bernard J. (1999)**

Research Associate Professor of Physics and Earth, Oceans, and Space; B.S., Rensselaer Polytechnic Institute, 1987; Ph.D., University of Maryland, 1992.



- Vasudevan, Palligarnai T. (1988)**  
Professor of Chemical/Environmental Engineering; B.Tech., University of Madras, India, 1974; M.S., State University of New York at Buffalo, 1984; Ph.D., Clarkson University, 1988.
- Veal, Larry J. (1982)**  
Associate Professor of Music; B.S., University of Illinois at Urbana-Champaign, 1974; M.M., *ibid.*, 1976.
- Venkatachalam, A. R. (1992)**  
Professor of Information Systems; B.Eng., University of Madras, India, 1980; M.B.A., Indian Institute of Management, Calcutta, 1983; Ph.D., University of Alabama, 1990.
- Vogel, Karla E. (1986)**  
UNHM Assistant Professor of Computer Information Systems; B.A., Rivier College, 1972; M.A., *ibid.*, 1990.
- Von Damm, Karen L. (1992)**  
Professor of Geochemistry and Earth, Oceans, and Space; B.S., Yale University, 1977; Ph.D., Massachusetts Institute of Technology, 1984.
- Vörösmarty, Charles J. (1992)**  
Research Professor of Earth Sciences and Earth, Oceans, and Space; B.S., Cornell University, 1977; M.S., University of New Hampshire, 1983; Ph.D., *ibid.*, 1991.
- Vroman, Kerryellen (2005)**  
Assistant Professor of Occupational Therapy; B.S., Massey University, 1990; M.H.S., McMaster University, 1992; Ph.D., Massey University, 2005.
- Vroman, Neil B. (1984)**  
Associate Dean of the School of Health and Human Services and Associate Professor of Kinesiology; B.S., Colgate University, 1975; Ph.D., Pennsylvania State University, 1982.
- Wagner, Mary S. (2005)**  
Instructor of Marketing; B.A., University of Michigan at Ann Arbor, 1994; M.B.A., Indiana University at Bloomington, 1998.
- Wake, Cameron P. (1995)**  
Research Associate Professor of Earth Sciences and Earth, Oceans, and Space; B.S., University of Ottawa, Canada, 1984; M.A., Wilfrid Laurier University, Waterloo, Ontario, 1987; Ph.D., University of New Hampshire, 1993.
- +Walker, Charles W. (1976)**  
Professor of Zoology; B.A., Miami University, Ohio, 1969; M.S., Cornell University, 1973; Ph.D., *ibid.*, 1976.
- Walsh, Susan A. (1990)**  
UNHM Associate Professor of English; B.A., Kenyon College, 1979; M.A., Duke University, 1980; Ph.D., *ibid.*, 1988.
- Walsh, Wendy A. (2003)**  
Research Assistant Professor of Sociology; B.A., Bates College, 1989; M.S., University of New Hampshire, 1997; Ph.D., *ibid.*, 2002.
- Wansart, William L. (1985)**  
Associate Professor of Education; B.S., State University of New York at Buffalo, 1972; M.A., University of Northern Colorado, 1975; Ed.D., *ibid.*, 1984.
- Ward, Larry G. (1989)**  
Research Associate Professor of Earth Sciences; B.A., University of New Hampshire, 1972; M.S., University of South Carolina, 1974; Ph.D., *ibid.*, 1978.
- Ward, Sally (1980)**  
Professor of Sociology; B.A., University of Maryland, 1970; M.A., Brown University, 1974; Ph.D., *ibid.*, 1977.
- Ware, Colin (2000)**  
Professor of Computer Science and Ocean Engineering; B.Sc., Durham University, England, 1972; M.Math, University of Waterloo, Canada, 1985; Ph.D., University of Toronto, Canada, 1980.
- Warner, Rebecca M. (1981)**  
Professor of Psychology; B.A., Carnegie Mellon University, 1973; Ph.D., Harvard University, 1978.
- Watson, Deborah (1967)**  
Associate Professor, Librarian; B.A., University of New Hampshire, 1963; M.A., *ibid.*, 1967; M.S.L.S., Simmons College, 1972.
- +Watson, Winsor H., III (1978)**  
Professor of Zoology; B.A., Wesleyan University, 1972; Ph.D., University of Massachusetts at Amherst, 1978.
- Watt, David W. (1987)**  
Professor of Mechanical Engineering; B.S.E., Princeton University, 1979; M.Eng., University of California at Berkeley, 1983; Ph.D., University of Michigan at Ann Arbor, 1987.
- Watters, David H. (1978)**  
Professor of English; A.B., Dartmouth College, 1972; Ph.D., Brown University, 1979.
- Webb, Dwight (1967)**  
Associate Professor of Education; B.A., University of Redlands, 1955; M.A., *ibid.*, 1956; Ph.D., Stanford University, 1967.
- Webster, Penelope E. (1987)**  
Associate Professor of Communication Sciences and Disorders; B.S., Northeastern University, 1976; M.A., State University of New York College at Geneseo, 1978; Ed.D., Boston University, 1984.
- Weiner, James L. (1979)**  
Associate Professor of Computer Science; B.S., University of Massachusetts at Amherst, 1973; M.S., University of Wisconsin at Madison, 1975; Ph.D., University of California at Los Angeles, 1979.
- Weisman, Gary R. (1977)**  
Professor of Chemistry; B.S., University of Kentucky, 1971; Ph.D., University of Wisconsin at Madison, 1976.
- Wells, Melissa (2004)**  
Assistant Professor of Social Work; Ph.D., University of New Hampshire, 2004.
- Wells, Roger E. (1996)**  
Senior Veterinary Pathologist; B.S., Ohio State University, 1968; D.V.M., *ibid.*, 1972; M.S., Michigan State University, 1981.
- Westmoreland, Virginia Logan (2006)**  
Clinical Assistant Professor of Kinesiology and Education Director The Browne Center; B.S., University of North Carolina at Greensboro, 1986; M.S., Nova Southern University, 1996.
- Wharton-McDonald, Ruth M. (1997)**  
Associate Professor of Education; A.B., Brown University, 1985; Ed.M., Harvard University, 1989; M.A., State University of New York at Albany, 1993; C.A.S., *ibid.*, 1994; Ph.D., *ibid.*, 1996.
- Whistler, Cheryl A. (2004)**  
Assistant Professor of Microbiology; B.A., University of San Diego, 1991; Ph.D., Oregon State University, 2000.
- White, Barbara Prudhomme (1998)**  
Associate Professor of Occupational Therapy; B.S., University of New Hampshire, 1978; Ph.D., University of Minnesota, 1997.
- White, Carolyn B. (2000)**  
UNHM Associate Professor, Library Science; B.A., College of the Holy Cross, 1989; M.A., Indiana University at Bloomington, 1991; M.L.I.S., University of Rhode Island, 1997.
- White, Christopher M. (2006)**  
Assistant Professor of Mechanical Engineering; M.Sc., Yale University, 1999; Ph.D., *ibid.*, 2001.
- Whittier, Duane H. (1967)**  
Professor of Philosophy; B.A., University of New Hampshire, 1950; M.A., University of Illinois at Urbana-Champaign, 1952; Ph.D., *ibid.*, 1961.
- Wible, James R. (1984)**  
Professor of Economics; A.B., Wheaton College, 1973; Ph.D., Pennsylvania State University, 1980.
- Williams, Daniel C. (1970)**  
Associate Professor of Psychology; B.A., Northwestern University, 1966; Ph.D., University of California at Santa Barbara, 1970.
- Williams-Barnard, Carol L. (1978)**  
Associate Professor of Nursing; A.S., Vermont College, 1970; B.S.N., Catholic University of America, 1972; M.S.N., *ibid.*, 1975; D.N.Sc., *ibid.*, 1979; Ph.D., *ibid.*, 2007.
- Willkomm, Therese (2005)**  
Clinical Assistant Professor of Occupational Therapy; B.S., University of Wisconsin at Stout, 1982; M.S., Drake University, 1984; Ph.D., University of Pittsburgh, 1997.
- Wirth, Clifford J. (1981)**  
Associate Professor of Political Science; B.A., Muhlenberg College, 1969; M.P.A., San Diego State University, 1971; Ph.D., Southern Illinois University at Carbondale, 1976.
- Witt, Charlotte Elizabeth (1987)**  
Professor of Philosophy and the Humanities; B.A., Swarthmore College, 1975; M.A., Georgetown University, 1978; Ph.D., *ibid.*, 1980.
- Witzling, Mara R. (1977)**  
Professor of Art History; B.A., Queens College, City University of New York, 1967; M.A., Cornell University, 1970; Ph.D., *ibid.*, 1978.
- Wolper, Ethel Sara (1996)**  
Associate Professor of History; B.A., University of Chicago, 1982; M.A., *ibid.*, 1984; Ph.D., University of California at Los Angeles, 1994.
- Wong, Edward H. (1978)**  
Professor of Chemistry; B.S., University of California at Berkeley, 1968; Ph.D., Harvard University, 1975.
- Wood, Craig H. (1990)**  
Associate Professor of Operations Management; A.B., Stanford University, 1972; M.B.A., University of Chicago, 1974; Ph.D., Ohio State University, 1991.
- Wood, Deanna (1990)**  
Associate Professor, Librarian; B.A., Reed College, 1969; M.A.L.S., University of Denver, 1972; M.P.A., University of New Hampshire, 1995.
- Woodward, Robert S. (2001)**  
Professor of Health Management and Policy; B.S., Haverford College, 1965; Ph.D., Washington University, 1972.



**Woodward, William R. (1975)**

Professor of Psychology and Affiliate Professor of History; B.A., Harvard University, 1967; M.A., Princeton University, 1969; M.A., Yale University, 1973; Ph.D., *ibid.*, 1975.

**Woolever, Kristin R. (2005)**

Dean of UNHM Degree Programs; B.A., Allegheny College, 1973; M.A., University of Pittsburgh, 1974; Ph.D., *ibid.*, 1980.

**Wright, Steven C. (2002)**

Associate Professor of Kinesiology; B.S., St. Lawrence University, 1978; M.Ed., Boston University, 1980; Ed.D., *ibid.*, 1992.

**Wunder, Amanda (2003)**

Assistant Professor of History; B.A., Wesleyan University, 1994; M.A., Princeton University, 1998; Ph.D., *ibid.*, 2002.

**Xiao, Xiangming (1997)**

Research Associate Professor of Earth, Oceans, and Space; B.S., Xiamen University, 1982; M.S., Chinese University of Science and Technology, 1987; Ph.D., Colorado State University, 1994.

**Xu, Le (2003)**

Assistant Professor of Accounting; B.S., Beijing University, P.R. China, 1999; Ph.D., University of Massachusetts at Amherst, 2003.

**Yarensky, Peter (1983)**

Lecturer in Psychology; B.A., University of Hartford, 1972; M.A., University of New Hampshire, 1974; Ph.D., *ibid.*, 1983.

**Yost, Israel J. (1993)**

Instructor of Computer Science; B.A., Upsala College, 1968; M.S., University of New Hampshire, 1991.

**Yount, Janet Aikins (1979)**

Professor of English; B.A., Grinnell College, 1972; M.S., University of Chicago, 1973; Ph.D., *ibid.*, 1980.

**Zang, Richard A. (1994)**

UNHM Associate Professor of Mathematics; B.T., State University of New York at Binghamton, 1978; M.A., *ibid.*, 1980; Ed.D., Rutgers, The State University of New Jersey, 1994.

**Zercher, Charles K. (1991)**

Professor of Chemistry; B.A., Messiah College, 1981; M.S., State University of New York College at Buffalo, 1984; Ph.D., University of Notre Dame, 1989.

**ZeZula, Jerilee A. (1979)**

Thompson School Associate Professor of Applied Animal Science; B.S., Michigan State University, 1970; D.V.M., *ibid.*, 1971.

**Zhang, Jianqiu (2002)**

Assistant Professor of Electrical and Computer Engineering; B.S., Zhejiang University, P.R. China, 1992; M.S., Zhongshan University, P.R. China, 1995; Ph.D., State University of New York at Stony Brook, 2002.

**Zhang, Yitang (1999)**

Lecturer in Mathematics; B.S., Peking University, 1982; M.S., *ibid.*, 1984; Ph.D., Purdue University, 1992.

**Zhou, Honggeng (2004)**

Assistant Professor of Decision Sciences; B.S., Zhejiang University, P.R. China, 1997; M.S., University of Memphis, 1999; M.A., Ohio State University, 2002; Ph.D., *ibid.*, 2003.

**Zhou, Kuan (2004)**

Assistant Professor of Electrical and Computer Engineering; B.S., Huazhong University of Science and Technology, P.R. China, 1996; M.S., Chinese Academy of Sciences, P.R. China, 1999; Ph.D., Rensselaer Polytechnic Institute, 2004.

**Zunz, Sharyn J. (1993)**

Associate Professor of Social Work; B.A., University of Wisconsin at Madison, 1970; M.S.W., New York University, 1972; Ph.D., Fordham University, 1993.

---

## Affiliate Faculty

**Baber, Matthew J. (2004)**

Affiliate Assistant Professor of Natural Resources; B.Sc., University of Otago, New Zealand, 1993; M.Sc., University of Auckland, New Zealand, 1996; Ph.D., Florida International University, 2001.

**Bianchi, Charles H. (2001)**

Affiliate Associate Professor of Electrical and Computer Engineering; B.S., University of New Hampshire, 1983; M.S., *ibid.*, 1985; Ph.D., *ibid.*, 1995.

**Brejaart, Ria (2001)**

Affiliate Assistant Professor of Natural Resources; M.A.S., Lincoln University, New Zealand, 1995.

**Brownell, Willard N. (1999)**

Affiliate Assistant Professor of Natural Resources; B.A., University of New Hampshire, 1967; M.S., Cornell University, 1970.

**Bubier, Jill L. (1997)**

Affiliate Assistant Professor of Natural Resources; B.A., Bowdoin College, 1974; J.D., University of Maine at Orono, 1978; M.S., University of Vermont, 1989; Ph.D., McGill University, 1994.

**Bucklin, Ann (1992)**

Affiliate Professor of Zoology; A.B., Oberlin College, 1976; Ph.D., University of California at Berkeley, 1980.

**Campbell, John L. (2006)**

Affiliate Assistant Professor of Natural Resources; B.S., University of New Hampshire, 1989; M.S., *ibid.*, 1996; Ph.D., State University of New York, Syracuse, 2006.

**Collins, Donald (1999)**

Affiliate Assistant Professor of Animal Science; D.V.M., Cornell University, 1966.

**Cotter, Paul F. (1987)**

Affiliate Assistant Professor of Animal & Nutritional Sciences; A.B., Suffolk University, 1966; M.S., Northeastern University, 1968; Ph.D., University of New Hampshire, 1973.

**Davis, P. Thompson (2001)**

Affiliate Professor of Earth Sciences; B.A., University of New Hampshire, 1971; M.S., University of Maine at Orono, 1976; Ph.D., University of Colorado, 1980.

**Dawes, Clinton J. (2001)**

Affiliate Professor of Plant Biology; B.S., University of Minnesota, 1957; M.S., University of California at Los Angeles, 1958; Ph.D., *ibid.*, 1961.

**Dijkman Dukes, Ellen J. (2004)**

Affiliate Assistant Professor of Animal Sciences and Education Coordinator of UNH-Mary Hitchcock Memorial Hospital; B.S., University of New Hampshire, 1984.

**Dionne, Michele (1992)**

Affiliate Professor of Zoology; B.A., Bates College, 1976; M.S., University of North Carolina at Chapel Hill, 1981; Ph.D., Dartmouth College, 1990.

**Eagar, Christopher (1995)**

Affiliate Professor of Natural Resources; B.S., University of Tennessee, 1969; M.S., *ibid.*, 1978; Ph.D., *ibid.*, 1985.

**Esterling, Donald M. (2005)**

Affiliate Associate Professor of Mechanical Engineering; Ph.D., Brandeis University, 1968.

**Flanagan, Rene (2006)**

Affiliate Assistant Professor of Animal Sciences and Education Coordinator of UNH-Mary Hitchcock Memorial Hospital.

**Franke, Tom (2006)**

Assistant Vice President and Chief Information Officer and Affiliate Professor of Education; A.B., Columbia University, 1970; M.A., Wayne State University, 1972; M.Ed., Frostburg State College, 1975; Ph.D., University of Maryland, 1980.

**Franz, Nancy (2004)**

Affiliate Assistant Professor of Education; B.S., Northland College, 1981; M.E.P.D., University of Wisconsin, 1985; Ph.D., Cornell University, 2002.

**Ganapathi, Sridevi (2005)**

Affiliate Assistant Professor of Plant Biology; B.S., Bharathiar University, Tamil Nadu, India, 1996; M.S. *ibid.*, 1998; Ph.D., Maduria Kamaraj University, Tamil Nadu, India, 2004.

**Garbos, Raymond J. (2000)**

Affiliate Associate Professor of Electrical and Computer Engineering; B.S.E.E., Northeastern University, 1968; M.S.E.M., *ibid.*, 1971; M.A.T., Rivier College, 1991.

**Gove, Jeffrey H. (1991)**

Affiliate Professor of Natural Resources and Research Forester - USDA Forest Service; A.A.S., University of New Hampshire, 1975; B.S., *ibid.*, 1977; M.S., *ibid.*, 1980; M.A., Pennsylvania State University, 1992; Ph.D., *ibid.*, 1989.

**Hallett, Richard (1996)**

Affiliate Assistant Professor of Natural Resources; B.S., University of Wisconsin at Madison, 1984; M.S., University of New Hampshire, 1991; Ph.D., *ibid.*, 1996.

**Heath, Linda S. (2001)**

Affiliate Associate Professor of Natural Resources; B.S., University of Illinois, 1981; M.S., *ibid.*, 1983; Ph.D., University of Washington, 1989.

**Hillsgrove, Lorrie (2006)**

Affiliate Assistant Professor of Animal and Nutritional Sciences; B.S., University of Vermont, 2003.

**Hilton, James (1991)**

Affiliate Assistant Professor of Recreation Management and Policy; B.S., Springfield College, 1975.

**Kahl, Jeffrey S. (2005)**

Affiliate Professor of Natural Resources; B.A., University of Maine at Orono, 1977; M.S., *ibid.*, 1982; Ph.D., *ibid.*, 1998.

**Kendall-Tacket, Kathleen A. (2004)**

Affiliate Associate Professor of Psychology; B.A., California State University at Chico, 1982; M.A., *ibid.*, 1984; Ph.D., Brandeis University, 1990.

**Kochanski, Thaddeus (2006)**

Affiliate Professor of Electrical and Computer Engineering; S.B., Massachusetts Institute of Technology, 1974; Ph.D., University of Texas at Austin, 1980.



**Langan, Richard (1992)**

Affiliate Associate Professor of Zoology and Co-Director; Cooperative Institute for Coastal and Estuarine Environmental Technology; B.A., Lehigh University, 1971; M.S., University of New Hampshire, 1980; Ph.D., *ibid.*, 1992.

**Latham, Paul W., II (2002)**

Affiliate Assistant Professor of Electrical and Computer Engineering; B.S.E.E., University of Minnesota, 1980; Ph.D., University of New Hampshire, 1995.

**Leak, William B. (1967)**

Affiliate Professor of Natural Resources; B.S., S.U.N.Y. College of Environmental Science and Forestry at Syracuse, 1953; M.F., *ibid.*, 1956.

**Li, Jianhua (2001)**

Affiliate Assistant Professor of Plant Biology; B.S., Henan Normal University, 1984; M.S., Central China Normal University, 1987; Ph.D., University of New Hampshire, 1998.

**Macieski, Robert L. (1994)**

Affiliate Associate Professor of History; B.A., Boston College, 1980; M.A., *ibid.*, 1982; Ph.D., *ibid.*, 1993.

**Maddison, Peter A. (2001)**

Affiliate Associate Professor of Natural Resources; B.S., University of London, England, 1964; Ph.D., *ibid.*, 1968.

**Marple, Sylvia H. (1983)**

Affiliate Assistant Professor of Hospitality Management; B.S., Winthrop College, 1963; M.S., Clemson University, 1964; R.D..

**Minocha, Rakesh (1991)**

Affiliate Professor of Plant Biology and Natural Resources; B.Sc.(Hon.), Punjab University, India, 1975; M.S.(Hon.), *ibid.*, 1976; M.S., University of New Hampshire, 1978; Ph.D., *ibid.*, 1985.

**Mitchell, Wanda S. (2003)**

Vice Provost for Diversity and Affiliate Associate Professor of Education; B.S., Georgia Southern University, 1982; M.A., Hampton University, 1987; Ed.S., College of William and Mary, 1993; Ed.D., *ibid.*, 1995.

**Moore, Jason H. (2004)**

Affiliate Associate Professor of Computer Science; B.S., Florida State University, 1991; M.S., University of Michigan at Ann Arbor, 1994; M.A., *ibid.*, 1998; Ph.D., *ibid.*, 1999.

**Moorhead, Cari (2006)**

Associate Dean of the Graduate School and Affiliate Assistant Professor of Education; B.A., University of Ulster, Northern Ireland, 1983; M.S., Northeastern University, 1988; Ph.D., University of New Hampshire, 1999.

**Muldavin, Jeremy (2006)**

Affiliate Associate Professor of Electrical and Computer Engineering; B.S., University of Michigan at Ann Harbor, 1995; M.S., *ibid.*, 1998; Ph.D., *ibid.*, 2001.

**Naumes, Margaret (1990)**

Affiliate Assistant Professor of Management; B.A., Connecticut College, 1968; M.A., Stanford University, 1971; M.B.A., Clark University, 1983; Ph.D., Stanford University, 1974.

**North, William G. (2004)**

Affiliate Professor of Biochemistry and Molecular Biology; B.S., Australian National University, Canberra, 1964; M.S., University of Melbourne, Australia, 1966; Ph.D., University of Queensland, Brisbane, Australia, 1973.

**O'Donnell, Robert (2005)**

Affiliate Professor of Electrical and Computer Engineering; B.S., Massachusetts Institute of Technology, 1963; M.S., University of Pennsylvania, 1964; Ph.D., *ibid.*, 1970.

**Ormrod, Jeanne E. (1998)**

Affiliate Professor of Education; Ph.D., Pennsylvania State University, 1975.

**Polito, Jill (1990)**

Affiliate Assistant Professor of Medical Laboratory Science; B.S., Vermont College, 1974.

**Prelli, Lawrence J. (2001)**

Affiliate Professor of Natural Resources; B.S., State University of New York, Brockport, 1977; M.A., State University of New York, Albany, 1979; M.S., University of New Hampshire, 1998; Ph.D., Pennsylvania State University, 1984.

**Ray, S. Alan (2004)**

Senior Vice Provost and Affiliate Associate Professor of Political Science, Philosophy and Justice Studies; Ph.D., Harvard University, 1986; J.D., University of California, Hastings College of the Law, 1990.

**Riabov, Vladimir (2005)**

Affiliate Associate Professor of Mechanical Engineering; Ph.D., Moscow Institute of Physics and Technology, Russia, 1979.

**Rompalla, Ronald E. (2000)**

Affiliate Professor of Animal and Nutritional Sciences; B.S., Ohio State University, 1975; M.S., *ibid.*, 1977; Ph.D., Northeastern University, 1987.

**Rueda, Bo (2004)**

Affiliate Assistant Professor of Animal & Nutritional Sciences; B.S., University of Nevada at Reno, 1987; M.S., *ibid.*, 1988; Ph.D., University of Wyoming, 1992.

**Russell, Sylvia Weber (1979)**

Affiliate Associate Professor of Computer Science; B.A., Middlebury College, 1962; M.S., Stanford University, 1970; Ph.D., *ibid.*, 1975.

**Ryan, John A. (2005)**

Affiliate Associate Professor of Animal Science; B.A., Marist College, 1971; Ph.D., University of Connecticut, 1997.

**Sahagian, Dork L. (1995)**

Affiliate Professor of Earth Sciences; B.S., Rensselaer Polytechnic Institute, 1977; M.S., Rutgers University, 1980; Ph.D., University of Chicago, 1987.

**Selikowitz, Stuart M. (1987)**

Affiliate Professor of Electrical and Computer Engineering; B.A., Rutgers, The State University of New Jersey, 1958; M.D., State University of New York School of Medicine, 1962.

**Sendak, Paul Edwin (1995)**

Affiliate Professor of Natural Resources; B.S., Rutgers University, 1965; M.S., University of Massachusetts at Amherst, 1968; Ph.D., *ibid.*, 1972.

**Shortle, Walter C. (1996)**

Affiliate Professor of Plant Biology; B.S., University of New Hampshire, 1968; M.S., *ibid.*, 1970; Ph.D., North Carolina State University, 1974.

**Shwaery, Glenn T. (2000)**

Affiliate Assistant Professor of Animal and Nutritional Sciences; B.A., Denison University, 1974; M.A., Eastern Michigan University, 1977; Ph.D., University of New Hampshire, 1994.

**Smejkal, Gary B. (2006)**

Affiliate Assistant Professor of Biochemistry and Molecular Biology; M.S., Cleveland Clinical Foundation Research Institute, 1997.

**Smith, Kevin T. (1996)**

Affiliate Professor of Plant Biology; B.S., Connecticut College, 1976; M.S., University of New Hampshire, 1979; Ph.D., University of Georgia, 1982.

**Smith, Nathan L. (2006)**

Affiliate Assistant Professor of Animal and Nutritional Sciences; B.S., University of Miami, 1966; Ph.D., University of California, 1972.

**Stokes, Martin (1999)**

Affiliate Professor of Animal Science; Ph.D., University of Glasgow, 1978.

**Stucchi, Arthur F. (1994)**

Affiliate Associate Professor of Animal and Nutritional Sciences; B.S., Franklin Pierce College, 1975; M.S., University of New Hampshire, 1981; Ph.D., *ibid.*, 1988.

**Sulikowski, James (2005)**

Affiliate Assistant Professor of Animal Sciences; B.S., Denison University, 1991; M.S., Nova Southern University, 1996; M.S., DePaul University, 1998; Ph.D., University of New Hampshire, 1998.

**Sullivan, Janet R. (1985)**

Affiliate Associate Professor of Plant Biology; B.S., University of Vermont, 1977; M.S., University of Connecticut, 1980; Ph.D., University of Oklahoma, 1984.

**Terry, Clark (1988)**

Affiliate Professor of Music; Ph.D., University of New Hampshire, 1978.

**Thompson, Peter J. (2000)**

Affiliate Professor of Geology; A.B., Dartmouth College, 1968; M.S., University of Vermont, 1975; Ph.D., University of Massachusetts at Amherst, 1985.

**Tobet, Stuart A. (2001)**

Affiliate Professor of Biochemistry and Molecular Biology; B.S., Tulane University, 1978; M.S., Massachusetts Institute of Technology, 1982; Ph.D., *ibid.*, 1985.

**Torosian, Stephen D. (2004)**

Affiliate Assistant Professor of Microbiology; B.S., University of Massachusetts, Amherst, 1977; Ph.D., University of New Hampshire, 1993.

**Trueblood, Dwight D. (2001)**

Affiliate Assistant Professor of Zoology and Co-Director; Cooperative Institute for Coastal and Estuarine Environmental Technology; B.S., University of Washington, 1979; M.S., University of Puerto Rico, 1985; Ph.D., University of Massachusetts at Boston, 1990.

**Ulrich, Laurel (1995)**

Affiliate Professor of History; B.A., University of Utah, 1960; M.A., Simmons College, 1971; Ph.D., University of New Hampshire, 1980.

**Upton, Timothy (2005)**

Affiliate Assistant Professor of Mechanical Engineering; Ph.D., University of New Hampshire, 1995.

**Wallace, John C. (1996)**

Affiliate Associate Professor of Plant Biology; A.B., Harvard University, 1975; Ph.D., University of Pittsburgh, 1983.

**Wicklow, Barry J. (1989)**

Affiliate Assistant Professor of Zoology; B.S., Central Connecticut State College, 1973; M.S., University of New Hampshire, 1975; Ph.D., *ibid.*, 1982.



**WildBlood-Crawford, Bruce S. (2006)**  
Affiliate Assistant Professor of Natural Resources; B.A., Dickinson College, 1995; M.E.E., Griffith University, 2003.

**Williams, Julie E. (2002)**  
Affiliate Associate Professor of Psychology; B.A., College of William and Mary, 1979; Ph.D., University of Tennessee, 1986.

**Windt, Mark R., M.D. (1998)**  
Affiliate Associate Professor of Communication Sciences and Disorders; B.S., Cornell University, 1972; M.D., University of Connecticut, 1978.

**Wright, Vicki C. (1986)**  
Affiliate Assistant Professor of Art and Art History; B.F.A., Ohio Wesleyan University, 1977; M.A., Arizona State University, 1986.

**Wunsch, David R. (2000)**  
Affiliate Professor of Earth Sciences; B.A., State University of New York College at Oneonta, 1980; M.S., University of Akron, 1982; Ph.D., University of Kentucky, 1992.

**Yamasaki, Mariko (1995)**  
Affiliate Assistant Professor of Natural Resources; B.S., University of Michigan at Ann Arbor, 1974; M.S., *ibid.*, 1978.

---

## Extension Faculty

**Alleva, Frederick M. (2002)**  
Extension Educator, 4-H Youth Development, Rockingham County; B.A., Tufts University, 1975; M.Ed., Boston University, 1981; Ed.D., *ibid.*, 1988.

**Auger, Philip A. (1977)**  
Extension Educator, Forest Resources, Rockingham County; B.S.F., University of New Hampshire, 1974; M.S., *ibid.*, 1991.

**Barker, Lawrence R. (1986)**  
Extension Educator, 4-H Youth Development, Coos County; B.S., University of New Hampshire, 1981; M.B.A., Plymouth State College, 1986.

**Barnaby, Roland T. (1988)**  
Extension Educator, Sea Grant & Marine Resources, Rockingham County; B.Ed., Plymouth State College, 1963; M.Ed., University of New Hampshire, 1970.

**Bennett, Karen P. (1980)**  
Extension Professor & Specialist, Forest Resources; B.S.F., University of New Hampshire, 1979; B.S., *ibid.*, 1992.

**Berry, Nancy G. (1993)**  
Associate Extension Educator, 4-H Youth Development, Sullivan County; B.S., University of New Hampshire, 1976; M.O.E., Keene State College, 1980.

**Black, Donald C. (1971)**  
Extension Educator, Forest Resources, Strafford County; B.S., University of Massachusetts at Amherst, 1963; M.O.E., University of New Hampshire, 1989.

**Blass, Karen M. (1990)**  
Associate Extension Educator, Family & Consumer Resources, Rockingham County; B.A., Regis College, Massachusetts, 1976; M.Ed., University of New Hampshire, 1988.

**Boozer-Blasco, Claudia R. (1983)**  
Extension Educator, Family & Consumer Resources, Rockingham County; B.S., University of Rhode Island, 1972; M.Ed., University of New Hampshire, 1988.

**Bradford-Sisson, Nancy E. (2000)**  
Associate Extension Educator, Family & Consumer Resources, Cheshire County; B.A., University of Kentucky, 1978; M.S., Oregon State University, 1981.

**Bradt, Shane (2006)**  
Assistant Extension Educator and Extension Specialist, Geospatial Technologies; B.S., Nazareth College, 1996; M.S., University of New Hampshire, 2000.

**Bressett, Lauren L. (1976)**  
Assistant Extension Educator, 4-H Youth Development, Cheshire County; B.S., Keene State College, 1975.

**Buob, Thomas E. (1982)**  
Extension Educator, Agricultural Resources, Grafton County; B.S., Christian Brothers College, 1970; M.S., University of New Hampshire, 1979.

**Burrows, Dorothy (1983)**  
Extension Instructor, 4-H Youth Development, Carroll County; B.A., University of Massachusetts at Amherst, 1970.

**Buteau, Shirley O. (1979)**  
Associate Extension Educator, Family & Consumer Resources, Coos County; B.S., University of Maine at Farmington, 1971.

**Cheever, Deborah J. (1977)**  
Extension Educator, 4-H Youth Development, Merrimack County; B.S., Keene State College, 1977; M.O.E., University of New Hampshire, 1984.

**Cowen, Sharon B. (2002)**  
Associate Extension Educator, Family & Consumer Resources, Hillsborough County; B.S., Ohio State University, 1975; M.S., *ibid.*, 1981.

**Cross, Charlotte W. (1981)**  
Extension Professor & Specialist, 4-H Youth Development; B.S., University of Maine at Orono, 1970; M.S., Oregon State University, 1978.

**Dole, Sumner A., III (1977)**  
Extension Educator, Forest Resources, Belknap County; B.S., State University of New York, 1973; M.P.A., University of New Hampshire, 1987.

**Eaton, Alan T. (1978)**  
Extension Professor & Specialist, Entomology; B.S., University of Massachusetts at Amherst, 1972; M.S., Virginia Polytechnic Institute and State University, 1975; Ph.D., North Carolina State University, 1978.

**Fleury, Timothy J. (1996)**  
Associate Extension Educator, Forest Resources, Merrimack County; B.S., University of Massachusetts at Amherst, 1983; M.S., University of Minnesota, 1995.

**French, Charles A. (2001)**  
Extension Assistant Professor, & Specialist Community and Economic Development; B.A., Dartmouth College, 1994; M.A., Western Illinois University, 1999.

**Garland, Lynn B. (1969)**  
Extension Educator, 4-H Youth Development, Rockingham County; B.S., University of Maryland, 1969; M.S., University of New Hampshire, 1979.

**Gregory, Paula J. (1980)**  
Extension Educator and Extension Specialist, 4-H Youth Development; B.Ed., Keene State College, 1971; M.O.E., *ibid.*, 1977.

**Grube, Rebecca C. (2004)**  
Extension Associate Professor & Specialist, Sustainable Horticulture Production; B.A., Dartmouth College, 1994; Ph.D., Cornell University, 1999.

**Haddad, Nada A. (1987)**  
Extension Educator, Agricultural Resources, Rockingham County; B.S., American University of Beirut, 1979; M.S., *ibid.*, 1983.

**Hagen, Margaret Pratt (1986)**  
Extension Educator, Agricultural Resources, Hillsborough County; B.A., Brown University, 1977; M.S., Colorado College, 1986.

**Hamilton, Ann M. (1988)**  
Associate Extension Educator, Family & Consumer Resources, Carroll County; B.S., University of Maine at Orono, 1985; M.S., *ibid.*, 1987.

**Hamilton, George W. (1989)**  
Extension Educator, Agricultural Resources, Hillsborough County; B.S., Pennsylvania State University, 1976; M.S., *ibid.*, 1982.

**He, Pingguo (2002)**  
Research Associate Professor of the Institute for Earth, Oceans and Space and Extension Specialist, Fisheries & Research, and Affiliate Associate Professor of Zoology; B.Eng., Zhejiang Fisheries College, P.R. China, 1982; Ph.D., University of Aberdeen, Scotland, 1987.

**Hersey, Charles M. (2005)**  
Assistant Extension Educator, Forest Resources, Sullivan County; B.A., Brandeis University, 2001; M.S., University of Massachusetts at Amherst, 2004.

**Jablonski, Kathleen E. (2001)**  
Associate Extension Educator, 4-H Youth Development, Grafton County; B.S., State University of New York College at Plattsburgh, 1973; M.Ed., University of Maine at Orono, 1987.

**Kennedy, Gail P. (1998)**  
Associate Extension Educator, Family & Consumer Resources, Sullivan County; B.A., Fairfield University, 1974; M.A., Columbia University, 1976.

**Knight, Suzann E. (1983)**  
Extension Professor & Specialist, Family Resource Management; B.S., University of Massachusetts at Amherst, 1972; M.O.E., Keene State College, 1978.

**La Valley, Kenneth J. (2004)**  
Assistant Extension Educator and Extension Specialist, Commercial Fisheries Technology; B.S., University of New Hampshire, 1993; M.S., University of Rhode Island, 1996.

**Levesque, Rebecca S. (1999)**  
Assistant Extension Educator, 4-H Youth Development, Belknap County; B.S., University of New Hampshire, 1996; M.O.E., Notre Dame College, 1999.

**Linehan, Thomas B. (2000)**  
Associate Extension Educator, Family & Consumer Resources, Merrimack County; B.A., William Paterson College, 1987; M.S., University of New Hampshire, 1995.

**Luppold, Deborah (1986)**  
Extension Specialist, Food and Nutrition, Merrimack County; B.S., University of Massachusetts at Amherst, 1975; M.S., Boston University, 1979.



**Luther, Robin A. (1985)**

Associate Extension Educator, 4-H Youth Development, Sullivan County; B.S., Rutgers, The State University of New Jersey, 1981; M.Ed., *ibid.*, 1985.

**Maes, Deborah B. (1982)**

Extension Educator, Family & Consumer Resources, Grafton County; B.S., Keene State College, 1975; M.Ed., Plymouth State College, 1987.

**Majewski, Carl J. (2002)**

Assistant Extension Educator, Agricultural Resources, Cheshire County; A.A.S., University of New Hampshire, 1992; B.S., *ibid.*, 1994; M.S., University of Vermont, 1996.

**Mawson, Julia Steed (1977)**

Extension Educator, 4-H Youth Development, Hillsborough County; B.S., Lowell Technological Institute, 1973; M.A.T., University of New Hampshire, 1978.

**Mitchell, Frank S. (1979)**

Extension Professor & Specialist, Land and Water Conservation; A.A.S., Thompson School of Applied Science, 1974; B.S., University of New Hampshire, 1976; M.S., *ibid.*, 1980.

**Mullen, Alice A. (1987)**

Extension Educator, Family & Consumer Resources and Administrator, Family, Home & Garden Education Center, Hillsborough County; B.S., University of New Hampshire, 1978; M.S., State University of New York, 1985.

**+Neal, Catherine A. (1999)**

Extension Professor & Specialist, Ornamental Horticulture; B.S., University of Massachusetts at Amherst, 1976; M.S., Cornell University, 1981; Ph.D., *ibid.*, 1983.

**Njue, Geoffrey N.M. (2000)**

Associate Extension Educator, Agricultural Resources & Environmental Horticulture, Strafford County; B.S., Egerton University, Kenya, 1993; M.S., Wagenin Agricultural University, Netherlands, 1997.

**Nute, Jonathan W. (1987)**

Extension Educator, Forest Resources, Hillsborough County; B.A., University of New Hampshire, 1973; M.S., Yale University, 1985.

**Ouellette, Amy B. (2001)**

Assistant Extension Educator, Agricultural Resources & Environmental Stewardship and , Belknap County; B.S., University of New Hampshire, 1998; M.S., *ibid.*, 2003.

**Parr, Northam D. (1982)**

Extension Educator, Forest Resources, Grafton County; B.S., University of New Hampshire, 1979; M.S., *ibid.*, 1986.

**Peterson, Julia P. (1993)**

Extension Associate Professor & Specialist, Water Resources; B.A., Connecticut College, 1982; M.S., Antioch College, 1988.

**Puglisi, Sadie E. (2004)**

Assistant Extension Educator, Agricultural Resources, Merrimack County; A.A.S., Morrisville College, 1997; B.S., Cornell University, 1999; M.S., Virginia Polytechnic Institute and State University, 2002.

**Reidy, Daniel F. (1997)**

Assistant Extension Educator, Community Development, Hillsborough County; B.S., Plymouth State College, 1976; M.Ed., *ibid.*, 1977.

**Rondina Paul, Ellen C. (2005)**

Assistant Extension Educator, Family & Consumer Resources, Strafford County; B.A., University of New Hampshire, 1997; M.S.W., *ibid.*, 2004.

**Savage, Tina M. (2002)**

Extension Instructor, Agricultural Resources and Environmental Stewardship, Carroll County; B.S., University of Connecticut, 1996.

**Schloss, Jeffrey A. (1989)**

Extension Professor & Specialist, Water Resources; B.S., Duke University, 1979; M.S., American University, 1985.

**\*Sciabarrasi, Michael R. (1980)**

Extension Professor & Specialist, Agricultural Business Management; B.S., University of Massachusetts at Amherst, 1976; M.S., Virginia Polytechnic Institute and State University, 1978.

**Smith, Cheryl A. (1992)**

Extension Professor & Specialist, Plant Health; B.A., Plymouth State College, 1978; M.S., University of Rhode Island, 1983; Ph.D., University of New Hampshire, 1992.

**Smith, Sarah Shea (1989)**

Extension Professor & Specialist, Forest Industry; B.S.F., University of New Hampshire, 1978; M.O.E., *ibid.*, 1989.

**Stoddard, Samuel, III (1990)**

Extension Educator, Forest Resources, Coos County; B.S., University of Maine at Orono, 1968; M.S., Iowa State University, 1976.

**Sullivan, Marilyn L. (1996)**

Associate Extension Educator, Family & Consumer Resources, Merrimack County; B.S., Syracuse University, 1971; M.Ed., Boston State College, 1977.

**Swier, Stanley R. (1978)**

Extension Professor & Specialist, Entomology; B.S., Utica College of Syracuse University, 1969; M.S., Northern Arizona University, 1974; Ph.D., Ohio State University, 1976.

**Tarr, Matthew D. (2002)**

Assistant Extension Educator, Forest Resources, Rockingham County; B.S., University of New Hampshire, 1996; M.S., *ibid.*, 1999.

**Tebo, Mary P. (2002)**

Assistant Extension Educator, Community Forestry, Hillsborough County; B.A., University of New Hampshire, 1983; M.A., *ibid.*, 2002.

**Townson, Lisa (2000)**

Associate Extension Educator and Extension Specialist, Program Development & Evaluation; B.S., Michigan State University, 1985; M.S., *ibid.*, 1997.

**Turaj, Steven J. (1988)**

Extension Educator, Agricultural Resources, Coos County; B.S., University of Connecticut, 1974; M.S., West Virginia University, 1980.

**Violette, Catherine A. (1986)**

Extension Professor & Specialist, Food & Nutrition; B.S., University of Maine at Orono, 1974; B.S., *ibid.*, 1975; M.S., *ibid.*, 1977; Ph.D., Pennsylvania State University, 2002.

**Wiley, Mark (2004)**

Associate Extension Educator and Extension Specialist, Marine Science Education; B.S., Dartmouth College, 1975; M.S., University of New Hampshire, 1980.

**Wilner, Seth (2000)**

Assistant Extension Educator, Agricultural Resources and Environmental Stewardship, Sullivan County; B.S., University of Connecticut, 1991; M.S., University of Wisconsin, 1997.

---

**Emeriti Faculty****Abeles, Sigmund**

Professor Emeritus of the Arts; A.B., University of South Carolina, 1955; M.F.A., Columbia University, 1957; (1970 to 1987).

**Adamovich, Frank W.**

Associate Professor Emeritus, Librarian; B.S., Fitchburg State College, 1960; M.S., Simmons College, 1968; (1968 to 1994).

**Adams, Nancy E.**

Extension Educator Emerita of Agricultural Resources, Rockingham County; B.S., University of New Hampshire, 1975; M.S., Michigan State University, 1977; (1980 to 2004).

**Adams, Robert L.a.**

Associate Professor Emeritus of Geography; B.A., Williams College, 1961; M.A., Clark University, 1966; Ph.D., *ibid.*, 1971; (1967 to 1994).

**Adamsky, Cathryn**

Associate Professor Emerita of Women's Studies; B.A., Clark University, 1955; Ph.D., University of Rochester, 1959; (1981 to 1996).

**Allen, Fred E.**

Professor Emeritus of Animal Science; B.S., University of New Hampshire, 1932; D.V.M., Ohio State University, 1936; (1940 to 1976).

**Allmendinger, E. Eugene**

Associate Professor Emeritus of Naval Architecture; B.S., University of Michigan at Ann Arbor, 1941; M.S., University of New Hampshire, 1950; D.N.A., O.E.(Hon.), *ibid.*, 1992; (1958 to 1983).

**Alonzo, Roy S.**

Thompson School Professor Emeritus of Food Services Management; B.S., Boston University, 1953; M.B.A., Western New England College, 1961; Ed.D., Nova University, 1978; (1969 to 1996).

**Amell, Alexander R.**

Professor Emeritus of Chemistry; B.S., University of Massachusetts at Amherst, 1947; Ph.D., University of Wisconsin at Madison, 1950; (1955 to 1988).

**Amsden, Katherine**

Associate Professor Emerita of Kinesiology; A.B., Sweet Briar College, 1953; M.S., Smith College, 1956; Ph.D., University of Southern California, 1967; (1967 to 1992).

**Andersen, Kenneth K.**

Professor Emeritus of Chemistry; B.S., Rutgers, The State University of New Jersey, 1955; Ph.D., University of Minnesota, 1959; (1960 to 1996).

**Anderson, Charlotte K.**

Professor Emerita and Library; B.A., University of Michigan at Ann Arbor, 1935; A.B.L.S., *ibid.*, 1936; A.M.L.S., *ibid.*, 1951; (1943 to 1980).

**Anderson, Franz E.**

Professor Emeritus of Geology; B.A., Ohio Wesleyan University, 1960; M.A., Northwestern University, 1962; Ph.D., University of Washington, 1967; (1967 to 2001).

**Annis, William H.**

Professor Emeritus of Occupational Education; B.S., University of Maine at Orono, 1951; M.Agri. Ed., University of New Hampshire, 1959; Ed.D., Cornell University, 1961; (1962 to 1995).

**Antosiewicz, Rose T.**

Associate Professor Emerita of Italian and the Humanities; A.B., Brown University, 1954; Ph.D., University of California at Los Angeles, 1971; (1970 to 1998).



**Appel, Kenneth I.**

Professor Emeritus of Mathematics; B.S., Queens College, City University of New York, 1953; M.A., University of Michigan at Ann Arbor, 1956; Ph.D., *ibid.*, 1959; (1993 to 2003).

**Arnoldy, Roger L.**

Professor Emeritus of Physics and Earth, Oceans, and Space; B.S., St. Mary's College, 1956; M.S., University of Minnesota, 1959; Ph.D., *ibid.*, 1962; (1967 to 2002).

**Ashley, Charles H.**

Associate Professor Emeritus of Education; A.B., Dartmouth College, 1957; M.Ed., University of New Hampshire, 1960; Ed.D., Boston University, 1969; (1969 to 1999).

**Balderacchi, Arthur E.**

Professor Emeritus of Art(Drawing); A.B., Duke University, 1960; M.F.A., University of Georgia, 1965; (1965 to 2001).

**Barney, Dwight E.**

Thompson School Associate Professor Emeritus of Applied Animal Science; B.S., University of New Hampshire, 1966; M.S., *ibid.*, 1971; (1971 to 2005).

**Barrett, James P.**

Professor Emeritus of Forest Biometrics and Management; B.S., North Carolina State University, 1954; M.F., Duke University, 1958; Ph.D., *ibid.*, 1962; (1962 to 1997).

**Barstow, Thomas R.**

Assistant Professor Emeritus of Kinesiology; B.S., St. Lawrence University, 1961; M.Ed., *ibid.*, 1965; (1965 to 1999).

**Batchelder, Gerald M.**

Thompson School Professor Emeritus of Civil Engineering; B.S.C.E., University of New Hampshire, 1950; M.S.C.E., Purdue University, 1952; (1953 to 1991).

**Baum, William M.**

Professor Emeritus of Psychology; A.B., Harvard University, 1961; Ph.D., *ibid.*, 1966; (1977 to 1999).

**Beasley, Wayne M.**

Associate Professor Emeritus of Materials Science; B.S., Harvard University, 1946; S.M., Massachusetts Institute of Technology, 1965; (1957 to 1984).

**Bechtell, Homer F., Jr.**

Professor Emeritus of Mathematics; B.S., Grove City College, 1951; M.A., University of Wisconsin at Madison, 1956; Ph.D., *ibid.*, 1963; (1966 to 1996).

**Blakemore, Richard P.**

Professor Emeritus of Microbiology; B.S., State University of New York at Albany, 1964; M.S., *ibid.*, 1965; Ph.D., University of Massachusetts at Amherst, 1975; (1977 to 2005).

**Blanchard, Fletcher A., Jr.**

Professor Emeritus of Electrical and Computer Engineering and Associate Director of Engineering Design and Analysis Laboratory; B.S., Union College, 1948; M.S., Lehigh University, 1950; (1972 to 1987).

**Blanchard, Robert O.**

Professor Emeritus of Plant Biology(Mycolology); B.S., University of Southern Maine, 1964; M.Ed., University of Georgia, 1969; Ph.D., *ibid.*, 1971; (1972 to 2005).

**Blickle, Robert**

Professor Emeritus of Entomology; B.S., Ohio State University, 1937; M.S., University of New Hampshire, 1939; Ph.D., Ohio State University, 1942; (1939 to 1941, 1946 to 1979).

**Bobick, Melvin T.**

Professor Emeritus of Sociology; A.B., University of Illinois at Urbana-Champaign, 1949; A.M., *ibid.*, 1952; Ph.D., *ibid.*, 1958; (1958 to 2005).

**Bogle, A. Linn**

Professor Emeritus of Plant Biology; B.S., University of Washington, 1958; M.S., *ibid.*, 1961; Ph.D., University of Minnesota, 1968; (1970 to 1999).

**Bolander, Steven F.**

Dean Emeritus of the Whittemore School of Business and Economics and Professor Emeritus of Decision Sciences; B.S. Iowa Wesleyan College, 1966; M.B.A., University of Colorado, 1967; Ph.D., Kent State University, 1972; (2000 to 2006).

**Bolian, Charles E.**

Associate Professor Emeritus of Anthropology; B.A., Mississippi State University, 1965; Ph.D., University of Illinois at Urbana-Champaign, 1975; (1971 to 2005).

**Bonnice, William E.**

Associate Professor Emeritus of Mathematics; B.A.E., Syracuse University, 1951; M.S., University of Washington, 1960; Ph.D., *ibid.*, 1962; (1962 to 1998).

**Borror, Arthur C.**

Professor Emeritus of Zoology and Affiliate Professor of Zoology; B.S., Ohio State University, 1956; M.S., *ibid.*, 1958; Ph.D., Florida State University, 1961; (1961 to 1995).

**Bowman, James S.**

Professor Emeritus of Entomology and Extension Entomologist; B.Sc., Ohio State University, 1951; M.Sc., *ibid.*, 1954; Ph.D., University of Wisconsin at Madison, 1958; (1971 to 1994).

**Boy, Angelo V.**

Professor Emeritus of Education; A.B., University of Notre Dame, 1953; Ed.M., Boston University, 1955; Ed.D., *ibid.*, 1960; (1965 to 2002).

**Boynton, Jason E.**

Associate Professor Emeritus of Education; B.Ed., Plymouth Teachers College, 1949; M.Ed., University of New Hampshire, 1952; (1966 to 1983).

**Bozak, John C., Jr.**

Thompson School Professor Emeritus of Forest Technology; B.S., University of Connecticut, 1962; M.F., Yale School of Forestry, 1963; (1967 to 2004).

**Briggs, Janet C.**

Assistant Professor Emerita of Animal Science; B.S., University of Massachusetts at Amherst, 1962; (1963 to 2005).

**Brockelman, Paul T.**

Professor Emeritus of Philosophy; A.B., Dartmouth College, 1957; M.A., Northwestern University, 1963; Ph.D., *ibid.*, 1968; (1963 to 2001).

**Bruns, Paul E.**

Professor Emeritus of Forest Resources; A.B., New York University, 1937; M.F., Yale University, 1940; Ph.D., University of Washington, 1956; (1958 to 1980).

**Bullock, Wilbur L.**

Professor Emeritus of Zoology; B.S., Queens College, City University of New York, 1942; M.S., University of Illinois at Urbana-Champaign, 1947; Ph.D., *ibid.*, 1948; (1948 to 1987).

**Burton, David M.**

Professor Emeritus of Mathematics; B.A., Clark University, 1954; A.M., University of Rochester, 1956; Ph.D., *ibid.*, 1961; (1959 to 1997).

**Bush, Judith J.**

Extension Educator Emerita of Family Development, Merrimack County; B.S., Oregon State University, 1963; M.A., University of Connecticut, 1965; (1979 to 2004).

**Byers, Gordon L.**

Professor Emeritus of Soil and Water Science; B.S., MacDonald College, 1948; M.S.A., Ontario Agricultural College, Canada, 1950; (1956 to 1986).

**Callan, Richard J.**

Professor Emeritus of Spanish and the Humanities; A.B., Iona College, 1957; M.A., Fordham University, 1959; Ph.D., St. Louis University, 1965; (1969 to 1997).

**Casas, R Alberto**

Professor Emeritus of Spanish and the Humanities; B. en L., Universidad de Barcelona, Spain, 1936; A.M., Columbia University, 1947; Ph.D., *ibid.*, 1954; (1952 to 1987).

**Chapman, Donald H.**

Professor Emeritus of Geology; B.A., University of Michigan at Ann Arbor, 1927; M.A., *ibid.*, 1928; Ph.D., *ibid.*, 1931; (1931 to 1974).

**Chesbro, William R.**

Professor Emeritus of Microbiology; B.S., Illinois Institute of Technology, 1951; M.S., *ibid.*, 1955; Ph.D., *ibid.*, 1959; (1959 to 1994).

**Chupp, Edward L.**

Professor Emeritus of Physics; A.B., University of California at Berkeley, 1950; Ph.D., *ibid.*, 1954; (1962 to 2006).

**Clark, Charles E.**

Professor Emeritus of History and the Humanities; A.B., Bates College, 1951; M.S., Columbia University, 1952; Ph.D., Brown University, 1966; (1967 to 1997).

**Clark, Ronald R.**

Professor Emeritus of Electrical and Computer Engineering; B.S., University of New Hampshire, 1956; M.E., Yale University, 1957; Ph.D., Syracuse University, 1963; (1957 to 1999).

**Clement, Bruce A.**

Extension Educator Emeritus of Agricultural Resources, Cheshire County; B.S., University of New Hampshire, 1968; M.S., University of Connecticut, 1980; (1985 to 2004).

**Clifford, Virginia W.**

Extension Educator Emerita of 4-H Youth Development, Belknap County; B.S., University of New Hampshire, 1956; M.S., *ibid.*, 1958; (1978 to 1995).

**Colby, Perley D.**

Associate Extension Educator Emeritus of Agriculture, Hillsborough County; B.S., University of New Hampshire, 1952; (1953 to 1988).

**Collins, Walter M.**

Professor Emeritus of Animal Science; B.S., University of Connecticut, 1940; M.S., *ibid.*, 1949; Ph.D., Iowa State University, 1960; (1951 to 1983).

**Copeland, Arthur H., Jr.**

Professor Emeritus of Mathematics; B.S., University of Michigan at Ann Arbor, 1949; M.A., *ibid.*, 1950; Ph.D., Massachusetts Institute of Technology, 1954; (1968 to 1998).

**Corcoran, Ellen P.**

Associate Professor Emerita of Education; B.A., Bryn Mawr College, 1962; M.A.T., New York University, 1968; Ph.D., *ibid.*, 1972; (1972 to 2001).



**Crocker, Robert A.**

Professor Emeritus of Natural Resources; A.B., Adelphi University, 1958; M.S., University of Miami (Fla.), 1960; Ph.D., Emory University, 1966; (1966 to 1994).

**Damon, John F.**

Extension Educator Emeritus of Cooperative Extension; B.S., University of New Hampshire, 1961; M.S., North Carolina State University, 1973; (1961 to 1990).

**Danko, Thomas**

Associate Extension Educator Emeritus and Extension Specialist, Poultry Management; B.S., University of Massachusetts at Amherst, 1952; M.S., University of New Hampshire, 1965; (1957 to 1987).

**Dauphinais, Edward J.**

Associate Professor Emeritus and Technology Branch Librarian; B.A., University of Hartford, 1956; M.S.L.S., Simmons College, 1960; (1968 to 1988).

**Davis, Myra L.**

Associate Professor Emerita of Secretarial Studies; B.S., Central Missouri State University, 1939; M.A., Iowa State University, 1945; (1945 to 1987).

**Dawson, John F.**

Professor Emeritus of Physics; B.S., Antioch College, 1958; Ph.D., Stanford University, 1963; (1968 to 2005).

**Deichert, Lillian C.**

Associate Professor Emerita and Loan Librarian; A.B., Hunter College, 1933; M.L.S., Pratt Institute, 1960; (1964 to 1975).

**Desrosiers, Richard V.**

Associate Professor Emeritus of Classics; A.B., Boston College, 1960; A.M., University of Wisconsin at Madison, 1961; Ph.D., University of North Carolina at Chapel Hill, 1969; (1965 to 2000).

**Dewey, Richard S.**

Professor Emeritus of Sociology; A.A., Pasadena Junior College, 1934; M.A., Oberlin College, 1939; Ph.D., University of Wisconsin at Madison, 1946; (1958 to 1978).

**Diller, Karl C.**

Professor Emeritus of English; B.A., University of Pittsburgh, 1961; Ed.M., Harvard University, 1964; Ph.D., *ibid.*, 1967; (1972 to 2000).

**Dingman, S. Lawrence**

Professor Emeritus of Earth Sciences; A.B., Dartmouth College, 1960; A.M., Harvard University, 1961; Ph.D., *ibid.*, 1970; (1975 to 2005).

**Dishman, Robert B.**

Professor Emeritus of Political Science; A.B., University of Missouri at Columbia, 1939; A.M., *ibid.*, 1940; Ph.D., Princeton University, 1948; (1951 to 1987).

**Dodge, Arthur G., Jr.**

Extension Educator Emeritus and Extension Program Leader, Forestry; A.A., Boston University, 1950; B.S., University of Massachusetts at Amherst, 1953; M.S.F., Harvard University, 1960; (1960 to 1988).

**Dodge, Peter**

Associate Professor Emeritus of Sociology; B.A., Swarthmore College, 1948; A.M., Harvard University, 1950; Ph.D., *ibid.*, 1961; (1964 to 1996).

**Downs, Richard E.**

Professor Emeritus of Anthropology; S.B., Harvard University, 1942; Cert. of Ethn., University of Paris, France, 1949; Ph.D., University of Leiden, Netherlands, 1956; (1962 to 1991).

**Draves, David D.**

Associate Professor Emeritus of Education; B.A., University of Wisconsin at Madison, 1948; M.A., *ibid.*, 1949; Ph.D., *ibid.*, 1957; (1964 to 1990).

**Dunn, Gerald M.**

Professor Emeritus of Plant Science; B.S., West Virginia University, 1948; M.S., Purdue University, 1950; Ph.D., *ibid.*, 1951; (1951 to 1982).

**Durgin, Owen B.**

Professor Emeritus of Environmental and Resource Economics; B.S.Ed., Gorham State Teachers College, 1946; M.A., University of New Hampshire, 1951; (1951 to 1992).

**Edwards, John C.**

Professor Emeritus of Theatre and Dance; B.S., Northwestern University, 1950; M.A., *ibid.*, 1952; Ph.D., *ibid.*, 1963; (1961 to 1995).

**Edwards, Ruth S.**

Associate Professor Emerita of Music; B.M., Northwestern University, 1949; M.M., *ibid.*, 1950; (1966 to 1995).

**Emery, Harvard B.**

Professor Emeritus of Mechanical Engineering; Certificate in M.E., Lowell Technological Institute, 1938; (1954 to 1979).

**Engalichev, Nicolas**

Professor Emeritus of Forest Resources and Extension Economist and Specialist, Forest Product Marketing and Utilization; B.S., S.U.N.Y. College of Environmental Science and Forestry at Syracuse, 1957; M.S., *ibid.*, 1960; (1963 to 1995).

**Enos, Chris (1986)**

Associate Professor Emeritus of Art (Photography); B.F.A., San Francisco State University, 1969; M.F.A., San Francisco Art Institute, 1971; (1986 to 2004).

**Estes, George O.**

Professor Emeritus of Plant Biology(Nutrition); B.S., University of Maine at Orono, 1958; M.S., *ibid.*, 1960; Ph.D., Oregon State University, 1969; (1969 to 2000).

**Fabrizio, Richard F.**

Extension Educator Emeritus of 4-H Youth Development, Grafton County; B.V.A., University of Massachusetts at Amherst, 1959; (1965 to 1995).

**Fairchild, Thomas P.**

Professor Emeritus of Animal Science and Genetics; B.S., University of New Hampshire, 1959; M.S., University of Wisconsin at Madison, 1961; Ph.D., *ibid.*, 1964; (1969 to 2005).

**Ferguson, John R., Jr.**

Extension Educator Emeritus of Forest Resources, Hillsborough County; B.S., University of New Hampshire, 1960; (1965 to 1995).

**Fink, Stephen L.**

Associate Dean Emeritus of the Whittemore School of Business and Economics and Professor Emeritus of Organizational Behavior; B.S., Union College, 1954; Ph.D., Case Western Reserve University, 1959; (1969 to 2001).

**Fish, Stanwood C.**

Dean Emeritus of Admissions and Financial Aid; B.A., Bowdoin College, 1960; M.A., University of New Hampshire, 1968; (1977 to 1994).

**Fisher, G. Thomas**

Associate Professor Emeritus of Entomology; B.S., Iowa State University, 1950; M.S., Rutgers, The State University of New Jersey, 1952; Ph.D., *ibid.*, 1954; M. Div., Andover Newton Theological School, 1985; (1969 to 1991).

**Fogg, Marguerite F.**

Associate Professor Emerita of Nursing; Diploma, Margaret Pillsbury Hospital School, 1940; B.S., Boston College, 1957; M.S., *ibid.*, 1960; (1967 to 1983).

**Forbes, F. William**

Professor Emeritus of Spanish; A.B., Stanford University, 1965; M.A., University of Arizona, 1967; Ph.D., *ibid.*, 1971; (1970 to 2006).

**Ford, Joseph P.**

Assistant Professor Emeritus of Political Science; B.A., University of New Hampshire, 1956; M.P.A., Harvard University, 1957; (1962 to 1991).

**Freear, John**

Professor Emeritus of Accounting and Finance; B.A., Cambridge University, England, 1963; M.A., *ibid.*, 1967; M.A., University of Kent, England, 1969; F.C.A.; (1983 to 2005).

**Frost, Albert D.**

Professor Emeritus of Electrical and Computer Engineering; B.S., Tufts University, 1945; A.M., Harvard University, 1947; Sc.D., Massachusetts Institute of Technology, 1952; (1957 to 1995).

**Gaudard, Marie A.**

Professor Emerita of Mathematics; A.B., Mount Holyoke College, 1973; Ph.D., University of Massachusetts at Amherst, 1977; (1977 to 2004).

**Gaudette, Henri E.**

Professor Emeritus of Earth Sciences and Earth, Oceans, and Space; B.A., University of New Hampshire, 1959; M.S., University of Illinois at Urbana-Champaign, 1962; Ph.D., *ibid.*, 1963; (1965 to 2001).

**Gerhard, Glen C.**

Professor Emeritus of Electrical and Computer Engineering; B.E.E., Syracuse University, 1956; M.Sc., Ohio State University, 1958; Ph.D., *ibid.*, 1963; (1967 to 1991).

**Gilman, Francis E.**

Associate Extension Educator Emeritus of Cooperative Extension; B.S., University of Maine at Orono, 1958; (1969 to 1990).

**Gilmore, Robert C.**

Professor Emeritus of History; A.B., University of Vermont, 1944; M.A., McGill University, 1947; M.A., Yale University, 1951; Ph.D., *ibid.*, 1954; (1952 to 1991).

**Glanz, Filson H.**

Professor Emeritus of Electrical and Computer Engineering; B.S., Stanford University, 1956; M.S., *ibid.*, 1957; Ph.D., *ibid.*, 1965; (1965 to 1996).

**Goodberry, James C.**

Thompson School Associate Professor Emeritus of Mathematics; A.A., Onondaga Community College, 1968; B.S., State University of New York College at Oswego, 1970; M.Ed., University of New Hampshire, 1974; (1986 to 2001).

**Gordon, Bernard K.**

Professor Emeritus of Political Science; B.A., New York University, 1953; A.M., *ibid.*, 1955; Ph.D., University of Chicago, 1959; (1971 to 1997).

**Grant, Clarence L.**

Professor Emeritus of Chemistry; B.S., University of New Hampshire, 1951; M.S., *ibid.*, 1956; Ph.D., Rutgers, The State University of New Jersey, 1960; (1952 to 1989).

**Graves, Donald H.**

Professor Emeritus of Education; B.A., Bates College, 1952; M.Ed., Bridgewater State College, 1959; Ed.D., State University of New York at Buffalo, 1973; (1973 to 1992).



**Green, Donald M.**

Professor Emeritus of Biochemistry and Molecular Biology and Genetics; A.B., Oberlin College, 1954; Ph.D., University of Rochester, 1958; (1967 to 1993).

**Gutman, Jonathan**

Professor Emeritus of Marketing; B.A., Pomona College, 1960; M.S., Purdue University, 1962; Ph.D., University of Southern California, 1967; (1987 to 2004).

**Haebler, Peter**

UNHM Associate Dean Emeritus for Academic Affairs; B.A., University of Massachusetts at Amherst, 1963; M.A., *ibid.*, 1968; Ph.D., University of New Hampshire, 1976; (1979 to 2005).

**Haendler, Helmut M.**

Professor Emeritus of Chemistry; B.S.Ch.E., Northeastern University, 1935; Ph.D., University of Washington, 1940; (1945 to 1978).

**Hagstrom, Earl C.**

Associate Professor Emeritus of Psychology; B.S., Tufts University, 1952; Sc.M., Brown University, 1954; Ph.D., *ibid.*, 1957; (1965 to 1994).

**Haley, Russell**

Professor Emeritus of Marketing; A.B., College of Wooster, 1946; M.B.A., Columbia University, 1948; Ph.D., Union Graduate School, 1974; (1975 to 1987).

**Hall, Francine S.**

Professor Emerita of Organizational Behavior; B.A., Boston University, 1965; M.S., Southern Connecticut State University, 1968; Ph.D., University of Toronto, Canada, 1975; (1980 to 2005).

**Hall, Francis R.**

Professor Emeritus of Hydrogeology; B.S., Stanford University, 1949; M.A., University of California at Los Angeles, 1953; Ph.D., Stanford University, 1961; (1964 to 1990).

**Hansen, Larry J.**

Associate Professor Emeritus of Family Studies; B.S., Brigham Young University, 1968; M.S., *ibid.*, 1971; Ph.D., Florida State University, 1973; (1973 to 2005).

**Hapgood, Robert**

Professor Emeritus of English; B.A., University of California at Berkeley, 1950; M.A., *ibid.*, 1951; Ph.D., *ibid.*, 1955; (1965 to 1996).

**Harter, Robert D.**

Professor Emeritus of Soil Chemistry; B.S., Ohio State University, 1961; M.S., *ibid.*, 1962; Ph.D., Purdue University, 1966; (1969 to 1999).

**Heckel, Maynard C.**

Director Emeritus of Cooperative Extension Service and Professor Emeritus of Adult Education; B.S., Rutgers, The State University of New Jersey, 1949; M.S., Cornell University, 1956; Ed.D., *ibid.*, 1961; (1971 to 1987).

**Heidgerd, Lloyd H.**

Associate Professor Emeritus and Biology Branch Librarian; A.B., Oberlin College, 1941; M.A., Teachers College, Columbia University, 1948; Ed.D., University of Illinois at Urbana-Champaign, 1958; A.M.L.S., University of Michigan at Ann Arbor, 1969; (1969 to 1985).

**Heilbronner, Hans**

Professor Emeritus of History; A.B., University of Michigan at Ann Arbor, 1949; A.M., *ibid.*, 1950; Ph.D., *ibid.*, 1954; (1954 to 1991).

**Heisenberg, Jochen**

Professor Emeritus of Physics; Vordiplom, University of Munich, Germany, 1961; Diplom, University of Hamburg, Germany, 1964; Doctor, *ibid.*, 1966; (1978 to 2006).

**Herbst, Edward J.**

Professor Emeritus of Biochemistry; B.S., University of Wisconsin, 1942; M.S., *ibid.*, 1944; Ph.D., *ibid.*, 1949; (1962 to 1988).

**Hill, John L.**

Professor Emeritus of Natural Resources; B.S.F., Colorado State University, 1942; M.S.F., Yale University, 1947; D.F., *ibid.*, 1954; (1964 to 1988).

**Hochgraf, Frederick G.**

Associate Professor Emeritus of Materials Science; B.Met.E., Rensselaer Polytechnic Institute, 1954; M.S., Cornell University, 1958; (1958 to 1987).

**Hocker, Harold W., Jr.**

Professor Emeritus of Forest Resources; B.S.F., Pennsylvania State University, 1949; M.F., North Carolina State University, 1952; D.F., Duke University, 1955; (1955 to 1990).

**Holder, Mary**

Associate Professor Emerita of Home Economics; B.S., Mount Allison University, 1940; M.S., Michigan State University, 1949; (1967 to 1980).

**Hollweg, Joseph**

Professor Emeritus of Physics; B.S., Massachusetts Institute of Technology, 1965; M.S., *ibid.*, 1965; Ph.D., *ibid.*, 1968; (1980 to 2006).

**Holter, James B.**

Professor Emeritus of Animal Science; B.S., Pennsylvania State University, 1956; M.S., University of Maryland, 1958; Ph.D., Pennsylvania State University, 1962; (1963 to 1996).

**Horne, Peter J.**

Dean Emeritus of Cooperative Extension; B.S., University of New Hampshire, 1958; M.Ed., *ibid.*, 1967; Ed.D., Boston University, 1980; (1984 to 1998).

**Horrigan, James O.**

Professor Emeritus of Accounting and Finance; B.S., University of Notre Dame, 1952; M.B.A., University of Chicago, 1956; Ph.D., *ibid.*, 1967; (1966 to 1995).

**Houston, Robert E., Jr.**

Professor Emeritus of Physics; B.S., Michigan State University, 1949; M.S., *ibid.*, 1951; Ph.D., Pennsylvania State University, 1957; (1957 to 1989).

**Howe, Gerald W.**

Extension Specialist Emeritus and Extension Specialist, Community and Family Development; B.S., University of Massachusetts at Amherst, 1970; M.S., *ibid.*, 1977; M.S.L., Vermont Law School, 1983; (1972 to 1995).

**Howell, David L.**

Professor Emeritus of Education; B.S., Michigan State University, 1964; M.Ed., Pennsylvania State University, 1968; Ph.D., Ohio State University, 1973; (1982 to 2005).

**Hraba, John B.**

Director Emeritus of System Planning and Professor Emeritus of Electrical and Computer Engineering; B.S., University of New Hampshire, 1948; M.Eng., Yale University, 1949; Ph.D., University of Illinois at Urbana-Champaign, 1955; (1949 to 1981).

**Hubbard, Colin D.**

Professor Emeritus of Chemistry; B.Sc., University of Sheffield, England, 1961; Ph.D., *ibid.*, 1964; (1967 to 1995).

**Hunter, Barbara J.**

Extension Educator Emerita of Family Development, Belknap County; B.A., Montclair State College, 1966; M.S., University of New Hampshire, 1975; (1982 to 2004).

**Ikawa, Miyoshi**

Professor Emeritus of Biochemistry and Affiliate Professor of Zoology; B.S., California Institute of Technology, 1941; M.S., University of Wisconsin at Madison, 1944; Ph.D., *ibid.*, 1948; (1963 to 1986).

**Irwin, Manley R.**

Professor Emeritus of Economics and Business Administration; A.B., Michigan State University, 1950; M.A., University of Michigan at Ann Arbor, 1954; Ph.D., Michigan State University, 1963; (1963 to 1990).

**James, Marion E.**

Professor Emerita of History; A.B., University of New Hampshire, 1940; A.M., Harvard University, 1949; Ph.D., *ibid.*, 1955; (1955 to 1986).

**Jansen, Edmund F., Jr.**

Professor Emeritus of Environmental and Resource Economics and Community Development; B.S., University of Illinois at Urbana-Champaign, 1960; M.S., North Carolina State University, 1964; Ph.D., *ibid.*, 1966; (1969 to 2002).

**Jellison, Charles A., Jr.**

Professor Emeritus of History; A.B., Stanford University, 1947; M.A., *ibid.*, 1948; Ph.D., University of Virginia, 1956; (1956 to 1989).

**Jenkins, Melvin E.**

Thompson School Professor Emeritus of Forest Technology; B.S.F., University of Massachusetts at Amherst, 1959; M.S.F., University of New Hampshire, 1961; (1961 to 1996).

**Jones, Galen E.**

Professor Emeritus of Microbiology; B.A., Dartmouth College, 1950; M.A., Williams College, 1952; Ph.D., Rutgers, The State University of New Jersey, 1956; (1966 to 1991).

**Jones, Paul R.**

Professor Emeritus of Chemistry; A.B., Albion College, 1952; Ph.D., University of Illinois at Urbana-Champaign, 1956; (1956 to 1995).

**Kang, Jae O.**

Associate Professor Emerita of Medical Laboratory Science; B.S., Salve Regina - The Newport College, 1973; M.S., State University of New York, Brooklyn, 1977; Ph.D., *ibid.*, 1984; (1989 to 2000).

**Kapoor, Jagdish C.**

Associate Professor Emeritus, Librarian; B.A., Punjab University, India, 1946; M.A., *ibid.*, 1954; M.A., University of New Hampshire, 1969; M.S., Simmons College, 1974; (1974 to 1990).

**Karson, Marvin J.**

Professor Emeritus of Business Statistics; B.B.A., City College of New York, 1959; M.A., Johns Hopkins University, 1961; Ph.D., North Carolina State University, 1967; (1983 to 1999).

**Keener, Harry A.**

Dean Emeritus of the College of Life Sciences and Agriculture, Director Emeritus of the Agricultural Experiment Station and Professor Emeritus of Animal Science; B.S., Pennsylvania State University, 1936; M.S., West Virginia University, 1938; Ph.D., Pennsylvania State University, 1941; (1941 to 1978).

**Kelley, Ann**

Associate Professor Emerita of Nursing; Diploma, Peter Bent Brigham Hospital, 1955; B.S., Boston University, 1959; M.S., *ibid.*, 1966; (1965 to 1999).



**Kennard, Jean E.**

Professor Emerita of English; B.A., University of London, England, 1958; M.A., University of California at Berkeley, 1966; Ph.D., *ibid.*, 1968; (1975 to 2000).

**Kertzner, Robert**

Professor Emeritus of Kinesiology; B.S., Brooklyn College, City University of New York, 1960; M.S., University of Illinois at Urbana-Champaign, 1961; Ph.D., Michigan State University, 1965; (1965 to 2001).

**Khleif, Bud B.**

Professor Emeritus of Sociology; Intermediate Certificate, British Government Arab College, Jerusalem, 1948; B.A., Hebrew University of Jerusalem, Israel, 1952; M.A., University of Michigan at Ann Arbor, 1954; Ph.D., Johns Hopkins University, 1957; (1967 to 1997).

**Kiang, Yun-Tzu**

Professor Emeritus of Plant Biology and Genetics; B.S., Taiwan Normal University, 1957; M.A., Ohio State University, 1962; Ph.D., University of California at Berkeley, 1970; (1970 to 1994).

**Kimball, Robert O.**

Associate Professor Emeritus of Mathematics; B.S., University of New Hampshire, 1941; M.A., *ibid.*, 1952; (1946 to 1986).

**Kimball, Roland B.**

Professor Emeritus of Education; B.S., University of New Hampshire, 1942; M.Ed., *ibid.*, 1949; Ed.D., Harvard University, 1958; (1963 to 1990).

**Klotz, Louis H.**

Associate Professor Emeritus of Civil Engineering; B.S.C.E., Pennsylvania State University, 1951; M.S.C.E., New York University, 1956; Ph.D., Rutgers, The State University of New Jersey, 1967; (1965 to 1986).

**Knight, Lewis**

Associate Professor Emeritus of Mathematics; B.A., Amherst College, 1957; M.A.T., Harvard University, 1961; Ed.D., Stanford University, 1971; (1983 to 1999).

**Knowles, Stanley W.**

Extension Educator Emeritus of Cooperative Extension and Extension Specialist, Forestry; B.S., University of New Hampshire, 1959; M.S., *ibid.*, 1970; (1962 to 1990).

**Komonchak, Bernadette**

Associate Professor Emerita of Spanish; B.S., State University of New York College at Plattsburgh, 1954; M.A., University of Arizona, 1967; Ph.D., *ibid.*, 1974; (1976 to 1999).

**Korbel, John J.**

Professor Emeritus of Economics and Administration; S.B., Harvard University, 1939; M.B.A., Harvard Graduate School of Business Administration, 1941; Ph.D., Harvard University, 1959; (1966 to 1986).

**Kuo, Shan S.**

Professor Emeritus of Computer Science; B.S., National Chung Chen University, China, 1944; M.S., Ohio State University, 1948; M.E., Harvard University, 1954; D.Eng., Yale University, 1958; (1964 to 1996).

**Lambert, Robert H.**

Professor Emeritus of Physics; B.S., St. Lawrence University, 1952; M.A., Harvard University, 1954; Ph.D., *ibid.*, 1963; (1955 to 1956, 1961 to 2001).

**Larson, Barbara K.**

Associate Professor Emerita of Anthropology; B.A., Stanford University, 1962; M.A., Harvard University, 1964; Ph.D., Columbia University, 1975; (1976 to 2002).

**Larson, David L.**

Professor Emeritus of Political Science; A.B., Dartmouth College, 1952; A.M., Fletcher School of Law and Diplomacy, Tufts University, 1957; M.A.L.D., *ibid.*, 1958; Ph.D., *ibid.*, 1963; (1965 to 1996).

**Laurent, John L.**

Professor Emeritus of the Arts; B.F.A., Syracuse University, 1948; M.A.T., Indiana University at Bloomington, 1954; (1954 to 1985).

**Lavoie, Marcel E.**

Associate Professor Emeritus of Zoology; B.A., St. Anselm College, 1940; M.S., University of New Hampshire, 1952; Ph.D., Syracuse University, 1956; (1950 to 1952, 1955 to 1984).

**Leahy, John A., Jr.**

Thompson School Assistant Professor Emeritus of Horticultural Technology; B.S., University of New Hampshire, 1947; M.S., *ibid.*, 1971; (1966 to 1991).

**Leighton, Roger S.**

Associate Extension Educator Emeritus and Program Leader Forestry Emeritus and CFM Supervisor Emeritus; B.S., University of New Hampshire, 1941; (1952 to 1979).

**Limbirt, David E.**

Professor Emeritus of Mechanical Engineering; B.S., Iowa State University, 1964; M.S., Case Western Reserve University, 1965; Ph.D., *ibid.*, 1969; (1969 to 1998).

**Linden, Allen B.**

Associate Professor Emeritus of History; B.A., Wayne State University, 1957; M.A., Columbia University, 1960; Ph.D., *ibid.*, 1969; (1963 to 1995).

**Linsky, Arnold S.**

Professor Emeritus of Sociology; A.B., Dartmouth College, 1954; M.A., University of Washington, 1963; Ph.D., *ibid.*, 1966; (1966 to 1997).

**Lockwood, John A.**

Professor Emeritus of Physics; A.B., Dartmouth College, 1941; M.S., Lafayette College, 1943; Ph.D., Yale University, 1948; (1948 to 1989).

**Loder, Theodore C., III (1972)**

Professor Emeritus of Earth Sciences and Earth, Oceans, and Space; B.A., University of Rochester, 1962; M.S., Lehigh University, 1965; Ph.D., University of Alaska at Fairbanks, 1971; (1972 to 2005).

**Lonergan, Judith E.**

Extension Specialist Emerita; B.S., Tufts University, 1958; M.O.E., University of New Hampshire, 1979; (1973 to 1995).

**Long, Valerie A.**

Extension Professor Emerita; B.S., Mount Saint Mary College, 1973; M.O.E., University of New Hampshire, 1981; (1979 to 2004).

**+Lord, William G.**

Extension Professor Emeritus and Extension Specialist, Fruit; B.S., University of New Hampshire, 1970; M.S., University of Massachusetts at Amherst, 1972; (1973 to 2003).

**Lucha-Burns, Carol**

Professor Emerita of Theatre and Dance; B.S., Syracuse University, 1963; Diploma, American Musical and Drama Academy, 1965; M.F.A., University of Utah, 1969; (1969 to 2006).

**MacHardy, William E.**

Professor Emeritus of Plant Biology (Plant Pathology) and Extension Plant Pathologist; B.S., University of Maine at Orono, 1958; M.Ed., *ibid.*, 1965; M.S., University of Nebraska at Omaha, 1966; Ph.D., University of Rhode Island, 1970; (1972 to 2001).

**Marshall, Grover E.**

Associate Professor Emeritus of French and Italian; A.B., Bowdoin College, 1951; M.A., Princeton University, 1954; Ph.D., *ibid.*, 1971; (1965 to 2000).

**McIntosh, Edward D.**

Captain Emeritus, Marine Program; (1971 to 1981).

**Meadows, Dennis (1988)**

Director of the Institute for Policy and Social Science Research and Professor Emeritus of Policy Analysis; B.A., Carleton College, 1964; Ph.D., Massachusetts Institute of Technology, 1969; (1988 to 2005).

**Meeker, Bonnie Sharon**

Extension Specialist Emerita; B.S., Oregon State University, 1957; M.E., University of New Hampshire, 1975; (1980 to 2004).

**Meeker, Loren D.**

Professor Emeritus of Mathematics and Earth, Oceans, and Space; B.A., B.S., Oregon State University, 1959; M.S., Stanford University, 1962; M.Sc., University of Aston, England, 1969; Ph.D., Stanford University, 1965; (1970 to 2000).

**Melvin, Donald W.**

Associate Dean Emeritus of the College of Engineering and Physical Sciences and Associate Professor Emeritus of Electrical and Computer Engineering; B.S., University of New Hampshire, 1955; M.E., Yale University, 1957; Ph.D., Syracuse University, 1971; (1957 to 1995).

**Menge, Carleton P.**

Professor Emeritus of Education; B.S., Springfield College, 1939; M.A., University of Chicago, 1940; Ph.D., *ibid.*, 1948; (1948 to 1990).

**Mennel, Robert M. (1969)**

Professor Emeritus of History and the Humanities; B.A., Denison University, 1960; M.A., Ohio State University, 1965; Ph.D., *ibid.*, 1969; (1969 to 2005).

**Merritt, Richard D.**

Associate Professor Emeritus of the Arts; Certificate, Rochester Institute of Technology, 1948; (1948 to 1986).

**Metcalf, Theodore G.**

Professor Emeritus of Microbiology; B.S., Massachusetts College of Pharmacy, 1940; Ph.D., University of Kansas, 1950; (1956 to 1981).

**Miller, Edmund G.**

Professor Emeritus of English; A.B., Dartmouth College, 1943; M.A., Columbia University, 1947; Ph.D., *ibid.*, 1955; (1951 to 1987).

**Mills, B. Joyce**

Assistant Professor Emerita of Kinesiology; B.S., Georgia State College for Women, 1949; M.S., University of Tennessee, 1958; (1967 to 1992).



**Mills, Richard L.**

Associate Professor Emeritus of Economics and Business Administration; B.S., Rose-Hulman Institute of Technology, 1962; M.A., Indiana University at Bloomington, 1964; Ph.D., *ibid.*, 1967; (1967 to 2002).

**Mitchell, James R.**

Associate Professor Emeritus of Plant Biology and Extension Agronomist, Forage Crops; B.S., University of New Hampshire, 1957; M.S., Pennsylvania State University, 1960; Ph.D., *ibid.*, 1969; (1964 to 1998).

**Morrison, James D.**

Professor Emeritus of Chemistry; B.S., Franklin and Marshall College, 1958; Ph.D., Northwestern University, 1963; (1965 to 1998).

**Mosberg, William**

Associate Professor Emeritus of Mechanical Engineering; B.S.M.E., Columbia University, 1956; M.Eng., Yale University, 1960; (1958 to 1997).

**Mower, Lyman**

Professor Emeritus of Physics; B.S., University of California at Berkeley, 1949; Ph.D., Massachusetts Institute of Technology, 1953; (1957 to 1990).

**Mulhern, John E., Jr.**

Professor Emeritus of Physics; B.S., Oklahoma State University, 1948; M.A., Boston University, 1949; Ph.D., *ibid.*, 1954; (1954 to 1993).

**Murdoch, Joseph B.**

Professor Emeritus of Electrical and Computer Engineering and Affiliate Professor of Electrical Engineering Technology; B.S., Case Western Reserve University, 1950; M.S., University of New Hampshire, 1955; Ph.D., Case Western Reserve University, 1962; (1952 to 1995).

**Murphy, William F.**

Dean Emeritus of the Division of Continuing Education and ; A.B., Syracuse University, 1963; M.S., *ibid.*, 1968; Ed.D., University of Massachusetts at Amherst, 1976; (1988 to 2004).

**Murray, Frederick P.**

Associate Professor Emeritus of Communication Sciences and Disorders; B.A., Stanford University, 1948; M.A., University of Southern California, 1950; Ph.D., University of Denver, 1966; (1966 to 1991).

**Nahin, Paul J.**

Professor Emeritus of Electrical and Computer Engineering; B.S.E.E., Stanford University, 1962; M.S.E.E., California Institute of Technology, 1963; Ph.D., University of California at Irvine, 1972; (1975 to 2004).

**Nevin, John A.**

Professor Emeritus of Psychology; B.E., Yale University, 1954; M.A., Columbia University, 1961; Ph.D., *ibid.*, 1963; (1972 to 1995).

**Nicoloff, Philip L.**

Professor Emeritus of English; B.A., University of California at Los Angeles, 1949; M.A., Columbia University, 1952; Ph.D., *ibid.*, 1959; (1954 to 1995).

**Nielson, Alfred Melville**

Associate Professor Emeritus of Sociology; B.S., Bowling Green State University, 1942; M.A., Ohio State University, 1947; Ph.D., *ibid.*, 1955; (1950 to 1986).

**O'Connell, Lawrence W.**

Associate Professor Emeritus of Political Science; B.A., University of New Hampshire, 1956; Ph.D., Syracuse University, 1968; (1966 to 1999).

**O'Donnell, Dorothy C.**

Associate Professor Emerita of Home Economics and Extension Specialist Emerita, Interior Design; B.S., Cornell University, 1946; M.S., University of Wisconsin at Madison, 1952; M.S., *ibid.*, 1955; (1961 to 1980).

**Olson, David P.**

Professor Emeritus of Wildlife Management; B.S., University of Minnesota, 1954; M.S., University of Maine at Orono, 1958; Ph.D., University of Minnesota, 1964; (1964 to 1995).

**Ossenbruggen, Paul J.**

Professor Emeritus of Civil Engineering; B.C.E., Syracuse University, 1963; M.S., University of Connecticut, 1967; Ph.D., Carnegie Mellon University, 1970; (1975 to 1999).

**Palmer, Stuart**

Dean Emeritus of the College of Liberal Arts and Professor Emeritus of Sociology; B.A., Yale University, 1949; M.A., *ibid.*, 1951; Ph.D., *ibid.*, 1955; (1955 to 1996).

**Parssinen, T. A.**

Assistant Professor Emeritus of Mechanical Engineering Technology; B.S.M.E., University of New Hampshire, 1960; (1977 to 1998).

**Patmos, Raymond M., Jr. (1972)**

Extension Educator Emeritus of Forest Resources, Cheshire County; B.S., University of New Hampshire, 1966; M.B.A., Plymouth State College, 1980; (1972 to 2005).

**Pearson, David A.**

Professor Emeritus of Health Management and Policy; B.S., State University of New York College at Cortland, 1956; M.P.H., University of Michigan at Ann Arbor, 1961; Ph.D., Yale University, 1970; (1989 to 2002).

**Peirce, Lincoln C.**

Professor Emeritus of Plant Biology and Genetics; B.S., Cornell University, 1952; Ph.D., University of Minnesota, 1958; (1964 to 1992).

**Petillo, Juliette D.**

Associate Professor Emerita of Nursing; B.S.N., St. Anselm College, 1961; M.S., Boston University, 1973; Ph.D., Boston College, 1993; (1973 to 1998).

**Petroski, Joseph J.**

Associate Professor Emeritus of Education; B.S., University of New Hampshire, 1947; M.Ed., *ibid.*, 1952; Ed.D., Harvard University, 1960; (1966 to 1978).

**Pilar, Frank L.**

Professor Emeritus of Chemistry; B.S., University of Nebraska at Lincoln, 1951; M.S., *ibid.*, 1953; Ph.D., University of Cincinnati, 1957; (1957 to 1992).

**Plowman, Faye T.**

Extension Educator Emerita and Extension Specialist, Housing; B.S., Michigan State University, 1970; M.A., *ibid.*, 1972; (1983 to 1991).

**Pohl, Peter W. (1969)**

Extension Educator Emeritus of Forest Resources, Carroll County; B.S., University of New Hampshire, 1966; M.S., *ibid.*, 1978; (1969 to 2005).

**Pokoski, John L.**

Professor Emeritus of Electrical Engineering; B.S., St. Louis University, 1959; M.S., Arizona State University, 1965; Ph.D., Montana State University, 1967; (1967 to 2001).

**Polk, Keith**

Professor Emeritus of Music; B.A., San Diego State University, 1956; M.M., University of Wisconsin at Madison, 1958; Ph.D., University of California at Berkeley, 1968; (1964 to 2000).

**Porter, John C.**

Extension Educator Emeritus and Extension Specialist, Dairy, Merrimack County; B.S., University of New Hampshire, 1971; M.S., Cornell University, 1973; (1974 to 2006).

**Pratt, Leighton C.**

Assistant Extension Educator Emeritus and County Extension Agent, Agriculture and County Coordinator, Coos County; B.S., University of Vermont, 1951; M.S., University of Rhode Island, 1953; (1969 to 1988).

**Prince, Allan B.**

Professor Emeritus of Soil and Water Science; M.S., Rutgers University, 1947; Ph.D., *ibid.*, 1950; (1954 to 1990).

**Pritchard, Hugh C.**

Professor Emeritus and Reference Librarian; B.A., University of Washington, 1939; M.A., University of North Carolina at Chapel Hill, 1942; M.S., Columbia University, 1950; (1954 to 1985).

**Puth, Robert C.**

Professor Emeritus of Economics; B.A., Carleton College, 1958; M.A., Northwestern University, 1965; Ph.D., *ibid.*, 1967; (1967 to 1997).

**Rasmussen, Mary H.**

Professor Emerita of Music; B.A., University of New Hampshire, 1952; M.M., University of Illinois at Urbana-Champaign, 1953; M.L.S., *ibid.*, 1956; (1968 to 1997).

**Reed, Robert C.**

Associate Professor Emeritus and Collection Development Librarian; B.A., Hartwick College, 1953; A.M.L.S., University of Michigan at Ann Arbor, 1960; (1960 to 1988).

**Ringrose, Richard C.**

Professor Emeritus of Animal Science; B.S., Cornell University, 1932; Ph.D., *ibid.*, 1936; (1942 to 1975).

**Roberts, Betty Holroyd**

Professor Emerita of Social Work; B.A., West Virginia University, 1953; M.S.W., *ibid.*, 1970; Ph.D., Brandeis University, 1975; (1974 to 1991).

**Roberts, Lewis, Jr.**

Associate Professor Emeritus of Occupational Education; B.A., Brown University, 1959; M.Ed., Auburn University, 1970; Ed.D., *ibid.*, 1972; (1972 to 1998).

**Rogers, John E.**

Professor Emeritus of Music; B.A., B.M., University of Georgia, 1960; M.M., Yale University, 1962; M.F.A., Princeton University, 1966; (1967 to 2005).

**Rogers, Owen M.**

Professor Emeritus of Plant Biology and Genetics; B.V.A., University of Massachusetts at Amherst, 1952; M.S., Cornell University, 1954; Ph.D., Pennsylvania State University, 1959; (1959 to 1995).

**Romoser, George K.**

Professor Emeritus of Political Science; A.B., Rutgers University, 1951; A.M., University of Chicago, 1954; Ph.D., *ibid.*, 1958; (1961 to 1962, 1967 to 1996).

**Rosen, Sam**

Professor Emeritus of Economics; B.A., University of Wisconsin at Madison, 1942; M.A., Harvard University, 1948; Ph.D., *ibid.*, 1952; (1957 to 1985).



**Ross, Shepley L.**

Professor Emeritus of Mathematics; A.B., Boston University, 1949; A.M., *ibid.*, 1950; Ph.D., *ibid.*, 1953; (1955 to 1993).

**Rothwell, Kenneth J.**

Professor Emeritus of International Economics; B.A., University of Western Australia, 1949; M.A., *ibid.*, 1954; Ph.D., Harvard University, 1961; (1963 to 1991).

**Rouman, John C.**

Professor Emeritus of Classics; B.A., Carleton College, 1950; M.A., Columbia University, 1951; Ph.D., University of Wisconsin at Madison, 1965; (1965 to 1999).

**Routley, Douglas G.**

Professor Emeritus of Plant Biology; B.S.A., University of British Columbia, 1952; M.S., Pennsylvania State University, 1953; Ph.D., *ibid.*, 1957; (1957 to 1991).

**Rupp, Nancy C.**

Assistant Professor Emerita of Kinesiology; B.S., Sargent College, Boston University, 1950; M.A., University of Iowa, 1955; (1970 to 1991).

**Samuels, Frederick**

Professor Emeritus of Sociology; B.S., City College of New York, 1950; M.A., University of Hawaii, 1963; Ph.D., University of Massachusetts at Amherst, 1966; (1966 to 1993).

**Sasner, John J.**

Professor Emeritus of Zoology and Affiliate Professor of Zoology; B.A., University of New Hampshire, 1957; M.S., *ibid.*, 1959; Ph.D., University of California at Los Angeles, 1965; (1965 to 2000).

**Savage, Godfrey H.**

Professor Emeritus of Mechanical and Ocean Engineering; B.S.E., Princeton University, 1950; M.B.A., Harvard University, 1954; Ph.D., Stanford University, 1970; (1965 to 1997).

**Sawyer, Albert K.**

Professor Emeritus of Chemistry; A.B., Colby College, 1940; M.S., University of Maine at Orono, 1947; (1949 to 1985).

**Schibanoff Susan**

Professor Emerita of English; B.A., Cornell University, 1966; M.A., University of California at Los Angeles, 1967; Ph.D., *ibid.*, 1971; (1971 to 2006).

**Schlobohm, Starr F.**

Associate Professor Emeritus of Marketing; B.A., Ohio Wesleyan University, 1950; M.B.A., Harvard University, 1952; M.Phil., Graduate School of Business Administration, New York University, 1978; Ph.D., *ibid.*, 1980; (1975 to 1992).

**Schneer, Cecil J.**

Professor Emeritus of Geology and the History of Science; A.B., Harvard University, 1943; A.M., *ibid.*, 1949; Ph.D., Cornell University, 1954; (1954 to 1988).

**Schroeder, Calvin E.**

Extension Educator Emeritus of Agricultural Resources, Strafford County; A.A.S., Thompson School of Applied Science, 1963; B.S., University of New Hampshire, 1968; M.O.E., *ibid.*, 1980; (1969 to 2000).

**Schwarz, Marc L.**

Associate Professor Emeritus of History; A.B., Bates College, 1959; M.A.T., Harvard University, 1960; Ph.D., University of California at Los Angeles, 1965; (1967 to 2006).

**Schweickart, Patrocínio P**

Professor Emerita of English; B.S., University of the Philippines, 1963; M.Ch.E., University of Virginia, 1965; M.A., *ibid.*, 1969; M.A., Ohio State University, 1974; Ph.D., *ibid.*, 1980; (1979 to 1998).

**Seavey, David C.**

Extension Educator Emeritus of Agricultural Resources, Merrimack County; A.A.S., Thompson School of Applied Science, 1963; B.S., University of Rhode Island, 1966; M.S., University of New Hampshire, 1969; (1970 to 2004).

**Seidel, Alice C.**

Associate Professor Emerita of Occupational Therapy; B.S., University of Wisconsin at Madison, 1963; M.P.H., University of Michigan at Ann Arbor, 1971; Ed.D., Vanderbilt University, 1994; (1976 to 2004).

**Shepard, Harvey K.**

Professor Emeritus of Physics; B.S., University of Illinois at Urbana-Champaign, 1960; M.S., California Institute of Technology, 1962; Ph.D., *ibid.*, 1966; (1969 to 2006).

**Shore, Carol**

Professor Emerita of Art; B.F.A., Boston University, 1963; M.A., University of Chicago, 1965; (1980 to 1999).

**Shotter, John D.**

Professor Emeritus of Communication; B.Sc., University of London, England, 1963; Ph.D., University of Nottingham, England, 1982; (1991 to 2003).

**Silva, J. Donald**

Thompson School Professor Emeritus of Communications; B.A., University of New Hampshire, 1957; M.A., *ibid.*, 1965; (1963 to 2004).

**Silverman, Robert J.**

Professor Emeritus of Mathematics; S.B., University of Chicago, 1947; S.M., *ibid.*, 1948; Ph.D., University of Illinois at Urbana-Champaign, 1952; (1962 to 1987).

**Simic, Charles D.**

Professor Emeritus of English; B.A., New York University, 1967; (1973 to 2006).

**Simpson, Robert E.**

Professor Emeritus of Physics; B.S., University of Rochester, 1955; A.M., Harvard University, 1956; Ph.D., *ibid.*, 1960; (1963 to 2002).

**Sir, W. Niel**

Associate Professor Emeritus of Music; B.A., University of Chicago, 1952; B.A., University of California at Berkeley, 1954; M.A., *ibid.*, 1962; (1970 to 2000).

**Skoglund, Winthrop C.**

Professor Emeritus of Animal Science; B.S., University of New Hampshire, 1938; M.S., Pennsylvania State University, 1940; Ph.D., *ibid.*, 1958; (1950 to 1981).

**Smith, Gerald L.**

Associate Professor Emeritus of Animal Science and Extension Animal Scientist; B.S., University of New Hampshire, 1948; M.S., Pennsylvania State University, 1951; (1948 to 1980).

**Smith, M. Daniel**

Associate Professor Emeritus of Education; A.B., Dartmouth College, 1948; M.M., University of Michigan at Ann Arbor, 1950; M.Ed., Harvard University, 1958; Ed.D., *ibid.*, 1961; (1967 to 1997).

**Smith, Mark R.**

Professor Emeritus of English; B.A., Northwestern University, 1960; (1966 to 1999).

**Smith, Samuel C.**

Professor Emeritus of Animal and Nutritional Sciences; B.S., Pennsylvania State University, 1955; M.S., *ibid.*, 1958; Ph.D., *ibid.*, 1962; (1961 to 2004).

**Sorensen, David C.**

Extension Educator Emeritus of Agricultural Resources, Carroll County; B.S., University of Rhode Island, 1964; M.S., *ibid.*, 1967; (1969 to 1998).

**Spears, Margaret W.**

Associate Professor Emerita of Nursing; B.S.N., University of Pittsburgh, 1952; M.S., University of Lowell, 1979; Ed.D., Vanderbilt University, 1985; (1981 to 1996).

**Sprague, Linda G.**

Professor Emerita of Operations Management; S.B., Massachusetts Institute of Technology, 1961; M.B.A., Boston University, 1967; D.B.A., Harvard University, 1973; (1969 to 2002).

**Sproul, Otis J.**

Dean Emeritus of the College of Engineering and Physical Sciences and Professor Emeritus of Civil Engineering; B.S., University of Maine at Orono, 1952; M.S., *ibid.*, 1957; Sc.D., Washington University, 1961; (1982 to 1995).

**Stewart, James A.**

Professor Emeritus of Biochemistry; B.A., St. Anselm College, 1963; Ph.D., University of Connecticut, 1967; (1968 to 2001).

**Stocking, Marion I.**

Associate Extension Educator Emerita and County Extension Agent, Home Economics, Carroll County; B.S., Simmons College, 1949; M.A., University of Connecticut, 1971; (1958 to 1988).

**Stone-McAdams, Deborah E.**

Associate Professor Emerita of Education; B.Ed., Plymouth Teachers College, 1940; M.Ed., Boston University, 1951; Ed.D., *ibid.*, 1971; (1962 to 1990).

**Sullivan, Judith A.**

Professor Emerita of Nursing; B.S., Boston University, 1962; M.S., Case Western Reserve University, 1967; Ed.D., University of Rochester, 1972; (1990 to 2006).

**Sussenberger, Barbara**

Associate Professor Emerita of Occupational Therapy; B.S., Tufts University, 1961; M.S., Boston University, 1975; (1978 to 2003).

**Sweet, Paul C.**

Coach of Track and Cross Country and Professor Emeritus of Kinesiology; B.S., University of Illinois at Urbana-Champaign, 1923; M.S., University of Southern California, 1941; (1924 to 1970).

**Szymujko, Joseph A.**

Assistant Extension Educator Emeritus of Forestry, Sullivan County; B.S., University of New Hampshire, 1954; (1958 to 1989).

**Taft, Charles K.**

Professor Emeritus of Mechanical Engineering; B.A., Amherst College, 1951; B.S., Massachusetts Institute of Technology, 1953; M.S., Case Western Reserve University, 1956; Ph.D., *ibid.*, 1960; (1967 to 1991).

**Tillinghast, Edward K.**

Professor Emeritus of Zoology and Affiliate Professor of Zoology; B.S., University of Rhode Island, 1955; M.S., *ibid.*, 1959; Ph.D., Duke University, 1967; (1967 to 1999).



**Tischler, Herbert**

Professor Emeritus of Geology; B.S., Wayne State University, 1950; M.A., University of California at Berkeley, 1955; Ph.D., University of Michigan at Ann Arbor, 1961; (1965 to 1997).

**Ulrich, Gael D.**

Professor Emeritus of Chemical Engineering; B.S., University of Utah, 1959; M.S., *ibid.*, 1962; Sc.D., Massachusetts Institute of Technology, 1964; (1970 to 1997).

**Urban, Willard E., Jr.**

Professor Emeritus of Biometrics; B.S., Virginia Polytechnic Institute and State University, 1958; M.S., Iowa State University, 1960; Ph.D., *ibid.*, 1963; (1963 to 1997).

**Ury, Ann D.**

Associate Professor Emerita of Occupational Therapy; B.S., University of New Hampshire, 1956; M.A., Brown University, 1968; C.A.G.S., Rhode Island College, 1973; M.S.W., University of Connecticut, 1985; (1973 to 1997).

**Valenza, Daniel L.**

Professor Emeritus of Art; A.A.S., School for American Craftsmen at Rochester Institute of Technology, 1956; B.F.A., *ibid.*, 1958; M.F.A., *ibid.*, 1966; (1959 to 1999).

**Van Osdol, Donovan H.**

Professor Emeritus of Mathematics; A.B., Earlham College, 1964; A.M., University of Illinois at Urbana-Champaign, 1966; Ph.D., *ibid.*, 1969; (1970 to 2002).

**Verrette, Paul F.**

Associate Professor Emeritus of Music; B.A., University of New Hampshire, 1952; M.A., Boston University, 1971; (1962 to 1995).

**Vreeland, Robert P.**

Associate Professor Emeritus of Civil Engineering; B.S., Yale University, 1932; M.S., Columbia University, 1933; M.E., Yale University, 1941; (1966 to 1977).

**Wallace, Oliver P., Sr.**

Professor Emeritus of Forest Resources; B.S., University of New Hampshire, 1937; B.S.F., University of Michigan at Ann Arbor, 1938; M.F., *ibid.*, 1947; Ph.D., *ibid.*, 1954; (1958 to 1982).

**Wang, Rosemary Y.**

Associate Professor Emerita of Nursing; Diploma, Good Samaritan School of Nursing, Cincinnati, 1957; B.S., College of Mount St. Joseph, 1959; M.S., Boston College, 1962; Ph.D., *ibid.*, 1982; (1971 to 1999).

**Wang, Tung-Ming**

Professor Emeritus of Civil Engineering; B.S., National Chiao-Tung University, China, 1945; M.S., University of Missouri at Columbia, 1954; Ph.D., Northwestern University, 1960; (1961 to 1992).

**Ward, Judith D.**

Associate Professor Emerita of Occupational Therapy; B.S., University of New Hampshire, 1964; M.O.E., *ibid.*, 1976; Ph.D., The Fielding Institute, 1997; (1972 to 2006).

**Wear, Robert E.**

Associate Professor Emeritus of Kinesiology; B.A., Oberlin College, 1941; M.A., University of Michigan at Ann Arbor, 1946; Ph.D., *ibid.*, 1955; (1964 to 1986).

**Weathersby, Rita**

Professor Emerita of Organizational Behavior; A.B., University of California at Berkeley, 1965; M.A.T., Harvard University, 1968; C.A.S., *ibid.*, 1974; Ed.D., *ibid.*, 1977; (1978 to 2005).

**Weber, James H.**

Professor Emeritus of Chemistry; B.S., Marquette University, 1959; Ph.D., Ohio State University, 1963; (1963 to 1999).

**Weeks, Silas B.**

Associate Professor Emeritus of Environmental and Resource Economics and Extension Community Resource Development Specialist Emeritus; B.S., Cornell University, 1937; (1955 to 1981).

**Weiland, Walter E.**

Associate Professor Emeritus of Kinesiology; B.S., State University of New York College at Cortland, 1957; M.S., Pennsylvania State University, 1958; Ph.D., *ibid.*, 1964; (1964 to 1996).

**Wells, Otho S.**

Professor Emeritus of Plant Biology and Extension Horticulturist, Vegetables; B.S., North Carolina State University, 1961; M.S., Michigan State University, 1963; Ph.D., Rutgers, The State University of New Jersey, 1966; (1966 to 1999).

**Wetzel, William E., Jr.**

Professor Emeritus of Business Administration; B.A., Wesleyan University, 1950; M.B.A., Temple University, 1964; M.B.A., University of Chicago, 1967; (1967 to 1993).

**Weyrick, Richard R.**

Associate Professor Emeritus of Forest Resources; B.S., University of Minnesota, 1953; M.F., *ibid.*, 1961; Ph.D., *ibid.*, 1968; (1964 to 2004).

**Wheeler, Charles M., Jr.**

Professor Emeritus of Chemistry; B.S., West Virginia University, 1947; M.S., *ibid.*, 1949; Ph.D., *ibid.*, 1951; (1950 to 1983).

**Wheeler, Douglas L.**

Professor Emeritus of History; A.B., Dartmouth College, 1959; A.M., Boston University, 1960; Ph.D., *ibid.*, 1963; (1965 to 2002).

**White, Barbara A.**

Professor Emerita of Women's Studies; A.B., Cornell University, 1964; M.A., University of Wisconsin at Madison, 1965; Ph.D., *ibid.*, 1974; (1976 to 1999).

**White, Susan O.**

Professor Emerita of Political Science; A.B., Bryn Mawr College, 1958; M.A., University of Minnesota, 1966; Ph.D., *ibid.*, 1970; (1969 to 1997).

**Wicks, John D.**

Professor Emeritus of Music; A.B., Harvard University, 1944; A.M., *ibid.*, 1947; Ph.D., *ibid.*, 1959; (1956 to 1989).

**Williams, Charles H.**

Associate Extension Educator Emeritus and Extension Specialist, Ornamentals; B.S., Pennsylvania State University, 1956; M.S., Michigan State University, 1967; Ph.D., University of New Hampshire, 1981; (1969 to 1998).

**Willits, Robin D.**

Professor Emeritus of Administration and Organization; A.B., Middlebury College, 1949; B.S., Massachusetts Institute of Technology, 1948; Ph.D., *ibid.*, 1965; (1965 to 1990).

**Wilson, John A.**

Associate Professor Emeritus of Mechanical Engineering; B.S., Tufts University, 1958; M.S., Northeastern University, 1960; Ph.D., *ibid.*, 1970; (1960 to 1999).

**Wing, Barbara H.**

Associate Professor Emerita of Spanish; B.A., Middlebury College, 1955; M.A.T., Harvard University, 1956; M.A., Middlebury College, 1971; Ph.D., Ohio State University, 1980; (1970 to 1996).

**Wing, Henry J., Jr.**

Associate Professor Emeritus of Music; B.M., Oberlin Conservatory, 1952; M.M., *ibid.*, 1953; Ph.D., Boston University, 1966; (1970 to 1996).

**Winn, Alden L.**

Professor Emeritus of Electrical and Computer Engineering; B.S., University of New Hampshire, 1937; S.M., Massachusetts Institute of Technology, 1948; (1948 to 1983).

**Wood, Dorothy**

Associate Extension Educator Emerita of Home Economics, Hillsboro County; B.S., Boston University, 1949; (1971 to 1989).

**Wood, Stephen A.**

Assistant Extension Educator Emeritus of Forest Resources, Sullivan County; B.S., University of Maine at Orono, 1973; (1974 to 2003).

**Wright, Paul A.**

Professor Emeritus of Zoology; S.B., Bates College, 1941; A.M., Harvard University, 1942; Ph.D., *ibid.*, 1944; (1958 to 1983).

**Wrightman, Dwayne E.**

Professor Emeritus of Finance; B.S., Manchester College, 1958; M.B.A., Indiana University at Bloomington, 1959; Ph.D., Michigan State University, 1964; (1964 to 1993).

**Yamamoto, Yutaka**

Associate Professor Emeritus of Philosophy; B.S., University of California at Berkeley, 1957; M.A., University of Michigan at Ann Arbor, 1967; Ph.D., *ibid.*, 1973; (1973 to 1997).

**Yount, John A.**

Professor Emeritus of English; B.A., Vanderbilt University, 1960; M.F.A., University of Iowa, 1962; (1962 to 1964, 1965 to 1997).

**Zabarsky, Melvin J.**

Professor Emeritus of Art; B.F.A., Boston University, 1958; M.F.A., University of Cincinnati, 1960; (1969 to 1997).

**Zaso, Gus C.**

Associate Professor Emeritus of Tourism Planning and Development; A.B., Syracuse University, 1957; M.A., Central Michigan University, 1962; Re.D., Indiana University at Bloomington, 1965; (1970 to 1997).

**Zsigray, Robert M.**

Professor Emeritus of Microbiology and Genetics; A.B., Miami University, Ohio, 1961; M.S., Georgetown University, 1967; Ph.D., *ibid.*, 1969; (1970 to 2004).

# ENROLLMENT STATISTICS—FALL SEMESTER

UNH Durham	2003-2004	2004-2005	2005-2006	2006-2007
	(Men/Women —Total)			
Freshman	1069/1551 — 2620	1076/1529 — 2605	1232/1587 — 2819	1287/1814 — 3101
Sophomore	1173/1503 — 2676	1144/1553 — 2697	1117/1515 — 2632	1274/1554 — 2828
Junior	1022/1421 — 2443	1090/1453 — 2543	1078/1499 — 2577	1060/1463 — 2523
Senior	1111/1558 — 2669	1146/1479 — 2625	1106/1503 — 2609	1139/1522 — 2661
1st Year—T.S.A.S.	183/133 — 316	144/119 — 263	135/85 — 220	118/88 — 206
2nd Year—T.S.A.S.	78/58 — 136	94/65 — 159	110/76 — 186	123/76 — 199
D.C.E.—A.A.	39/38 — 77	27/23 — 50	9/11 — 20	0/5 — 5
Graduate—Master's*	737/1134 — 1871	731/1212 — 1943	742/1258 — 2000	721/1225 — 1946
Graduate—Doctoral	242/211 — 453	246/218 — 464	250/231 — 481	258/230 — 488
<b>Total Degree Candidates</b>	<b>5654/7607 — 13261</b>	<b>5698/7651 — 13349</b>	<b>5779/7765 — 13544</b>	<b>5980/7977 — 13957</b>
Continuing Education Credit	454/716 — 1170	399/657 — 1056	378/642 — 1020	367/525 — 892
Summer Session	1024/1726 — 2785	958/1792 — 2765	1075/1819 — 2894	1097/1920 — 3017

## Baccalaureate Curricula

	2003-2004	2004-2005	2005-2006	2006-2007	2003-2004	2004-2005	2005-2006	2006-2007
<b>Life Sciences and Agriculture</b>					<b>Liberal Arts</b>			
Freshman	340	337	394	433	1232	1162	1303	1387
Sophomore	341	328	324	349	1328	1269	1270	1329
Junior	340	368	371	343	1102	1079	1071	1035
Senior	390	390	409	427	1042	1082	1004	1023
<b>Total</b>	<b>1411</b>	<b>1423</b>	<b>1498</b>	<b>1552</b>	<b>4704</b>	<b>4592</b>	<b>4648</b>	<b>4774</b>
<b>Engineering and Physical Sciences</b>					<b>Whittemore School of Business and Economics</b>			
Freshman	333	342	358	414	388	434	440	512
Sophomore	305	308	272	340	377	422	427	456
Junior	227	283	273	266	372	367	405	417
Senior	351	309	326	327	416	389	371	387
<b>Total</b>	<b>1216</b>	<b>1242</b>	<b>1229</b>	<b>1347</b>	<b>1553</b>	<b>1612</b>	<b>1643</b>	<b>1772</b>
<b>Health and Human Services</b>								
Freshman	327	330	324	355				
Sophomore	325	370	339	354				
Junior	402	446	457	462				
Senior	470	455	499	497				
<b>Total</b>	<b>1524</b>	<b>1601</b>	<b>1619</b>	<b>1668</b>				

UNH Manchester	2003-2004	2004-2005	2005-2006	2006-2007
	(Men/Women —Total)			
Associate	108/126 — 234	108/118 — 226	81/120 — 201	90/107 — 197
Baccalaureate	204/364 — 568	224/342 — 566	237/341 — 578	255/344 — 599
<b>Total Degree Candidates</b>	<b>312/490 — 802</b>	<b>332/460 — 792</b>	<b>318/461 — 779</b>	<b>345/451 — 796</b>
Continuing Education Credit	179/251 — 430	153/270 — 423	145/188 — 333	149/192 — 341

\*Master's counts include Certificate of Advanced Graduate Study.



# 2007–2008 UNDERGRADUATE CALENDAR

---

## Semester I

### September 3, Monday

Labor Day, University Holiday

### September 4, Tuesday

Classes begin

### September 13, Thursday

Rosh Hashanah\*

### September 14, Friday

Last day to withdraw, to drop to part-time, or to reduce part-time load and qualify for tuition refund based on 3/4 difference in tuition

### September 21, Friday

Last day to add courses or Honors designation

Last day to drop courses or change to Audit without \$25 late fee

Last day to choose Pass/Fail grading option

### September 22, Saturday

Yom Kippur\*

### September 28, Friday

Last day to file Intent-to-Graduate form for December, 2007 graduation without late fee

### October 5, Friday

Last day to withdraw, to drop to part-time, or to reduce part-time hours and qualify for tuition refund based on 1/2 difference in tuition

Last day to drop courses or change to Audit (\$25 late fee continues to apply)

Last day to drop Honors designation

Last day to carry more than 20 credits without tuition surcharge

### October 12, Friday

Fall break day, no classes

Mid-semester

Last day to withdraw from the University without grades of WP or WF

### November 6, Tuesday

Election Day – no exams scheduled

### November 12, Monday

Veterans Day observed, University holiday, no classes, offices closed

### November 13, Tuesday

Classes follow MONDAY schedule

### November 21, Wednesday

Classes follow FRIDAY schedule

### November 22-23, Thursday-Friday

Thanksgiving Holidays, no classes, offices closed

### November 26, Monday

Classes resume

### December 7, Friday

Last day an announced oral or written exam may be given before finals

### December 14, Friday

Last day of classes

Last day to file Completion of Minor form for December graduates

Last day to change college until January

### December 17, Monday

Reading Day; 6:00 p.m. final exams begin

### December 18–22, Tuesday–Saturday

Final exams

### December 23–January 1

Holiday break, offices closed

### December 31, Monday

Graduation date (no ceremony)

---

## Semester II

### January 21, Monday

Martin Luther King, Jr. Day, University holiday

### January 22, Tuesday

Classes begin

### February 1, Friday

Last day to withdraw, to drop to part-time, or to reduce part-time hours and qualify for tuition refund based on 3/4 difference in tuition

### February 8, Friday

Last day to add courses or Honors designation

Last day to drop courses or change to Audit without \$25 late fee

Last day to choose pass/fail grading option

### February 15, Friday

Last day to file Intent-to-Graduate for May 2008 graduation without late fee

### February 22, Friday

Last day to withdraw, to drop to part-time, or to reduce part-time hours and qualify for tuition refund based on 1/2 difference in tuition

Last day to drop courses or change to Audit (\$25 late fee continues to apply)

Last day to drop Honors designation

Last day to carry more than 20 credits without a surcharge

### March 14, Friday

Mid-semester

Last day to withdraw from the University without grades of WP or WF

### March 17-21, Monday–Friday

Spring recess

### March 21, Friday

Good Friday\*

### March 24, Monday

Classes resume

### April 20, Sunday

Passover\*

### April 25, Friday

Orthodox Good Friday\*

### May 5, Monday

Last day an announced oral or written exam may be given before finals

### May 12, Monday

Last day of classes

Last day to file Completion of Minor form for May graduates

### May 13-14, Tuesday-Wednesday

Reading Days

### May 15, Thursday

Final exams begin

### May 17, Saturday

Thompson School Commencement ceremony

### May 20, Tuesday

Thompson School final exams end

### May 22, Thursday

Baccalaureate/graduate final exams end

### May 23, Friday

Senior Day

### May 24, Saturday

Baccalaureate/graduate Commencement ceremony

---

## Summer Session 2008

### May 26–August 15

\*Religious and cultural holidays, although not University holidays, are important to many members of the University community and are noted here to facilitate planning of University events. A more comprehensive list may be found at [www.interfaithcalendar.org](http://www.interfaithcalendar.org).

# CAMPUS MAP

## Student Activities/Lodging

Athletic Arena  
Dairy Bar  
Field House  
New England Center  
Memorial Union Building  
Whittemore Center

## Apartment Complexes

The Gables  
Forest Park Apartments  
Woodside Apartment

## Administrative Offices/ Support Services

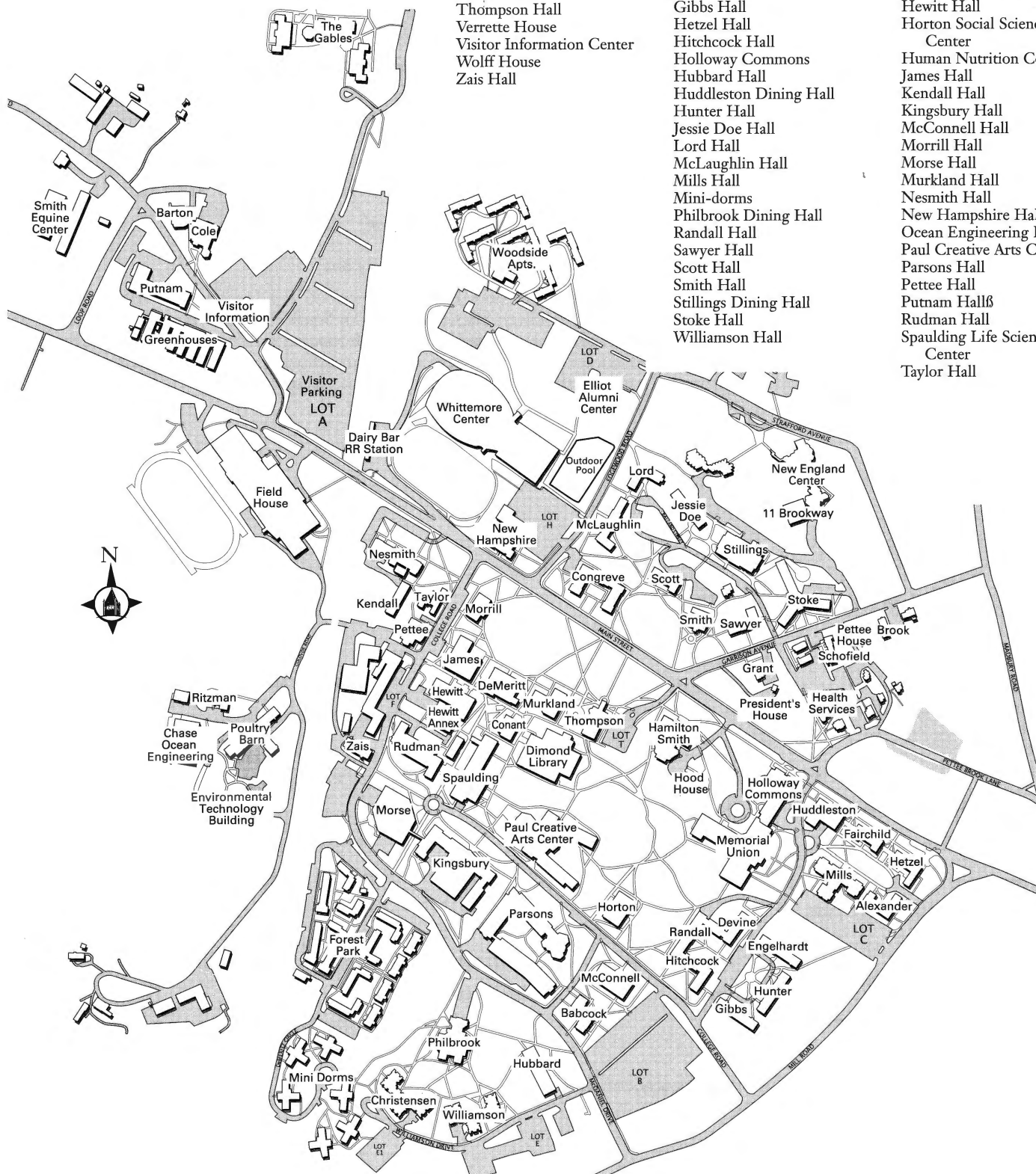
Elliott Alumni Center  
Grant House, Office of Admissions  
Health Services  
Hood House  
Pettee House  
Thompson Hall  
Verrette House  
Visitor Information Center  
Wolf House  
Zais Hall

## Residence and Dining Halls

Alexander Hall  
Babcock House  
Christenson Hall  
Congreve Hall  
Devine Hall  
Englehardt Hall  
Fairchild Hall  
Gibbs Hall  
Hetzel Hall  
Hitchcock Hall  
Holloway Commons  
Hubbard Hall  
Huddleston Dining Hall  
Hunter Hall  
Jessie Doe Hall  
Lord Hall  
McLaughlin Hall  
Mills Hall  
Mini-dorms  
Philbrook Dining Hall  
Randall Hall  
Sawyer Hall  
Scott Hall  
Smith Hall  
Stillings Dining Hall  
Stoke Hall  
Williamson Hall

## Academic Buildings

Barton/Cole Hall  
Conant Hall  
DeMerritt Hall  
Dimond Library  
Equestrian Center  
Greenhouses  
Hamilton Smith Hall  
Hewitt Hall  
Horton Social Science Center  
Human Nutrition Center  
James Hall  
Kendall Hall  
Kingsbury Hall  
McConnell Hall  
Morrill Hall  
Morse Hall  
Murkland Hall  
Nesmith Hall  
New Hampshire Hall  
Ocean Engineering Building  
Paul Creative Arts Center  
Parsons Hall  
Pettee Hall  
Putnam Hall  
Rudman Hall  
Spaulding Life Sciences Center  
Taylor Hall





## DIRECTIONS TO CAMPUS

### By Car

#### FROM BOSTON, MASS.

Take I-95 North to Portsmouth, N.H., bearing left towards NH Lakes and Mountains, on Routes 4 & 16 (Spaulding Turnpike) to Exit 6W (Concord-Durham). Follow Route 4 West to Route 155A. Follow 155A through a short stretch of fields and farmland to the UNH campus.

#### FROM HARTFORD, CONN.

Take I-84/I-86 East out of Hartford to the Mass. Pike (I-90) to Auburn Exit 10 then East on I-290 to I-495 North. Drive east on I-495 North, Exit 26. Continue north on I-95, then follow the directions above for driving from Boston.

#### FROM PORTLAND, ME.

Follow either I-95 or Route 1 South to the Portsmouth traffic circle. Take the Spaulding Turnpike north to Exit 6W (Concord-Durham). Then follow the directions above for driving from Boston.

#### FROM CONCORD, N.H.

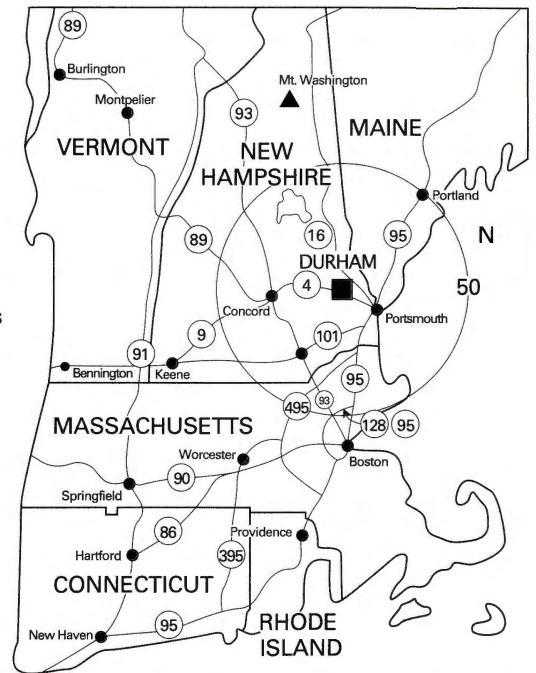
Follow Route 4 East, and take the UNH/Durham exit at 155A. Follow a short stretch of farmlands and fields to the UNH campus.

#### FROM MANCHESTER, N.H.

Take Route 101 to the junction of Route 125. Follow Route 125 North to the Lee traffic circle. Drive east on Route 4, and then follow the directions above for driving from Concord.

### By Plane

From Logan International Airport, Boston, you may use the C & J Trailways bus service. Advance reservations are not required. For further information call (603) 742-5111 or, outside New Hampshire, (800) 258-7111.



### By Bus

Depart C & J Trailways bus service across from South Station in Boston. For further information call (603) 742-5111 from New Hampshire or (800) 258-7111 outside of New Hampshire.

## FREQUENTLY CALLED NUMBERS

Directory Assistance  
and Information . . . . . (603) 862-1234  
(on campus) . . . . . Dial 0

Office of Admissions . . . . . 862-1360

Financial Aid Office . . . . . 862-3600

Department of Housing . . . 862-2120

Business Services . . . . . 862-2230

Registration and Records . . 862-1500

Health Services . . . . . 862-1530

Honors Program . . . . . 862-3928

Orientation Scheduling . . . 862-3488  
(e-mail: [first.year@unb.edu](mailto:first.year@unb.edu))

Memorial Union  
and Information Center . . . 862-2600

Off-Campus Housing . . . . . 862-3612

Traffic Services/Parking . . . 862-1010

University Police . . . . . 862-1427

The Access Office . . . . . 862-2607  
(Support Services for Students with  
Disabilities)

Office of Multicultural  
Student Affairs . . . . . 862-2050

The Whittemore Center . . . 862-1379

Campus Recreation . . . . . 862-2031

Athletics . . . . . 862-1850

### Academic Advisers

College of Liberal Arts . . . 862-2064

College of Engineering  
and Physical Sciences . . . . 862-1783

School of Health  
and Human Services . . . . . 862-1177

College of Life Sciences  
and Agriculture . . . . . 862-1451

Whittemore School  
of Business and Economics . 862-3885

Thompson School  
of Applied Science . . . . . 862-1025

**Web: [www.unh.edu](http://www.unh.edu)**

# INDEX

- A**  
Abbreviations, 23, 123  
Academic honesty, 20  
Academic requirements, 16, 143  
Academic Resources, Center for, 8  
Academic services, student and, 12  
Academic standards and expectations, 143  
Accounting and finance, 104, 107, 145  
Accreditation, 3, 53  
ACT, 3, 4  
Administration, University, 270  
Admissions, 3, 122, 141  
    Criteria, 3  
    Deadlines, 4  
    Deferred admission, 4  
    Music candidates, 4  
    Readmission, 5  
    Test requirements, 4  
    Transfer students, 5  
Advanced standing, 4  
Advising and counseling services, 8  
Advising and Career Center, 12  
African American studies minor, 24  
Agribusiness minor, 84  
Agriculture. *See* Life Sciences and Agriculture,  
    College of; plant biology;  
    Thompson School of Applied Science  
American studies minor, 25, 147  
Animal behavior minor, 84  
Animal sciences, 86, 148  
    Equine science option, 87  
    Preveterinary medicine option, 87  
Anthropology, 30, 151  
Application deadlines, 4, 122, 132  
Applied animal science, 123, 250  
    Dairy management, 124  
    Equine management, 124  
    Small animal care, 124  
Applied business management, 125, 252  
    Business management, 125  
Architectural studies minor, 31. *See also*  
    course listing in art and art history  
Art and art history, 30, 153  
    Art education, 31  
    Art history major, 30  
    Fine arts major, 31  
    Minors, 31  
Asian studies minor, 25  
Associate degrees  
    Associate in Applied Science, 122  
    Associate in Arts, 131  
    Associate in Science, 131  
    Candidacy, 4  
Athletic training. *See* Kinesiology  
Athletics, men's and women's, 8  
Austria, study abroad, 117
- B**  
Bachelor of Arts, 18, 24, 53, 83, 102, 131, 133  
Bachelor of Arts-Master of Education, 33  
Bachelor of Fine Arts, 24, 31  
Bachelor of Music, 24, 44  
Bachelor of Science, 18, 53, 72, 83, 102, 131  
Bachelor of Science in Forestry, 83  
Bachelor of Science-Master of Education, 33  
Bachelor of Science-Master of Science in  
    Accounting, 103  
Bachelor of Science-Master of Science in  
    Biochemistry, 88  
Bachelor of Science-Master of Science in  
    Occupational Therapy, 80  
Biochemistry, 88, 157  
Biological sciences, 132. *See* Animal sciences,  
    biochemistry and molecular biology,  
    biology, forestry, microbiology, nutritional  
    sciences, plant biology, zoology  
Biology, 89, 157  
    Biology teacher certification, 90  
    Options, 90  
    Prehealth professional program, 90  
Bioscience and technology option. *See*  
    Animal sciences  
Books, 15  
Business, 133  
Business administration, 103, 133, 146  
    Accounting option, 104, 145  
    Entrepreneurial venture creation  
    option, 104  
    Finance option, 104  
    Information systems option, 105  
    International business and  
    economics option, 105  
    Management option, 105, 205  
    Marketing option, 105, 206  
    Student-designed option, 105  
Business and accounting skills for  
    managers, 132
- C**  
Calendar, 300  
California student exchange program, 115  
Cambridge Summer Program, 116  
Campus, 3  
    directions to, 302  
    map, 301  
    visits, 3, 122  
Campus life, 6  
Campus recreation, 7  
Canada, study abroad, 116  
Canadian studies minor, 26  
Career Center, 12  
Career mobility option. *See* Medical  
    laboratory science  
CATS program, 143  
Cat's Cache, 8  
Center for Academic Resources, 8  
Center for Graduate and  
    Professional Studies, 141  
Center for the Humanities, 29  
Certificate programs, 132  
Certification option, undergraduate, 33  
Chemical engineering, 55, 158  
    Bioengineering option, 55  
    Energy option, 56  
    Environmental engineering option, 56  
Chemistry, 56, 159  
Chemistry and physics teaching, 57  
Child studies. *See* Family studies  
Chinese, 40, 160  
Cinema studies minor, 26  
Civil engineering, 57, 160  
Civil technology, 126, 253  
    Architectural technology, 126  
    Construction management, 126  
    Surveying and mapping, 126  
Classics, 40, 162  
CLEP tests, 4  
College Transition Program, 132  
Communication, 32, 163  
Communication arts, 134, 260  
Communication sciences and disorders, 72, 165  
    Deaf and hard of hearing studies minor, 73  
Communication skills for managers, 132  
Community and Environmental  
    Planning, 91, 166  
Community planning minor, 84  
Community leadership, 127, 254  
Computer access, 8  
Computer and information technology  
    minor, 110  
Computer engineering, 62, 174  
Computer information systems, 135, 262  
Computer science, 59, 166  
    Bioinformatics, 59  
Computing and Information Services, 8  
Conduct and Mediation Programs,  
    Office of, 10  
Consortium Student Exchange Program, 115  
Continuing Education, 143  
Counseling Center, 8  
Course fees, 15  
Credit certificate programs, 132  
Credit quota per semester, 19  
Cultural events, 7
- D**  
Dairy management, 91, 148. *See also*  
    Applied animal science  
Dance, 50  
Decision sciences, 107, 168  
Deferred admission, 4  
Degree candidacy, 4  
Degree requirements, 18  
    Associate in Applied Science, 122  
    Associate in Arts, 131  
    Associate in Science, 131  
    Bachelor of Arts, 18, 24, 53, 83,  
    102, 131  
    Bachelor of Fine Arts, 24, 31  
    Bachelor of Music, 24, 44  
    Bachelor of Science, 18, 53, 72, 83, 102, 131  
    Bachelor of Science in Forestry, 83  
    College of Engineering and Physical  
    Sciences, 53  
    College of Liberal Arts, 24  
    College of Life Sciences and Agriculture, 83  
    Dual degrees, 18  
    School of Health and Human Services, 72  
    Thompson School of Applied Science, 121  
    University of New Hampshire at  
    Manchester, 131  
    Whittemore School of Business and  
    Economics, 102  
Degrees, 18, 21  
    Eligibility for degree candidacy, 4  
Deposits, 15  
Dietetics. *See* Nutritional sciences  
Dining, 6  
Disabilities minor, 81  
Disabilities, services for students with, 9  
Diving program, 113. *See also* Scuba diving  
Doctor of Philosophy degree, 142  
Domestic exchange programs, 115  
Drama. *See* Theatre and dance  
Dual degrees, 18. *See also* Five-year degree  
    programs  
Dual major in international affairs, 111  
Dual major in justice studies, 39
- E**  
Early action, 4, 34, 141. *See also* Admission  
Early childhood program. *See* Family studies  
Earth, Oceans, and Space, Institute for the  
    Study of, 110  
Earth sciences, 60, 168  
    Earth science teaching, 61  
    Environmental sciences, 61  
    Geology, 61  
    Oceanography option, 60  
Ecology, evolution, and behavior option. *See*  
    Biology  
Economics, 105, 170  
    Environmental and resource  
    economics, 93, 181  
Education, 32, 172  
    Teacher certification, 33  
Electrical and computer engineering, 62, 174  
Elementary education. *See* Education  
Employment, part-time, 6  
Energy option. *See* Chemical engineering  
Engineering  
    Chemical, 55  
    Civil, 57  
    Computer, 62  
    Electrical, 62  
    Environmental, 56, 64  
    Environmental Engineering Industrial  
    Process Emphasis, 64  
    Environmental engineering minor, 56  
    Environmental Engineering Municipal  
    Process Emphasis, 65  
    Mechanical, 68  
    Ocean engineering minor, 112  
Engineering and Physical Sciences, College  
    of, 53  
Engineering Technology, 136, 176, 263  
England, study abroad, 116  
English, 34, 136, 176, 264  
    English/journalism, 36  
    English literature, 35  
    English teaching, 35  
Enrollment statistics, 299  
Environmental and resource economics, 93, 181  
Environmental conservation studies, 91  
    Minor, 93  
Environmental engineering, 64, 180  
    Industrial processes emphasis, 64  
    Minor, 66  
    Municipal processes emphasis, 65  
Environmental engineering option. *See*  
    Chemical engineering



- Environmental horticulture, 93  
 Environmental sciences, 61, 94  
   Ecosystems, 61  
   Hydrology, 61  
   Soil and Watershed Management, 61  
 Equine management, 124. *See* Applied animal science  
 Equine sciences option. *See* Animal sciences  
 European cultural studies, 36, 182  
 Exchange programs  
   Domestic, 115  
   Study abroad, 41, 54, 103, 116  
 Exercise science. *See* Kinesiology  
 Expenses, 14, 122
- F  
 Faculty, 271  
 Faculty, affiliate, 288  
 Faculty, emeriti, 291  
 Faculty, extension, 290  
 Family internship programs. *See* Family studies  
 Family studies, 73, 183  
   Child advocacy and family policy, 73  
   Individual and family development, 74  
   Family support, provisional certification program, 74  
   Minors, 75  
   Young child specialization/nursery-kindergarten, 74  
 Fees and expenses, 13, 14  
 Fellowship Office, 110  
 Fiction writing. *See* English  
 Financial aid, 5, 122, 141  
 Fine and Performing Arts Division, 24  
 Five-year degree programs, 22, 33, 41, 103  
 Food services management, 128, 254  
   Dietetic technician, 128  
   Restaurant management, 128  
 Foreign language requirement, B.A., 18  
 Foreign study. *See* Exchange programs  
 Forest technology, 128, 256  
 Forest technician, 129  
 Forestry, 94  
   Forest management option, 95  
   Forest science option, 95  
   Minor, 95  
 France, study abroad  
   Brest, Dijon, Grenoble, Paris, 41, 117  
 Fraternities, 9  
 French, 40, 184  
 French studies, 40  
 Frequently called numbers, 302  
 Freshman application deadlines, 4
- G  
 General biology. *See* Biology  
 General education program requirements, 16, 122  
 General science certification, 83. *See also* Education  
 Genetics, 85, 95, 185  
 Geography, 36, 186  
 Geology. *See* Earth sciences  
 German, 41, 187  
 German-speaking countries, study abroad, 41, 117
- Gerontology, 111, 188  
 Grade-point-average requirement for graduation, 18  
 Grades and grading symbols, 19  
 Graduate School, 141  
   Admissions, 141  
   Center for Graduate and Professional Studies, 141  
   Dual credit, 141  
   Early admission, 141  
   Financial assistance, 141  
 Graduation requirements, 18  
 Grants, 6  
 Greek, 41, 188  
 Greek life at UNH, 9  
 Guatemala, study abroad, 117
- H  
 Hamel Center for Undergraduate Research, 109  
 Health and counseling fee, 13  
 Health and Human Services, School of, 72  
 Health Education and Promotion, Office of, 13  
 Health insurance, 13  
 Health management and policy, 75, 189  
   Minors, 76  
 Health record requirement, 13  
 Health Services, 13  
 Help desk, 9  
 History, 37, 137, 190, 266  
 History and philosophy of science minor, 26  
 Honesty, academic, 20  
 Honors, 20  
 Honors Program, 109  
 Horses. *See* Animal sciences  
 Horticultural technology, 129, 256  
   Landscape operations, 130  
   Ornamental horticulture, 129  
 Horticulture. *See* Environmental horticulture  
 Hospitality management, 106, 195  
 Housing, 6  
 Human behavior studies, 132  
 Humanities, 38, 137, 196, 267  
   Humanities minor, 27, 38  
 Humanities, Center for the, 29  
 Hungary, study abroad, 54, 118
- I  
 Independent study. *See* individual colleges and schools  
 Insurance, health, 13  
 Insurance, student liability, 72  
 Intercollege courses, 111, 197  
 Intercollegiate athletics, 8  
 Interdisciplinary majors, 22  
 Interdisciplinary minors, 19, 22, 24, 54, 84, 110  
 Interdisciplinary programs, 24, 54, 110. *See also* Engineering and Physical Sciences, College of; Liberal Arts, College of; Life Sciences and Agriculture, College of  
 International affairs dual major, 111, 198  
 International Education, Center for, 81, 103, 111, 116  
 International Research Opportunities Program (IROP), 109  
 International Students and Scholars, Office of, 10
- International tourism development. *See* Tourism planning and development  
 Internships, 12, 46, 74, 103, 117  
 Italian, 42, 199  
 Italy, study abroad, 42, 118
- J  
 Jackson Estuarine Laboratory. *See* Marine sciences  
 Japan, study abroad, 118  
 Japanese, 42, 199  
 Job Locator Development Program. *See* Career Services  
 Journalism. *See* English  
 Justice studies dual major, 39, 199  
 Justice studies minor, 27
- K  
 Kindergarten concentration, 74  
 Kinesiology, 77, 200  
   Athletic training option, 77  
   Exercise science option, 78  
   Outdoor education option, 78  
   Physical education pedagogy option, 78  
   Sports studies option, 78
- L  
 Lancaster Exchange Program, 116  
 Languages, Literatures, and Cultures, 39, 204  
 Latin, 42, 204  
 Latin American studies minor, 28  
 Leave of absence, 19  
 Liability insurance, student, 72  
 Liberal Arts, College of, 24  
 Library, 3  
 Life Sciences and Agriculture, College of, 83  
 Linguistics, 43, 205  
 Livestock. *See* Animal sciences  
 Loan programs, 6  
 London Program, 116
- M  
 Majors, 19, 21. *See also* individual colleges and schools  
   interdisciplinary, 22  
   second, 19  
   student-designed, 114  
 Management, 107, 205  
 Map, campus, 301  
 Marine biology minor, 85, 112  
 Marine sciences, 112  
   Diving Program, 113  
   Marine biology minor, 112  
   Marine research, 113  
   Ocean engineering minor, 112  
   Oceanography minor, 113  
   Shoals Marine Laboratory, 113  
 Marketing, 108, 206  
 Master of Business Administration program  
   *See* Bachelor of Arts-Master of Business Administration, and Bachelor of Science-Master of Business Administration  
 Master's degrees, 141  
 Materials science minor, 69
- Mathematics and statistics, 66, 207  
   Computer science option, 67  
   Economics option, 67  
   Education, 67  
   Electrical science option, 67  
   Minor, 68  
   Physics option, 67  
   Statistics option, 67  
 Mathematics placement, 53  
 Mechanical engineering, 68, 210  
 Mechanical engineering minor, 69  
 Media practices option, 32  
 Mediation Programs, Office of Conduct and, 10  
 Medical laboratory science, 95, 211  
 Medical services, 13  
 Memorial Union Building (MUB), 7  
 Mexico, study abroad, 118  
 Microbiology, 96, 212  
 Minors, 19, 131. *See also* individual department offerings, interdisciplinary minors  
 Mission, University, 2  
 Molecular, cellular, and developmental biology option. *See* Biology  
 Multicultural Student Affairs, Office of, 10  
 Music, 43, 215  
   Minor, 45  
   Music audition, 4  
   Music education, 45  
   Music history option, 44  
   Music performance option, 44  
   Music preteaching option, 44  
   Music theory option, 44  
   Undifferentiated B.A., 44  
 Musical theatre. *See* Theatre and dance
- N  
 National Student Exchange Office, 115  
 Netherlands, The, study abroad, 119  
 New England Land-Grant Exchange Program, 116  
 New England/Nova Scotia student exchange program, 116  
 New England/Québec student exchange program, 116  
 New England Regional Student Program, 5, 100, 123  
 New Hampshire College and University Council (NHCUC) Student Exchange Program, 115  
 New Zealand, study abroad, 84, 119  
 Nontraditional student services, 10  
 Nova Scotia student exchange program, 116  
 Nursery-kindergarten concentration, 74  
 Nursing, 79, 138, 221, 267  
 Nutritional sciences, 97, 222
- O  
 Occupational therapy, 80, 223  
   Combined Bachelor of Science/Master of Science program, 80  
 Ocean engineering minor, 112  
 Oceanography minor, 113  
 Off-campus programs, 115  
 Options, 19  
 Organ option. *See* Bachelor of Music

- Outdoor education. *See* Kinesiology
- Continuing Education and Summer Session, Office of, 143
- P
- Pass/Fail, 20
- Payment of bills, 15
- Pell Grant program, 6
- Perkins loans, 6. *See also* Financial aid
- Philosophy, 45, 225
- Physical education pedagogy. *See* Kinesiology
- Physics, 69, 226
  - Astronomy option, 71
  - Chemical physics option, 71
  - Materials science option, 71
- Physics teaching, 57
- Piano option. *See* Bachelor of Music
- Placement service. *See* Advising and Career Center
- Plant biology, 97, 227
- Poetry writing. *See* English
- Police, University, 11
- Political science, 46, 230
- Portuguese, 42, 46, 233
- Poultry science. *See* Animal sciences
- Prehealth care study, 114
- Prelaw, 114
- Pre-majors, 131
- Premedical/Predental Advising
  - Office, 90, 114
- Premedical/prehealthcare professional study, 114
- Preprofessional programs, 80, 90, 114
  - Prelaw, 114
  - Premedical/prehealthcare, 114
- Preschool education. *See* Education, family studies
- President's Commission on the Status of Gay, Lesbian, Bisexual, and Transgender Issues, 11
- President's Commission on the Status of People of Color, 11
- President's Commission on the Status of Women, 11
- Preveterinary medicine option. *See* Animal sciences
- Professional development and training, 142, 144
- Program administration. *See* Recreation management and policy
- Psychology, 46, 138, 233, 268
- Public service, 3
- Purchase and repair, computer, 9
- Puerto Rico, study abroad, 54, 119
- Q
- Québec student exchange program, 116
- Queer studies emphasis, 28
- R
- Race, culture, and power minor, 113
- Readmission, 5
- Rebates, 15
- Recreation, campus, 7
- Recreation management and policy, 81, 235
  - Child life minor, 82
  - International study in recreation and leisure, 81
  - Program administration option, 81
  - Therapeutic recreation option, 81
- Regional student program. *See* New England Regional Student Program
- Regional Student Program
- Regional tourism planning. *See* Tourism planning and development
- Religious studies minor, 29, 237
- Research, 2, 3, 54, 109, 113
- ResNet, 9
- Residence halls, 6
- Residence requirement, 19
- Resident status, 5
- Residential life, 11
- Resource economics. *See* Environmental and resource economics
- Rhetoric and public address minor, 32
- R.N. Baccalaureate Program, 80, 138. *See also*
  - Nursing
- Room and board, 15
- ROTC, 119, 214
- ROTC scholarships, 6
- Russian, 42, 237
- S
- SAT, 3, 4
- Scholarships, 6, 122
- Scotland, Heriot-Watt University Exchange Program, 54, 119
- Scuba diving, 113
- Second majors, 19
- Secondary education. *See* Education
- Services for students, 8
- Services for students with disabilities, 9
- Sexual Harassment and Rape Prevention Program (SHARPP), 11
- Shoals Marine Laboratory. *See* Marine sciences
- Sign language interpretation, 139, 269
- Small animal care, 124
- Social Science Division, 24
- Social work, 82, 238
- Sociology, 48, 239
- Sororities, 9
- Spain, study abroad, 43, 119
- Spanish, 42, 241
- Special student status, 5
- Special University Programs, 109
- Specialization within discipline. *See* Options
- Speech and drama. *See* Communication, theatre and dance
- Speech and hearing therapy. *See*
  - Communication sciences and disorders
- Sport studies option. *See* Kinesiology
- Statistics. *See* Mathematics and statistics
- Student and Academic Services, Division of, 12
- Student-designed majors, 114
- Student exchange programs, 115, 116
- Student liability insurance, 72
- Student services, 8
- Student teaching. *See* individual departments
- Students with disabilities, services for, 9
- Study abroad programs, 41, 54, 103, 116
- Summer Studies, 144
- Sustainable living minor, 85
- T
- Teacher Education Division, 24
- Teacher preparation. *See* Education.
- Tech courses, 53
- Theatre and dance, 48, 243
  - Acting emphasis, 51
  - Dance emphasis, 50
  - Design and technical theatre emphasis, 51
  - Minors, 51
  - Musical theatre emphasis, 50
  - Secondary teacher emphasis, 49
  - Youth drama emphasis, 50
  - Youth drama in special education emphasis, 50
- Theory option. *See* Bachelor of Music
- Therapeutic recreation. *See* Recreation management and policy
- Thompson School of Applied Science, 121
  - Abbreviations, 123
  - Admissions, 122
  - Application deadlines, 122
  - Associate in Applied Science Degree, 122
  - Campus visits, 122
  - Expenses, financial aid, scholarships, 122
  - Full- and part-time programs, 122
  - New England Regional Student Programs, 123
  - Transfer opportunities, 123
- Tourism planning and development, 98, 245
  - International tourism development, 99
  - Regional tourism planning, 99
- Training, computer, 9
- Transfer students, 5
  - from Thompson School, 123
- Trustees, 270
- Tuition, 14
- U
- Undeclared major, 72, 84, 140
- Undergraduate apartments. *See* Housing
- Undergraduate licensure option, 32, 54
- Undergraduate Research Opportunities Program (UROP), 109
- UNH-Ecoquest New Zealand Study Abroad Program, 84, 119
- UNH Center for Graduate and Professional Studies, 141
- UNHINFO (University's campuswide computer information system), 9
- UNH/UNH Manchester cross registration, 116
- University, 2
  - General information, 2
- University of New Hampshire at Manchester, 131, 259
  - Application deadlines, 132
  - Certificate programs for professional advancement, 132
  - College Transition Program, 132
  - Degree programs, 131
  - Minors, 131
  - Pre-majors, 131
- V
- Veterans' information, 12
- Voice option. *See* Bachelor of Music
- W
- Water resources management minor, 85
- War and peace studies minor, 114
- Wetland ecology minor, 86
- Whittemore School of Business and Economics, 102
- Wildlife ecology, 99
- Withdrawal, 13, 19
  - for health reasons, 13
- Women's Commission, 11
- Women's studies, 29, 52, 246
- Work-study program, 6
- Writing. *See* English
- Writing Center, 12
- Writing committee, 12
- Writing intensive courses, 16
- Writing programs, 12, 36
- Writing requirement, University, 16
- WSBE. *See* Whittemore School of Business and Economics
- Z
- Zoology, 100, 246



## APPENDIX

The University of New Hampshire is a public institution with a long-standing commitment to equal opportunity for all. It does not discriminate on the basis of race, color, religion, sex, national origin, age, veteran's status, gender identity or expression, sexual orientation, marital status, or disability in admission or access to, or treatment or employment in, its programs, services, or activities. Inquiries regarding discrimination should be directed to Donna Marie Sorrentino, Director of Affirmative Action and Equity, Room 305 Thompson Hall, 105 Main Street, Durham, N.H. 03824, phone (603) 862-2930 (Voice/TTY), fax (603) 862-2936, or to the Regional Director, Office for Civil Rights, U.S. Department of Education, 33 Arch Street, Suite 900, Boston, MA 02110-1491.

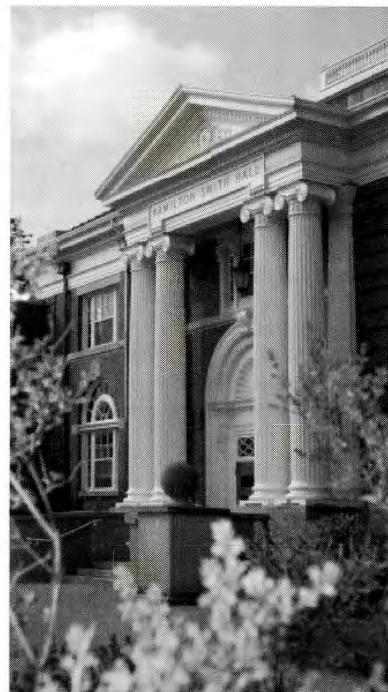
There are various grievance procedures to provide for the resolution of complaints under this policy. Information may be obtained at the Affirmative Action and Equity Office.

The University complies with federal guaranteed student loan regulations and will supply information about the employment of its graduates who have majored in specialized degree programs that normally lead to specific employment fields. This information may be obtained upon request from the University's Career Services, which is available to all students. The University does not guarantee employment to its graduates, but their chances for employment are enhanced if they have begun career planning early in their undergraduate days.

The University provides information pertaining to the Family Educational Rights and Privacy Act of 1974 (the "Buckley Amendment") in the annual student handbook. Information also is available from the Office of the Vice President for Student Affairs and the Office of the Provost and Vice President for Academic Affairs. The annual student publication, *Student Rights, Rules, and Responsibilities*, also contains University regulations and policies regarding student conduct.

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.



---

Volume XCVII, Number 1, May 2007. The *Bulletin of the University of New Hampshire* (ISSN 8750-9040) is published two times per year, in May and September, by University Communications and Marketing, Schofield House, UNH, 8 Garrison Avenue, Durham, NH 03824-3556. Periodicals postage paid at Durham, NH 03824. Postmaster, send address changes to *Bulletin of the University of New Hampshire*, Schofield House, UNH, 8 Garrison Avenue, Durham, NH 03824-3556.



*The Undergraduate Catalog  
2007-2008 is a project of  
University Communications  
and Marketing.*

Mary Peterson, *editor*  
Cheryl Dow, *layout*

*Cover photo*  
Lisa Nugent,  
UNH Photographic Services

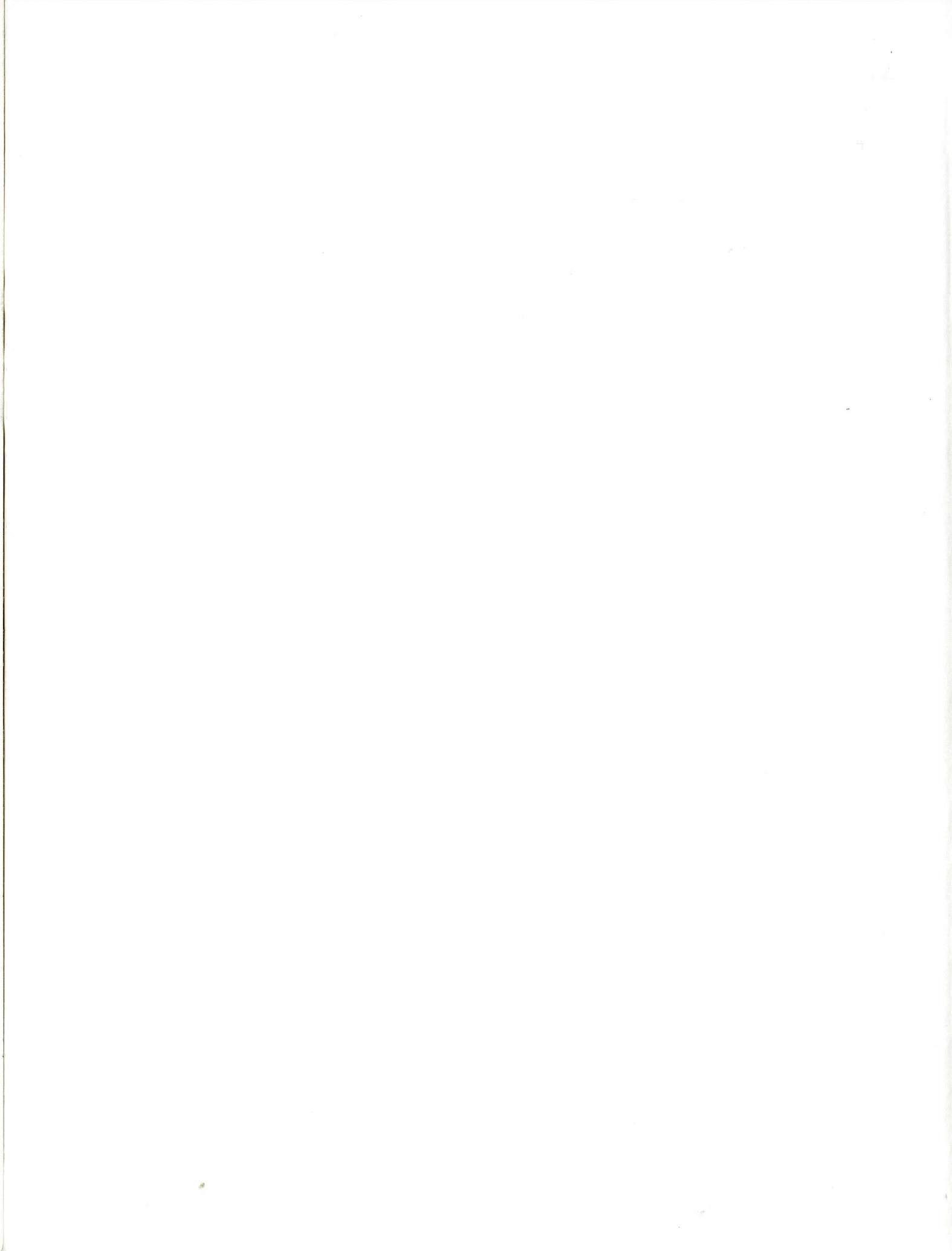
## NOTES



NOTES

## NOTES









Bulletin of the

UNIVERSITY OF NEW HAMPSHIRE

Office of Editorial and Creative Services

Schofield House

8 Garrison Avenue

Durham, NH 03824-3556

PLEASE POST  
REGISTRARS OFFICE  
ADMIN-STOKE

