

1994

University of Maine Undergraduate Catalog for 1994-1995, part 1

University of Maine

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University of Maine

**Undergraduate Catalog
for 1994–1995**

University of Maine

**Undergraduate Catalog
for 1994–1995**

In complying with the letter and spirit of applicable laws and in pursuing its own goals of pluralism, the University of Maine shall not discriminate on the grounds of race, color, religion, sex, sexual orientation, national origin or citizenship status, age, disability, or veterans status in employment, education, and all other areas of the University. The University provides reasonable accommodations to qualified individuals with disabilities upon request.

Questions and complaints about discrimination in any area of the University should be directed to the Director of Equal Opportunity, Suzanne Estler, 318 Alumni Hall, 581-1226. Inquiries about discrimination may also be referred to the Maine Human Rights Commission, U.S. Equal Employment Opportunity Commission, Office for Civil Rights of the U.S. Department of Education, or other appropriate federal or state agencies.

University of Maine

General telephone number, connecting all departments:

207-581-1110

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Information in this catalog covers the academic year 1994–1995.

The University of Maine reserves the right to revise, amend, or change items set forth in the BULLETIN from time to time. Accordingly, readers of this BULLETIN should inquire as to whether any such revisions, amendments, or changes have been made since the date of publication. The University of Maine reserves the right to cancel course offerings, to set the minimum and maximum sizes of classes, to change designated instructors in courses, and to make decisions affecting the academic standing of anyone participating in a course or program offered by the University of Maine.

1994-1995 Academic Calendar

Fall Semester 1994

Classes begin.....	Tuesday, September 6, 8:00 a.m.
Add/Drop week.....	Tuesday-Monday, September 6-12
End of 1st 3rd of semester for withdrawals.....	Friday, October 6, 4:30 p.m.
Fall break begins.....	Friday, October 7, 5:00 p.m.
Classes resume.....	Tuesday, October 12, 8:00 a.m.
Mid-semester reports due.....	Friday, October 21, 4:30 p.m.
Application for Degree filing deadline (December).....	Tuesday, November 1, 4:30 p.m.
End of 2nd 3rd of semester to withdraw.....	Thursday, November 10, 4:30 p.m.
Registration for Spring 1995.....	Friday, November 11-22
Thanksgiving break begins.....	Wednesday, November 23, 8:00 a.m.
Classes resume.....	Monday, November 28, 8:00 a.m.
Classes end.....	Friday, December 16, 5:00 p.m.
Commencement (tentative).....	Saturday, December 17, 10:30 a.m.
Final exams begin.....	Monday, December 19, 8:00 a.m.
Final exams end.....	Thursday, December 22, 9:30 p.m.
Family and Friends weekend.....	Friday-Sunday, September 16-18
Homecoming weekend.....	Friday-Sunday, September 30-October 2

Spring Semester 1995

Classes begin.....	Monday, January 16, 8:00 a.m.
Add/Drop week.....	Monday-Friday, January 16-20
End of 1st 3rd of semester for withdrawals.....	Thursday, February 16, 4:30 p.m.
Mid-semester reports due.....	Friday, February 24, 4:30 p.m.
Application for Degree filing deadline (May).....	Wednesday, March 1, 4:30 p.m.
Spring recess begins.....	Friday, March 3, 5:00 p.m.
Classes resume.....	Monday, March 20, 8:00 a.m.
Registration for Fall 1995.....	Monday, April 3-12
End of 2nd 3rd of semester for withdrawals.....	Tuesday, April 4, 4:30 p.m.
Classes end.....	Friday, May 5, 5:00 p.m.
Final exams begin.....	Monday, May 8, 8:00 a.m.
Final exams end.....	Friday, May 12, 12:30 p.m.
Commencement (tentative).....	Saturday, May 13, 10:30 a.m.
Maine Day.....	Wednesday, April 26

Correspondence

Inquiries should be directed as indicated below:

General administrative matters: President, Frederick E. Hutchinson, 5703 Alumni Hall, Orono, ME 04469-5703

Admission as a first-year student or with advanced standing: Associate Director of Admissions, William J. Munsey, 5713 Chadbourne Hall, Orono, ME 04469-5713

College of Arts and Humanities: Dean of the College, Leslie A. Flemming, 5774 Stevens Hall, Orono, ME 04469-5774

College of Business Administration: Dean of the College, W. Stanley Devino, 5723 Donald P. Corbett Business Building, Orono, ME 04469-5723

College of Education: Dean of the College, Robert A. Cobb, 5766 Shibles Hall, Orono, ME 04469-5766

College of Engineering: Dean of the College, Norman Smith, 5708 Barrows Hall, Orono, ME 04469-5708

College of Natural Resources, Forestry and Agriculture: Dean of the College, Dean G. Bruce

Wiersma, 5782 Winslow Hall, Orono, ME 04469-5782

College of Science: Dean of the College, Dagmar R. Cronn, 5706 Aubert Hall, Orono, ME 04469-5706

College of Social and Behavioral Sciences: Interim Dean of the College, Gordon E. Kulberg, 5774 Stevens Hall, Orono, ME 04469-5774

University College: Interim Dean of the College, Robert C. White, 5724 Dunn Hall, Orono, ME 04469-5724

Graduate School and scholarships available for graduate students: Dean of the Graduate School, Charles E. Tarr, 5782 Winslow Hall, Orono, ME 04469-5782

Billing Issues: Bursar, Madeline Madden, Business Office, 5703 Alumni Hall, Orono, ME 04469-5703

Continuing Education courses: Director, Continuing Education Division, Robert C. White, 5713 Chadbourne Hall, Orono, ME 04469-5713

Summer Session: Director, Robert C. White, 5713 Chadbourne Hall, Orono, ME 04469-5713

Conferences and Institutes: Director, Bruce G. Stinson, 5713 Chadbourne Hall, Orono, ME 04469-5713

Financial Assistance: Director of Student Aid, Peggy Crawford, 5781 Wingate Hall, Orono, ME 04469-5781

Residence Halls: Director of Campus Living, Scott Anchors, 5734 Hilltop Commons, Orono, ME 04469-5734

Off-campus Housing: Associate Dean of Student Services, Dave Rand, 5748 Memorial Union, Orono, ME 04469-5748

Senior and alumni placement: Associate Director, Patricia B. Counihan, 5713 Chadbourne Hall, Orono, ME 04469-5713

Student Records: Associate Registrar, Diana L. Estey, 5781 Wingate Hall, Orono, ME 04469-5781

Accreditation

The University of Maine 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.

The University of Maine System

The University of Maine System is a seven-campus, public university system which provides a full range of higher education services to the citizens of Maine. The University System is governed by a 16-member Board of Trustees appointed by the Governor, and administered by a Chancellor who is the Board's chief administrative and educational officer, and by campus

presidents, who are responsible for the day-to-day operation of their respective institutions.

The University of Maine System includes the University of Maine, Maine's land grant/sea grant university; the University of Southern Maine, a comprehensive metropolitan institution in Portland, Gorham, and Lewiston/Auburn; the University of Maine at

Augusta, Maine's community college; the University of Farmington, a residential baccalaureate institution; and three regional baccalaureate institutions, the University of Maine at Fort Kent, the University of Maine at Machias, and the University of Maine at Presque Isle.

General Information

The University of Maine is located about half-way between Kittery, the southernmost town in the state, and Fort Kent on the northern boundary. It is on U.S. Route 2A approximately eight miles from Bangor, the third largest city in Maine. The University campus is a mile from the business section of Orono, an attractive town of about 10,000 people, and borders the Stillwater River, a branch of the Penobscot.

History

The University was originally established as the State College of Agriculture and the Mechanic Arts under the provisions of the Morrill Act approved by President Abraham Lincoln in 1862. The next year, the State of Maine accepted the conditions of the act and in 1865 created a corporation to administer the affairs of the college. The original name was changed to the University of Maine in 1897.

The institution opened on September 21, 1868, with 12 students and two faculty members. Dr. Merritt Caldwell Fernald was appointed acting president. By 1871, curricula had been developed in agriculture, civil engineering, mechanical engineering, and electives. From these curricula the Colleges of Agriculture, Technology, and Arts and Sciences gradually developed. Women have been admitted since 1872. The School of Education was established in 1930 and became the College of Education in 1958. The University operated a college of law from 1898 to 1920. After this unit was discontinued in 1920, the University did not offer law courses until 1961 when a School of Law, located in Portland, was added through a merger with Portland University.

In 1974, the University of Maine at Bangor became the University's sixth college and was renamed Bangor Community College. The College was renamed again in 1985 as University College. Schools of Business Administration, Forestry, Home Economics, and Nursing were established in 1958. The School of Business Administration became the College of Business Administration in 1965. Schools of Engineering Technology and Performing Arts were established in 1975. The College of Forest Resources was established in 1982. In 1989, the College of Arts and Sciences split to form three Colleges: the College of Social and Behavioral Sciences, the College of Arts and Humanities, and the College of Sciences. At the same time, the departments from the College of Engineering and Science and the College of Life Sciences and Agriculture merged with the College of Sciences, resulting in College name changes for the

College of Engineering and the College of Applied Sciences and Agriculture.

In 1993, the College of Forest Resources merged with the College of Applied Sciences and Agriculture to form the College of Natural Resources, Forestry, and Agriculture. This College is one of the largest of its kind in the country.

The Maine Agricultural Experiment Station was established as a division of the University by act of the Legislature of 1887, as a result of the passage by Congress of the Hatch Act. It succeeded the Maine Fertilizer Control and Agriculture Experiment Station, which had been established in 1885.

In 1980, the University of Maine was accorded Sea Grant College status by the Federal Government under provisions of the National Sea Grant College Program Act.

Graduate instruction has been offered by various departments for many years. The first master's degree was conferred in 1881, and the first doctor's degree in 1960. Since 1923, all graduate work has been consolidated in a separate division, the Graduate School.

Beginning in 1895, the Summer Session has usually been held each year. Summer Sessions of varying lengths are designed for teachers, school administrators and for regular college students who desire to accelerate their work.

Structural reorganization of the University through the years has resulted in the present eight colleges.

Mission

The University of Maine is the principal research and graduate institution of the State of Maine. It offers a comprehensive program of undergraduate study that is enriched by the resources of its university setting. The University is one of seven campuses in the University of Maine System; each campus complements and collaborates with the other six institutions in the System to fulfill the needs of public higher education in the State of Maine. The University of Maine has responsibility for those educational, research, and public service programs associated with its designation as Maine's land-grant university and sea-grant college. In the spirit of its land-grant heritage, the University is committed to the creation and dissemination of knowledge to improve the lives of its students and Maine citizens in their full social, economic, and cultural diversity.

The University of Maine offers a competitive and intellectually challenging experience for its students in degree programs for the associate's level through the doctorate. Undergraduate

education, with a foundation in the liberal arts and sciences that guides the intellectual and ethical development of the University's students, continues to be central to its teaching mission. Professional education in a wide range of disciplines, including programs unique within the State in engineering, the sciences, natural resources, teacher education, business, and human resources, meets student and societal needs. Graduate education, with special emphasis on programs that address the current and future needs of Maine citizens, and in selected areas in which the University of Maine can make significant national and international contributions, supports the research mission of the University, provides advanced training, and educates the next generation of teachers and researchers.

The University recognizes the increasingly global context of economic, social, scientific, technological, and political issues, as well as the evolving multicultural dimensions of contemporary society. Through its basic and applied research, and its public service activities, the University of Maine contributes to the economic, social and cultural life of Maine citizens. With programs that are national and international in scope, the University is also a major resource for Maine in the increasingly interdependent world community.

The University is committed to developing and sustaining a multicultural and pluralistic educational community that encourages the full participation of all of its members. An attractive campus and quality cultural, social, recreational, and athletic programs are offered to complement and extend the learning environment.

Non-discrimination Policies

The University of Maine is committed to a living, learning and working environment fully inclusive of the diverse populations it serves. Thus, the University shall not discriminate and shall comply with applicable laws prohibiting discrimination on the grounds of race, color, religion, sex, sexual orientation, national origin or citizenship status, age, handicap, or veteran status in employment, education, and all other areas of the University.

Consistent with this policy, the University has a responsibility to: (1) provide a living, learning and working environment free of harassment related to any of the above characteristics and specifically related to sexual harassment, (2) provide reasonable accommodation to assure the fullest possible participation of persons with disabilities in the educational and employment life of the University, (3) as-

sure employment and educational practices free of discrimination, and (4) provide full and impartial investigation of concerns regarding discrimination in these categories in any area of the University.

Sexual Harassment Policy

In accordance with its policy of complying with non-discrimination laws, the University will regard freedom from sexual harassment as a right which will be guaranteed as a matter of policy. Any employee or student will be subject to disciplinary action for violation of this policy.

Sexual advances, requests for sexual favors and other verbal or physical conduct of a sexual nature constitute sexual harassment when:

1. Submission to such conduct is made either explicitly or implicitly a term or condition of an individual's employment or education;
2. Submission to or rejection of such conduct by an individual is used as the basis for academic or employment decisions affecting that individual; or
3. Such conduct has the purpose or effect of interfering with an individual's academic or work performance or creating an intimidating, hostile or offensive employment, educational, or living environment.

Consenting relationships may constitute sexual harassment under this policy. When a professional power differential exists between members of the University of Maine and a romantic or sexual relationship develops, there is a potential for abuse of that power, even in relationships of apparent mutual consent. A faculty or staff member should not engage in such relationships. Further, the University prohibits the abuse of power in romantic or sexual relationships.

To ensure that power is not abused and to maintain an environment free of sexual harassment, a faculty or staff member must eliminate any current or potential conflict of interest by removing himself or herself from decisions affecting the other person in the relationship. Decisions affecting the other person include grading, evaluating, supervising, or otherwise influencing that person's education, employment, housing, or participation in athletics or any other University activity.

It is the policy of the University of Maine to ensure fair and impartial investigation that will protect the rights of the person(s) filing sexual harassment complaints, the person complained against and the University as a whole. A separate brochure and information specific to sexual

harassment is available through the Office of Equal Opportunity.

Questions, concerns and complaints about discrimination in any area of the University about the application of laws and regulations related to equal opportunity and affirmative action should be directed to: Office of Equal Opportunity, 5703 Alumni Hall, Room 311 University of Maine Orono, Maine 04469-5703 (207) 581-1226.

Nonsexist Language

The University of Maine, as an equal opportunity educational institution, is committed to both academic freedom and the fair treatment of all individuals. It therefore discourages the use of sexist language. Language that reinforces sexism can arise from imprecise word choice that may be interpreted as biased, discriminatory, or demeaning even if they are not intended to be. Accordingly, all University communications, whether delivered orally or in writing shall be free of sexist language.

Each member of the University community is urged to be sensitive to the impact of language and to make a commitment to eliminate sexist language. Guidelines on the use of non-sexist language can be provided by the Women in the Curriculum Program or Public Affairs.

Undergraduate Degree Programs

College of Arts and Humanities

Bachelor of Arts

Art
English
French
German
History
International Affairs *
Latin
Modern Languages
Music
Philosophy
Romance Languages
Spanish
Theatre

Other

Bachelor of Music in Music Education
Bachelor of Music in Performance

College of Business Administration

Bachelor of Science
Business Administration

*With majors in the following: History and Modern Languages.

College of Education

Bachelor of Science

Elementary Education
Health, Physical Education and Recreation
Education
Secondary Education

Other

Provisional Teaching Certification Option:
Elementary or Secondary Levels

College of Engineering

Bachelor of Science

Chemical Engineering
Civil Engineering
Computer Engineering
Construction Management Technology
Electrical Engineering
Electrical Engineering Technology
Engineering Physics
Forest Engineering
Mechanical Engineering
Mechanical Engineering Technology
Pulp and Paper Technology
Surveying Engineering
Certificate in Five Year Pulp and Paper
Management

College of Natural Resources, Forestry and Agriculture

Associate of Science

Landscape and Nursery Management

Bachelor of Science

Agribusiness and Resource Economics
Animal and Veterinary Sciences
Aquaculture
Bio-Resource Engineering
Bio-Resource Engineering Technology
Food Science and Human Nutrition
Forest Engineering
Forestry
Landscape Horticulture
Natural Resources
Recreation and Park Management
Sustainable Agriculture
Wildlife Ecology
Wood Science and Technology

College of Sciences

Bachelor of Arts

Biochemistry
Biology
Botany
Chemistry

Clinical Laboratory Sciences
 Computer Science
 Geological Sciences
 Mathematics
 Microbiology
 Physics
 Zoology

Bachelor of Science

Biochemistry
 Biology
 Botany
 Chemistry
 Computer Science
 Geological Sciences
 Microbiology
 Molecular and Cellular Biology
 Physics
 Zoology

College of Social and Behavioral Science

Bachelor of Arts

Anthropology
 Communication Disorders
 Economics
 International Affairs *
 Journalism
 Mass Communication
 Political Science

*With majors in the following: Anthropology, Economics, and Political Science.

Psychology
 Public Management
 Social Work
 Sociology
 Speech Communication

Bachelor of Science

Child Development/Family Relations
 Health and Family Life Education
 Nursing

University College

Associate of Arts

Liberal Studies

Associate of Science

Business Management
 Dental Hygiene
 Merchandising
 Health Information Technology
 Hotel, Restaurant and Tourism Management
 Legal Technology

Other

Bachelor of University Studies
 Certificate in Dental Assisting
 Certificate in Paralegal Studies

Academic and Career Exploration Program (ACE)

It is common for students entering college to be undecided about a major or to have several areas of academic interests. Such students can apply for admission to the Academic and Career Exploration Program (ACE) rather than to one of the baccalaureate degree colleges at the University of Maine. The ACE Program is a selective, limited-enrollment program which provides undecided students the opportunity to assess their abilities, interests and goals while systematically investigating the University's various academic programs.

Through the special seminars and close contact with faculty advisors that characterize the program, ACE students engage in structured activities which enable them to make informed choices of major and consider potential careers. Under the guidance of their advisors students select courses to investigate disciplines of interest as well as to fulfill general education requirements.

Students continue in the ACE Program until they are confident they have identified an academic program that matches their abilities and intellectual or career interests. At the time of declaration of major or transfer to a college, students must meet the eligibility requirements (e.g., GPA) of the program or college of interest. ACE students may choose to major in any of the undergraduate programs at the University, provided they meet the eligibility standards and there is space available. Further information may be obtained by calling the ACE Program Coordinator at (207) 581-1831.

Graduate Degree Programs

Doctor of Philosophy:

Biochemistry and Molecular Biology
 Biological Sciences
 Chemical Engineering
 Chemistry
 Civil Engineering
 Ecology and Environmental Science
 Food and Nutrition Sciences
 Forest Resources
 Geological Sciences
 History
 Individualized
 Marine Bio-Resources
 Microbiology
 Oceanography
 Physics
 Plant Science
 Psychology
 Surveying Engineering
 Wildlife Ecology
 Zoology

Doctor of Education

Master of Arts:

Communication Disorders
 Economics*
 Education
 English*
 French
 History*
 Liberal Studies*
 Mathematics*
 Psychology
 Speech Communication*
 Theatre*

Master of Science

Agricultural and Resource Economics
 Animal Sciences
 Bio-Resource Engineering

*Indicates non-thesis option

Biochemistry
 Botany and Plant Pathology
 Chemical Engineering
 Chemistry
 Civil Engineering
 Community Development
 Computer Science
 Education
 Ecology and Environmental Science
 Electrical Engineering
 Entomology
 Food Science
 Forestry
 Geological Sciences
 Geographic Information
 Human Development
 Marine Bio-Resources
 Mechanical Engineering
 Microbiology
 Nursing
 Oceanography
 Physics
 Plant, Soil and Environmental Sciences

Quaternary Studies
Resource Utilization
Surveying Engineering
Wildlife Ecology
Zoology

Professional Programs

Certificate of Advanced Study

Master of Arts in Teaching with major in one of the following:

French
German
Spanish

Master of Business Administration

Master of Education

Master of Engineering with a major in one of the following:

Bio-Resource Engineering
Civil Engineering
Electrical Engineering
Engineering Physics
Mechanical Engineering
Surveying Engineering

Master of Forestry

Master of Manufacturing Management

Master of Music

Master of Professional Studies with major in one of the following:

Agricultural and Resource Economics
Animal Sciences
Biochemistry
Community Development
Microbiology
Public Administration

Master of Public Administration

Master of Social Work

Master of Wildlife Conservation

Accreditation

The University of Maine is accredited by the New England Association of Schools and Colleges. In addition, many of the University of Maine's professional programs and departments are accredited by national professional associations, including:

Accreditation Board of Engineering and Technology, Inc.
American Assembly of Collegiate Schools of Business

American Home Economics Association
National Association of Schools of Public Affairs and Administration
American Psychological Association
American Speech-Language-Hearing Association
American Veterinary Medical Association
American Medical Records Association
American Chemical Society
Council on Social Work Education
Commission on Dental Accreditation, American Dental Association
National Association of Schools of Art and Design
National Association of Schools of Music
National Association of Schools of Public Affairs and Administration
National League for Nursing
Council for Standards in Human Service Education
National Council for Accreditation of Teacher Education
Society of Wood Science and Technology
Society of American Foresters
American Dietetic Association

Other Facilities and Services

The Conferences and Institutes Division

Established in 1973, this office brings together groups of participants and qualified resource people to share information and ideas, develop new skills and insights, and seek solutions to current problems. Each year over 40,000 people participate in more than 300 conferences, meetings, seminars, workshops, short courses, institutes, and symposia. The office is located in Chadbourne Hall.

The Canadian-American Center

The Canadian-American Center coordinates the broad range of Canadian and cross-border studies at the University of Maine. Located at 154 College Avenue, the Center houses seminar rooms, research space for visiting faculty and administrative offices of the University of Maine's National Resource Center for Canada.

The Franco-American Center

The Franco-American Centre is an advocate of the Franco American Fact at the University of Maine and the region. It serves as a bridge between the Franco American community and the University's Division of Academic Affairs. This office stimulates the development of academic and program offerings relevant to the history and life experience of this ethnic group in Maine and New England. In addition, the center promotes bilingual, bicultural and multicultural models of delivery of services; work experiences for university students; maintains a readily available library of materials and in-

formation, and has established a network of resources in Maine and North America to assist students, faculty, administrators, and agencies with their research and programming needs relative to Franco-Americans and other Main cultural communities. The Centre also publishes a bilingual sociocultural journal, *F.A.R.O.G. Forum* and multicultural magazine *the Maine Mosaic*. For further information please contact Yvon A. Labbé, Rhea Côté Robbins, James Bishop at the Franco-American Centre, University of Maine, 126 College Avenue, Orono, Maine 04469. Telephone: (207) 581-37

Computing and Instructional Technology (CIT)

Located in Shibles Hall, the department supports students, faculty, and staff using personal computers. CIT staff installs and supports networks, installs and maintains public clusters, sells and services personal computers, provides software training for the campus community, maintains a Help Center to respond to software application problems, provides high-end graphics computers and peripherals for campus use, and provides a network connectivity program (ConnectME) to residence hall students and subscribing departments.

Public clusters located in Fogler Library and the Memorial Union are equipped with DOS/Windows and Macintosh computers. Those in Rooms 124 Barrows Hall and 121 Lengyel Hall are Macintoshes; and those in 111 Corbett Business Building are DOS/Windows. All clusters have laser printers and access to key server software applications, the mainframe, URSL (the Library system), and NearNet. (ConnectME offers full Internet access.)

The Help Center provides diagnostic and software assistance on a walk-in basis, by telephone (581-2506), or by EMail (cithelp@maine.edu).

The Computer Connection is a nonprofit store for University of Maine students, faculty, and staff purchase of personal computers, printers, computer peripherals, and software at educationally-discounted prices. Offerings include Apple Macintosh, IBM, Digital (DEC), Toshiba Gateway, and Hewlett-Packard hardware. Software includes programs by Microsoft, Aldus, Adobe, Lotus, WordPerfect, Symantec, Norton, and others.

CIT repair service is an Authorized Service Center for Apple Macintosh, IBM, Swan, and Zenith and warranty-certified for many Hewlett-Packard printers. In addition to servicing University-owned equipment, they provide warranty support for those who purchase through the Computer Connection.

Maine Center for the Arts/Hutchins Concert Hall

The Maine Center for the Arts, dedicated in September of 1986, consists of the 1,629-seat Hutchins Concert Hall, the Hudson Museum, the Palmer Gallery, and the Bodwell Area.

The Center presents a full spectrum of performances ranging from classical music to bluegrass, from avant-garde dance to Broadway musicals, jazz to folk and ethnic music, comedy to family entertainment, and much more. In addition to the regular season of events, the Concert Hall is also available for rent by major promoters bringing other types of performers to the University of Maine.

Past performances have featured Isaac Stern and Yo-Yo Ma, Leipzig Gewandhaus Orchestra, Arlo Guthrie, Jean Redpath, The Royal Winnipeg Ballet, The Peking Acrobats, Marcel Marceau, Leontyne Price, Rudolf Nureyev, Johnny Cash and the June Carter Family, Johnny Winter, Greg Allman, The Modern Jazz Quartet, Peter, Paul and Mary, Jerry Seinfeld, Dana Carvey, Dennis Miller, Kris Kristofferson, Lee Greenwood, and many others.

Students are encouraged to experience a wide variety of performances to enhance their overall education at the University of Maine. The comprehensive fee makes it possible for University of Maine students to attend some performances at no cost. Additionally a "student RUSH ticket" may be purchased for \$5.00 on the day of performance and is subject to availability. Students can benefit from Master Classes which are often offered in conjunction with performances by visiting world-class artists in many disciplines.

Tickets for all events are available at the Box Office, located in the lobby of the Maine Center for the Arts. The Box Office is open weekdays from 9:00 a.m. to 4:00 p.m. and for one and one-half hours before each performance. The phone number for information is (207) 581-1755.

The Hudson Museum

The Hudson Museum is located in the Maine Center for the Arts on the UMaine campus. The museum's collections are anthropological and function as teaching and research aids for University faculty, students and the general public.

The Hudson Museum's permanent collections include one of the finest assemblages of Prehispanic Mexican and Central American materials in the United States. The collections also include materials from the Native American cultures of the Northwest Coast, the Plains, the Southwest, local Penobscot, South America and the Arctic, as well as artifacts from Oceania, Asia and Africa. Visiting exhibits are regularly brought to the museum to supplement the permanent collections. The Hudson Museum Shop sells books, jewelry and other gifts. Regular hours are Tuesday-Friday, 9 a.m.- 4 p.m.; Saturdays, 9 a.m. - 3 p.m.; and Sundays 11 a.m. - 3 p.m. The Museum is closed Mondays and holi-

days. Admission is free, donations are encouraged. There is a modest charge for group tours. For more information call 581-1901.

The Libraries

The Raymond H. Fogler Library, on the Orono campus, is the largest library in Maine. It contains an excellent collection of general materials to support undergraduate studies as well as rich and varied research collections including 850,000 volumes, 5,400 periodical subscriptions, more than 1.2 million microforms, and more than 1.8 million U.S. and Canadian federal government publications. Specialized collections include Maine-related materials, sound recordings and music scores, manuscripts, and educational materials for teachers and students. An online information system provides convenient access to the holdings of all University of Maine System libraries, as well as other specialized databases which are mounted locally or available over the Internet. Students and faculty have access to electronic databases for computerized literature searching in the Reference Department and the Science and Engineering Center.

IBM and Apple microcomputer are available for use at no charge. The computers are connected to the campus network and provide student access to popular software applications and laser printing capabilities. The Library also has a GIS workstation.

The library at the Ira C. Darling Center in Walpole houses a specialized collection of books, journals, and reprints on marine studies.

Telecommunications

The Telecommunications Office utilizes current technologies to provide telephone service to the entire campus community. In addition to installing telephone lines and sets, telecommunications staff provides assistance with training, telefacsimile needs, conference calls, voice mail, and long-distance authorization codes and calling cards.

Each resident hall room is equipped with a telephone jack. However, students must provide their own touch tone phone. In addition, students may sign up for a long distance calling program through ACUS (ATC College & University Service) which offers low calling rates comparable to direct dial rates received at home.

Video Services is responsible for on-campus distribution of interactive television including three instructional classrooms, the television studio in Alumni Hall as well as maintenance of video and audio equipment.

The University of Maine Museum of Art

The University of Maine Museum of Art, located in Carnegie Hall on the Orono campus, offers year-round exhibitions and programs featuring contemporary artists, works from the

permanent collection, and other fine arts. Changing exhibitions are also sponsored elsewhere on campus at the Maine Center for the Arts, the Memorial Union, and Fogler Library. The only fine arts institution owned by the people of the State of Maine, the Museum sponsors a statewide effort, Museum by Mail: The Vincent Hartgen Traveling Exhibition Program, which brings art exhibits to hundreds of Maine schools annually. Founded in 1946, the Museum has built a collection of over 4,500 works, including a wide variety of prints and paintings by such artists as Inness, Daumier, Picasso, Piranesi, Kollowitz, Wengenroth, Sprinchorn, Wesselman, and Dine.

The Museum is open all year, Monday - Friday, 9:00 a.m. - 4:30 p.m. There is no admission fee. For more information, call 581-3255.

The University of Maine Planetarium and Observatory

The University of Maine Planetarium and Observatory are operated by the Department of Physics and Astronomy as astronomy resource facilities for students and the public. The director and student staff conduct lab activities, present public shows and promote astronomy education for all.

The University of Maine Planetarium, located on the second floor of Wingate Hall, offers star shows for public audiences (free admission for UMaine students) and special presentations for clubs and public school groups. Thousands of visitors each year view the simulated heavens under a darkened twenty-foot dome and enjoy the narratives and special effects of a modern planetarium.

The University of Maine Observatory is a small domed building south of the Memorial Union. It houses a classic 8-inch Alvan Clark refractor telescope that was installed at Orono in 1910 and several smaller instruments. Astronomy students conduct lab activities there, and a volunteer staff opens the Clark refractor for the general public on clear weekend evenings during the Fall and Spring semesters.

The Maine Folklife Center

The Maine Folklife Center, affiliated with the Department of Anthropology, is located in South Stevens Hall. The Center serves as a comprehensive public folklore agency with a mission to document, study, interpret and present the folklore and folklife of Maine and the Maritime Provinces. It houses a major audiovisual and manuscript collection of American regional culture, the Northeast Archives of Folklore and Oral History; sponsors a wide range of public programs; and publishes the journal *Northeast Folklore* and a newsletter. The Center's research facilities are open to the public weekday afternoons throughout the year and by special appointment. Contact person: Dr. Edward D. Ives, Director and Mary O'Meara, Associate Director. Telephone: (207) 581-1891

Women in the Curriculum Program

The mission of the Women in the Curriculum Program (WIC) is to improve the quality of education for all students by helping to ensure that the experiences and perspectives of women are part of the University curriculum. The WIC Program, which reports to the Office of Academic Affairs, administers an Interdisciplinary Course Concentration in Women's Studies and encourages the development of departmental and interdisciplinary Women's Studies courses. It also continues a long-standing effort toward revising existing courses so that they represent equally the experiences, values, contributions, and perspectives of both women and men and so that the classroom climate in all courses is equally hospitable to both female and male students. The WIC Program also cooperates with other campus units to implement the University's nonsexist language policy.

Toward these goals the WIC Program provides small grants to faculty for curriculum development, research, focused reading, and improvement of the academic climate for women. Additional WIC Program components include the weekly WIC Lunch Series, the Feminist Oral History Project, the University's annual Women's History Celebration, the Maryann Hartman Awards to Maine women of achievement, Women's Studies discussion groups, a program of speakers and performers, and a variety of other projects and events intended to assist the University in providing a full and accurate education for its students. Together with the Women's Resource Center, WIC maintains a small lending library in their joint space in Fernald Hall.

Office of Services for Students with Disabilities (Onward Program)

The Counselor/Coordinator of Services for Students with Disabilities facilitates the education of students with physical or learning disabilities by providing a point of coordination for any special services they may need while attending the University of Maine.

Some of the services provided or coordinated for disabled students are advising, special orientation to campus, readers, recorders, tutors as needed, the ordering of taped texts, classroom relocation, priority registration, mediation and advocacy, classroom accommodations, as well as personal, educational, and vocational counseling. Students believed to be learning disabled without documentation can be screened through this office and referred for assessment.

Accommodation Procedure for Students with Disabilities

Students with disabilities have two options when making requests for academic accommodation. Requests are made to either the Coordinator of Services for Students with Disabilities at the Onward Program, or to the faculty member teaching the student's class.

Option 1

Student requests accommodation through the Coordinator of Service for Students with Disabilities at the Onward Program, complete the following procedure each semester. There is no such thing as a "standing letter of accommodation." The process of providing accommodations involves each specific course and changing needs, thus requires review on a semester-by-semester basis.

(1) Call to make an appointment to see Ann Smith, Coordinator of Services for Students with Disabilities. (Voice 581-2319, TDD 581-2311).

(2) Provide current appropriate documentation of disability and accommodation need from a qualified medical or other licensed professional evaluator if disability is not readily apparent. (See L.D. Documentation Guidelines.)

(3) Bring to the appointment class schedule and the names of professors.

(4) If the student is qualified, and the accommodation deemed appropriate using criteria from the University of Maine Policy on Accommodations, then a letter of accommodation request will be written to the Professors working with that student. The student will be asked to sign a release form for all accommodation letters requested. *No letters will be made available until the release is signed.*

(5) Unless otherwise arranged, letters of accommodation will be held at the Onward Building for the student to pick up and deliver to his/her professors. This allows the professor to meet with the student and discuss any accommodation arrangements. In some cases, letters will be mailed to Professors but this is the exception and needs to be requested by the student.

(6) The professor has final responsibility for an accommodation decision. If a formally requested accommodation from the Onward Program is not provided by the professor, then it is the student's responsibility to bring this to the Coordinator's attention for further advocacy.

Option 2

Student requests accommodation directly from Professor of his/her class.

Request granted without intervention from the Coordinator of Services for Students with Disabilities at the Onward program. For example, a student may request to tape record class lectures. Many professors have no difficulty with such a request and grant it immediately.

Or

Professor refers student to Coordinator of Services for Students with Disabilities for:

1. Verification of disability
2. Accommodation request letter
3. Exploration of accommodation alternatives. Student follows procedure as outlined in Option 1.

Accommodation Policy for Students with Disabilities

It is the policy and practice of the University of Maine to comply with the Americans with Disabilities Act, Section 504 of the Rehabilitation Act, and state and local requirements regarding

students with disabilities. Under these laws, qualified individual with a disability shall denied access to or participation in services programs, Maine.

In compliance with federal and state regulations, reasonable accommodations are provided to qualified students with disabilities. A qualified individual is a person who, with or without reasonable accommodations, can perform the essential functions of a program or course requirements. The essential requirements of an academic course or program may not be modified to accommodate an individual with a disability.

The University has designated Student Disability Services located in the Onward Building as the office which coordinates services for students with disabilities, as part of the continuous effort to make the campus accessible.

Final responsibility for selection of the most appropriate accommodation rests with the University and is determined on an individual case by case basis, based on the nature of the course or program and the nature of the student's disability.

Students are encouraged to meet with the Coordinator of Services for Students with Disabilities to develop a plan for their academic accommodations. A request for accommodation is deemed reasonable if it:

- a) is based on documented individual needs; all cases of non-apparent disability;
- b) allows the most integrated experience possible AND
- c) does not compromise essential requirements of a course or program;
- d) does not pose a threat to personal or public safety;
- e) does not impose undue financial or administrative burden;
- f) is not of a personal nature (ex. paying for personal care attendant, eyeglasses, etc.)

It is the student's responsibility in the accommodation process to:

- 1) follow the University of Maine accommodation procedure for students with disabilities
- 2) identify self as having a disability to Onward's Services for Students with Disabilities, or to faculty, or staff when the disability is not readily apparent;
- 3) provide at the student's expense, current appropriate documentation of disability and accommodation need from a qualified medical or other licensed professional. (See Learning Disabilities Documentation Guidelines (To be kept in confidential file separate from student's academic files)
- 4) request a specific accommodation or service

For further information, please contact Ann Smith, Coordinator of Services for Students With Disabilities, 5757 Onward Building, University of Maine, Orono, ME 04469-5757. Phone 207-581-2319, TDD 581-2311.

Office of University Retention Programs

The Office of University Retention Programs works to help students persist at the University of Maine until their educational goals are reached. It does so by working on specific problems with individual students and by identifying systemic causes of and solutions to the various problems that negatively impact the lives of students. The Office is responsible for listening to student problems, assessing their significance to the ability of students to remain in school and helping the student work through appropriate solutions. It also serves as a location where individual students may obtain information about and referral to relevant campus resources.

Office of International Programs

The Office of International Programs (OIP), has administrative and programmatic responsibility for coordinating UMaine international academic, research, education, and training program activities, making policy recommendations and establishing protocol and procedures for new UMaine programs and initiatives, developing strategies, and maintaining liaison with external public and private institutions, organizations and agencies. The director of OIP also oversees and manages activities related to the Title XII, to research and program development activities, and for ongoing UMaine projects abroad. The OIP Director also teaches and advises students in areas related to international conservation. The Office of International Programs helps international students achieve their educational objectives by assisting in their successful adjustment to a new culture and educational system and increasing their awareness of the many resources available to them. The Office of International Programs offers assistance with immigration matters and provides intercultural opportunities such as GAB, Culturefest and International Week. All international students are required to have University of Maine International Student Insurance coverage. Organizations sponsoring international students may be charged an administrative fee by the Office of International Programs. This office is responsible for issuance of the U.S. Immigration I-20 or IAP-66 forms necessary for the international student to obtain a student visa from the U.S. consulate in their native country. All international students, including those with "F" student or "J" exchange student status, must report to the Office of International Programs upon arrival on campus.

Academic Requirements

Study Away and Away Status

Students from all majors are encouraged to consider one of our several study away programs to earn credit towards their University of Maine degree. There are many opportunities through

Study Abroad, National Student Exchange, national and international internships, cooperative programs, visiting student, and various research programs. A student may study away at another institution for an academic year, a semester, summer, May term or other interim period. Typically, a student studies away during the junior year, but various programs are available for sophomores, seniors and graduate students.

When a student registers for study at another institution he/she will be placed on "Away Status" at the University of Maine, still fully enrolled in he/her degree program. Academic degree credit will be transferred from the host institution according to policies set by the student's academic dean and the chair of the student's major department; such transferred credit is not normally calculated into the grade point average.

A student wishing to register for "Away Status" must be in good academic standing. To insure that the intended study will be appropriate to the student's overall academic program, the student must first discuss plans for study away with the dean and the academic advisor and obtain *prior approval* from both these individuals. Before a student pursues Summer Session courses in *any* institution (including UMaine), he/she must be in good academic standing and secure the prior approval of the dean and the chairperson of the student's major department *if the student expects degree credit for such work*. Course equivalencies for any study away should be determined *prior* to registration. All approval and registration forms are available in the dean's offices.

For more information about study away, the student should contact his/her academic advisor, the college dean or the offices of the Study Abroad of National Student Exchange programs.

Pass/Fail

It is possible to take some courses on a pass/fail basis under the following conditions: (1) Students must have sophomore standing or higher and have a grade point average of at least 2.0; (2) a student may not take more than one course a semester on a "pass/fail" basis; (3) a course taken on a pass/fail basis may not be used to fulfill requirements set by the student's academic unit (other than total hours required for graduation); (4) pass grades will not be used in computing grade point averages but will be counted toward degree credit (a failing grade although recorded as an "F", will not be figured in the student's accumulative grade point average); (5) a student must indicate when registering for the course that he/she is taking it on a pass/fail basis. A student cannot convert from the pass/fail basis to the regular enrollment or vice versa after the first two weeks of a semester.

Physical Education

Physical Education is *not* required for graduation for any UMaine degree. For the B.A. degree, students may earn up to two credits in

Physical Education *skills* courses applicable towards the 120 total needed for graduation. The allowable number of credits that can be applied toward the B.S. and other bachelor degrees varies. Students pursuing these degrees should check with the appropriate dean's office for guidance. Note: All Physical Education courses are designated as HPR (Health, Physical Education and Recreation).

Problems Courses

Field experience, practica, and independent study (readings, etc.) are normally taken in the student's major. Problem courses, practica, and independent study courses *outside* the student's major, and especially outside the student's college, require special prior permission from the academic advisor and dean.

Transfer Credit

All students who transfer to the University of Maine from another institution must earn a minimum of 30 hours of "Orono" courses to qualify for the baccalaureate degree. Degree credit will normally be allowed for courses in which grades of "C" or above have been received. Grades do not transfer and are not included in the G.P.A. Evaluation of such courses for approval of degree credit and possible equivalency rests with the Dean of the student's college.

A number of agreements have been formalized with other institutions for the acceptance of transfer degree credit. Specific details are available through the Registrar's Office or the Office of the Dean, of the student's college.

Double Majors and Second Degrees

Double majors are permitted between most disciplines at the University of Maine. The requirements for meeting the double major state that a student must meet all requirements of two separate and distinct disciplines. Students also may obtain a double major or double degrees *across* colleges by satisfying the requirements for both colleges and majors. Students intending to become candidates for double majors or degrees across colleges must declare their intent to the deans of both colleges no later than the beginning of their junior year.

Students who have taken sufficient courses outside of their primary major to qualify for a second degree must have at least 150 degree hours prior to the award of the second degree if they are in one of the colleges that require 120 hours for graduation. Students in colleges which require more than 120 hours for graduation must have 30 hours beyond their normal degree requirements to be awarded a double degree.

Students already holding a baccalaureate degree from UMaine or from any other accredited institution may be admitted to the University to pursue a second baccalaureate degree. Such students must earn a minimum of 30 additional credits to be awarded a second degree.

System and functions as a research and teaching facility for University faculty, students, and visiting investigators from throughout the world. The Center is located on the oceanic Gulf of Maine. Coastal habitats include rocky shores, marsh, beaches, and mud flats. Nearby subtidal environments include seagrass beds, soft bottoms of all grain size types, and rocky, hard bottoms. Macrofauna indicative of Virginian to sub-Boreal regions are present. The subarctic to cold temperature environment is seasonally variable, with temperature ranging between 2 and 15 degrees C in the open ocean and between -2 and 20 degrees C in the upper reaches of estuaries. Salinity within the estuary ranges from 28 to 32 ‰. Facilities include a 60-seat classroom building, a dining hall and kitchen, conference rooms, mechanical and woodworking shops, dormitory and cottage housing, and an excellent marine library containing over 5700 volumes and 190 journal subscriptions. The new 12,000 sq. ft. Flowing Seawater Laboratory serves us a multifunctional facility for culturing and experimenting with a wide variety of living marine organisms under either ambient and controlled temperatures (10-20 degrees C). This facility also contains walk-in environmental rooms, an algal culture room, and Electron Microscopy and Histology Lab, as well as dry office and lab space. A newly constructed shore-side Dive and Field Staging building contains showers, locker rooms, a scuba cascade system, an electronics lab and storage space. A fleet of small boats plus a 34' lobster-style boat provide access to the water.

The Sea Grant College Program

Part of the Center for Marine Studies, the Sea Grant College Program provides a focus for the University of Maine and cooperating institutions on important marine issues and the resource potential of the Gulf of Maine and its coastal boundary. Primarily a program of marine research, graduate education, and marine extension education, the program, in partnership with the University of New Hampshire, receives primary funding from the Office of Sea Grant, National Oceanic and Atmospheric Administration. Additionally, funding for the Gulf of Maine Regional Marine Research Program is managed through Maine Sea Grant. The Marine Advisory Program is a network of organizations working together toward a common goal: to promote the wise use, development and conservation of northern New England's coastal and Marine resources through research-based educational programs. By integrating the talents of educational institutions and government agencies it extends the impact of its programs and responds effectively to the needs of those dependent on Marine resources.

Institute for Quaternary Studies

The Institute for Quaternary Studies is an interdisciplinary research unit with a focus on the

Quaternary Period, a time of numerous glacial/interglacial cycles leading up to the present. Research focuses on the timing, causes, and mechanisms of natural climate change, and on the effects of former climate changes on the physical, biological, chemical, social, and economic conditions of the past. Such studies provide important perspectives on Global Changes of the present and the future. The Institute includes faculty with joint appointments in the departments of Anthropology, Plant Biology and Pathology, Computer Science, Geological Sciences, History, and Oceanography. Research projects currently involve the United States, Canada, South America, Antarctica, Greenland, India, Europe, Siberia, and many regions of the world's oceans. Collaborations and exchange programs are in effect with faculties at the University of Oslo, Norway, and the Universities of Stockholm and Lund, Sweden, among others.

Laboratory for Surface Science and Technology

The Laboratory for Surface Science and Technology (LASST) is one of the University's organized research units. LASST coordinates research in a range of fundamental and applied areas relating to the properties of surfaces and materials and their application to areas such as microsensors, catalysis, and thin film growth. Extensive laboratory facilities have been set up in LASST to support the research needs of University of Maine faculty as well as state and regional industries. LASST provides an opportunity for graduate and undergraduate students to acquire training and experience in a high technology program. LASST faculty also offer specialized courses in surface and material science. Major research areas include surface crystallography, microwave acoustics, surface phase transitions, adsorption and catalysis, analytical methods, adhesion, atomic force microscopy, biosensors, gas sensors and fluid sensors.

The Department of Industrial Cooperation

The University has skills and facilities that are useful to individuals, private industry and government agencies. The Department of Industrial Cooperation was established in 1946 to coordinate the activity in a way that does not compromise the basic commitment of the University to teaching, research and public service. All University costs, including the operation of the Department, are paid by clients using the service.

University of Maine Cooperative Extension

The University of Maine Cooperative Extension extends the resources of the University to the people of Maine wherever they live, an important responsibility of all land-grant colleges and

universities. At work in Orono and in 16 county offices, more than 80 Extension faculty members and roughly 15,000 volunteers conduct educational programs to help Maine citizens solve problems at home, at work, on farms, and in communities. In addition, Extension administers the state's 4-H program, which involves more than 24,000 Maine young people in educational clubs, camps, and in-school activities. Extension programs are based on research performed at the University of Maine and other colleges and universities across the nation. Besides county educators and volunteers, Extension personnel include state and area specialists, administrators, professionals, and paraprofessionals. County Extension Associations sponsor Extension programs in each county. Maine's Cooperative Extension is part of a nationwide Extension system, supported by a three-way partnership involving the U.S. Department of Agriculture, the land-grant colleges and universities, and county governments.

The Pulp and Paper Foundation

Supported by private funding from nearly 150 companies located in 25 states as well as several hundred individual donations and endowment gifts, the foundation encourages a strong teaching and research program in Chemical Engineering, with a significant undergraduate scholarship program available to qualified students throughout the College of Engineering, School of Engineering Technology and the College of Natural Resources, Forestry and Agriculture.

The Lobster Institute

A program of research and education conducted in cooperation with the lobster industry, the Institute generates information about the Maine lobster which is used to help conserve and enhance the resource and ensure the continuance of the lobster industry in Maine and adjacent areas. The Institute works with representatives of the industry to identify practical problems and generate solutions to them.

Economics America/Maine Council on Economic Education

A cooperative effort of the University of Maine and more than 100 business and labor groups, the Council offers statewide programs of teacher training in economics, hosts workshops, and integrates economic education into school curricula. Principal programs: Economics America Curriculum Program; Global Education, High School Financial Planning; The Stock Market Game™; "Economics is Kids' Stuff™" Television Series and Educator-In-Residence Program.

National Center for Geographic Information and Analysis

This research center was established to study methods of collecting, storing, analyzing, and presenting geographic information in a computer-based world, and to promote an understanding of the impact of this new technology on science, society and industry. The Center supports faculty, postdoctoral research associates and graduates students from such fields as engineering, geography, computer science, and mathematics, to study concepts about geographic phenomena. The NCGIA is the only such center in the U.S. and is operated by a consortium of the University of California at Santa Barbara, the State University of New York at Buffalo and the University of Maine.

Margaret Chase Smith Center for Public Policy

The Margaret Chase Smith Center for Public Policy was created in 1989 to improve the capacity of the University to address important public problems and issues. The Center produces and broadly disseminates policy studies which are relevant, timely and responsive. The primary audience for projects of the Center is the State of Maine, including its citizens, officials in the legislative and executive branches and affected interests from educational, business and technological sectors. The Center is an interdisciplinary unit, with working relationships with a broad range of students, faculty, and other units at the University of Maine.

Women's Resource Center

The Women's Resource Center, located at 101 Fernald Hall, was established in the fall of 1991 to promote and maintain an inclusive, positive and supportive climate conducive to women's personal and professional development at the University of Maine. The Center, which comes under the Research and Public Service arm of the University, serves as a resource for individuals and organizations, offering information and referrals for women's programs and services on and off campus, providing advocacy and collaboration to help women with special needs and concerns, and bringing together women with similar values and goals. The Women's Resource Center shares space with the Women in the Curriculum Program which encourages and assists in integrating women's experiences and perspectives into academic and professional programs. A non-academic complement to the WIC program, the Women's Resource Center promotes a closer relationship between the women on the University of Maine campus and women in the larger Maine community. In addition to an extensive collection of books, videos, and periodicals of interest to women, the Center offers programs, provides meeting space, distributes calendars of events of interest

to women and works with groups on and off campus to enhance the status of women.

The Center for Community Inclusion, Maine's University Affiliated Program

The Center for Community Inclusion was established in 1992 as Maine's University Affiliated Program (UAP). UAPs are a national network of federally funded programs established to provide interdisciplinary education, community/outreach education, applied research and policy analysis, technical assistance, and dissemination in the field of developmental disabilities. To meet its statewide mission, the Center has affiliations with a wide range of state and community agencies, advocacy groups, and consumer, parent and professional organizations. On campus, the Center coordinates the undergraduate and graduate Interdisciplinary Concentration in Developmental Disabilities which is affiliated with fourteen academic departments and units and Eastern Maine Medical Center in Bangor. Several education, research and service projects, which focus on improved quality of life for persons with developmental disabilities, their families, and professionals who support them, are administered by the Center. Students who elect the Interdisciplinary Concentration in Developmental Disabilities may become involved in these projects through practicum and internship experiences. For a description of the Interdisciplinary Concentration in Developmental Disabilities, see Interdisciplinary Course Concentrations (ICCS).

Bureau of Labor Education, University of Maine

The Bureau of Labor Education, established in 1966, conducts educational programs, presentations, and research on labor and labor related issues of interest to workers, students, leaders in government, labor, and education, and public policymakers. General topics include employment law, occupational health and safety, labor/management relations, leadership development, and labor economics. The Bureau also analyzes and speaks on timely issues involving such topics as discrimination and sexual harassment, the Americans With Disabilities Act, productivity, workplace innovations, the global economy and competitiveness. For more information on the Bureau, or to request a program, call 581-4124. Fees, charges, and program costs are determined by arrangement.

Division of Student Affairs

Center for Student Services

Center staff members work closely with individual students and student groups to help them solve personal, social, and academic problems. Staff members also act as a resource to

Student Government and other student organizations, assist students in the development and evaluation of student life policies, and serve as student advocates to speed up the administrative problem-solving process. The office addresses specific student needs through the following sub units: Dean of Student Services, Commuter and Non-Traditional Student Programs, Information/Reservation Center, Judicial Affairs, Maine Bound and Recreation Center, Memorial Union, Administration Multicultural and Special Programs, Student Activities and Organizations, and The Union Board

Counseling Center

The Counseling Center's mission is to provide services and programs which promote the personal development and psychological well-being of students, and to encourage a University atmosphere which is conducive to growth and which maximizes students' educational attainments.

The Center staff, consisting of doctoral level counselors, psychologists and a psychiatric consultant, provides a full range of counseling and mental health services to help students in areas such as educational functioning and decision making, career selection, personal and emotional development, relationship difficulties, psychological disorders and emotional crises. These services are provided through individual and group counseling/therapy, educational/occupational library resources, interest, ability and personality testing and evaluation, psychiatric evaluation of students referred by Counseling Center Staff, crisis intervention and preventive and developmental programming. In addition to these services, Counseling Center staff also provide consultation and educational programming to the campus community.

All full-time students on the Orono campus are eligible for the services of the center. All services except psychiatric consultation are free of charge. Referral services are provided to persons who are not eligible to be seen at the Counseling Center.

Counseling Center offices are located on the Gannett side of Cutler Health Center, call 581-1392.

Career Center

The primary purpose of the Career Center is to assist students in developing, evaluating and effectively initiating and implementing career plans. The Career Center provides career planning and placement services for all undergraduate and graduate students. It also coordinates the Cooperative Education/Field Experience program, providing work/learning opportunities in conjunction with over 50 academic departments.

Staff members provide individual counseling to help students explore career options, set career goals, and devise strategies for reaching

these goals. SIGI Plus, a computer guidance system, is also used to assist students with career decisions. Counselors are actively involved in outreach programming in academic classes, student organizations and residence halls on campus. A Self-Help Career Lab that includes extensive written and audio-visual materials on careers, employers, and graduate and professional school information is located in the office and is staffed by trained peer career assistants.

Special programs designed to help students make connections with employers and graduate schools are sponsored on an on-going basis. Examples of such programs include the Maine Mentor Program, the Engineering Job Fair, the Graduate and Professional School Fair, and the Maine Recruiting Consortium.

The Career Center serves as the clearinghouse for the following job listings: co-op, internships, and full-time jobs upon graduation. This information is distributed campus-wide through electronic bulletin boards and printed bulletins. Employers from regional and national firms conduct interviews on campus to fill cooperative education positions and full-time career positions from October through April. In addition to participating in the on-campus recruiting program, students are encouraged to develop their own personalized job search and assistance is provided through individual counseling and group workshops such as "Resume Writing", "Interviewing Techniques", and "Job Search Strategies", as well as special interest workshops such as "Career for Science Majors", "Careers with the Federal Government" and "Job Search Strategies for International Students".

For further information contact the Career Center, 5713 Chadbourne Hall, University of Maine, Orono, Maine 04469-5713. (207) 581-1359.

Campus Living

This department of Student Affairs provides on-campus housing for single students (581-4584) and students with families (581-4585) as well as dining services (581-4706) to the campus community. Guest housing is available for a minimal fee to campus visitors (reservations: 581-8577). Housing and dining services offices are located at Room 103, 5734 Hilltop Commons.

Office of Student Aid

The Office of Student Aid administers a variety of programs to help students finance their education. To enable the University to make a proper judgement as to the amount and type of assistance a student will be offered, the student must apply for financial aid. Aid applications must be filed each year, regardless of whether the student has filed previously. Education is seen as a family responsibility, and in many cases both parent and student information will be required. For 1994-95, undergraduate stu-

dents must file the "Free Application for Federal Student Aid" (FAFSA). Students who receive a "Renewal Application" from Federal Student Aid Programs can file this form *instead* of the FAFSA. Priority consideration will be given to students whose FAFSA or "Renewal Application" is received by the processing center on or before March 1, 1995. Applications received after this date will be considered only after on-time applications are processed *and* if funds are available. To maintain priority standing, all copies of federal student/parent tax returns (or non-tax filer statements) must be turned in to the Office of Student Aid by May 15, 1995.

NOTE: All aid applicants are considered without regard to race, color, religion, sex, sexual orientation, national origin or citizenship status, age, disability, or veteran status, except in those cases where the aid is intended to rectify prior or existing imbalance in minority or other group participation in the educational process. If you are a person with a disability and will need any accommodations to participate in this program, please contact the Office of Student Aid to discuss your needs.

Some of the financial aid programs are listed below:

Federal Pell Grants: are available to eligible undergraduate students pursuing their first bachelor's degree, based on financial resources. Pell Grants do not have to be repaid.

Federal Supplemental Grants: are offered to undergraduates with exceptional financial need who are pursuing their first bachelor's degree. Supplemental Grants do not require repayment.

University Grants and Scholarships: are awarded on the basis of financial need and/or academic achievement and/or the ability to meet certain requirements as stipulated by the donor. Scholarship listings are available upon request through the Office of Student Aid.

Federal Perkins Loans: are low-interest loans awarded by the Office of Student Aid on the basis of demonstrated financial need. A Promissory Note must be signed each semester in which a student accepts the offer of a Perkins Loan. Repayment is deferred while enrollment remains at least half time, and no interest is charged on the loan until repayment is expected.

Federal Stafford Loans: are available through banks, credit unions and other lending institutions. Contact the Office of Student Aid to find out if a separate loan application is required. Subsidized Stafford Loans are made to students with demonstrated financial need, while unsubsidized Stafford Loans are made to students with only partial or no subsidized Stafford Loan eligibility. Maximum Stafford Loan eligibility, both subsidized and unsubsidized, is determined by a student's grade level. All other financial assistance is also taken into consideration when determining a student's loan eligibility. Interest rates are variable for new borrowers after October 1, 1992, but will not exceed 9%. First-time Stafford Loan borrowers

must attend an entrance interview/counseling session before the loan check can be released.

Federal Work-Study: offers eligible students the opportunity to earn spending money and/or living expenses, while gaining valuable work experience. Once a work study job is secured, the student will receive bi-weekly paychecks until the total amount of the work study award has been earned. Job listings are available at the Office of Student Employment.

Satisfactory Academic Progress for Federal Student Aid Recipients: All recipients of Federal, State and/or University aid must meet the University's policy of Satisfactory Academic Progress. Progress is measured by both grade point average (GPA) and the length of time it is taking the student to complete his or her program of study. Students who are not meeting either one or both of these requirements will lose eligibility for aid. Further information is available from the Office of the Vice President for Academic Affairs, 5703 Alumni Hall.

Office of Indian Programs and Minority Services

The Office of Indian Programs and Minority Services represents the richness and diversity of services offered at the University of Maine. Our mission is to provide support services and programs to minority students. We assist minority students to achieve their academic, career, and personal objectives, we advocate on minority's behalf, and we assist the campus-wide planning efforts to promote cultural diversity. The Office of Indian Programs recruits and assists American Indian students wishing to pursue a college education at the University of Maine.

Academic Support Services and Minority Services

The Indian Programs provides academic and career counseling for minority students. Supportive services often start before the regular college school year. The office works in close cooperation with the UMaine's Developmental Program. Thus, the office assures American Indians and minority students that remedial courses in reading, study skills, math, sciences, and English are available to all who wish to advance their education. This service encourages Indian and Minority students who might not have otherwise attended college to enroll at the University of Maine.

Office of Multicultural and Special Programs

The Office of Multicultural and Special Programs provides programs that promote cultural diversity. It strives to acknowledge, affirm and advocate through communication, education, and celebration of issues of common humanity—issues that transcend race, language, spirituality, gender, and sexual orientation among all.

Student Health and Prevention Services

The Student Health and Prevention Services provides health care to University of Maine students who have paid the comprehensive fee and also to students on a "Fee-for-Service" basis.

For students who have paid the comprehensive fee services include walk-in, appointment, and specialty clinic visits with nurses, nurse practitioners, physician assistants, and physicians. Pharmacy, laboratory, x-ray, some supplies and special services are available at a reasonable cost. Health impact group provides a variety of programs including the Preventive Medicine Program, UMaine Peer Educator Program, Sexual Health and Reproductive Education, Community Health Nursing and a comprehensive array of substance abuse services.

The University sponsors a Health Insurance Policy for interested students.

Religious Affairs

Fifteen religious groups provide opportunities for religious programming, worship, study, conversation, and witness: Hillel Foundation (Jewish), Maine Christian Association (Protestant), St. George's Greek Orthodox Church (Greek Orthodox), Our Lady of Wisdom Parish/Newman Center (Roman Catholic), Newport Full Gospel Church, UMaine Student Fellowship (Pentecostal), United Methodist Church (Methodist), Redeemer Lutheran Church (Lutheran), Orono Friends (Quaker), Church of Universal Fellowship (varying Denominations) and the Canterbury Club (Episcopal). The chaplains are available for counseling or instruction. The Intervarsity Christian Fellowship, Campus Crusade for Christ, Bahai Club and UMaine Muslim Student Group, four approved student organizations, meet weekly in the Memorial Union.

Questions concerning the above may be directed to the Office of the Dean of Student Activities, 5748 Memorial Union.

The churches and synagogues of Orono, Old Town, and Bangor always welcome the attendance of University students. The Drummond Chapel, a small meditation room open to the University community, is located in the Memorial Union.

The Office of the Dean of Student Activities, Memorial Union, serves as a resource in the areas of religious affairs.

Student Life

Student Government, Inc.

University of Maine Student Government, Inc. is the largest organization of its kind in the State of Maine. It is funded and controlled by undergraduate students with the sole purpose of benefiting students through educational, cul-

tural and social programs, events and activities. Student Government Inc. is involved in literally hundreds of University policies and programs.

The activities of Student Government, Inc. are directed by an elected president and vice-president who appoint and coordinate a diverse administrative staff including six representative boards, four service boards, many committees, and other diversions representing the needs of students and promoting student rights.

Student Government, Inc. receives moneys from the Student Activity Fee. The Student Government Executive Budgetary Committee, as an advisory body, assists in budget matters and in disbursing funds to groups and organizations requesting assistance.

The General Student Senate (GSS) is the legislative unit of Student Government, Inc. and is under the leadership of the vice-president. The GSS has final approval over all Student Government matters. It is composed of 35 to 55 members, each elected by a specific constituency for a one-year term. The GSS and its six standing committees deal with budget matters, Student Government, Inc. policy, recommendations to the University, and any matters affecting the students of UMaine.

The ten boards that help make up the Student Government, Inc. are:

Representative Boards
Off-Campus Board
Residents on Campus
Inter-Fraternity Council
Panhellenic Council

Service Boards
Guest Lecture Series
Maine Day
Senior Council
Student Legal Services
Student Entertainment and Activities
Ram's Horn Board All Board presidents/chairpersons hold seats in the Cabinet of the Student Government, Inc. which is chaired by the President. All Student Government, Inc. committee memberships and meetings are open to all students. Graduate Students have their own student government which is described in the Graduate School Catalog.

Representative Boards

Off-Campus Board (OCB)
The Off-Campus Board was created to serve the needs and interests of the undergraduate students who live off-campus. This goal is accomplished by organizing social functions, concerts, a newspaper, and working on local issues such as landlord-tenant relations.

Residents on Campus (ROC)
ROC coordinates the activities of the 18 Hall Governing Boards (HGB) and serves as the central governing body for all on-campus students. In this role it assists in and oversees implementation of policies, programs, and activities as well as controlling the Student TV channel.

Inter-Fraternity Council (IFC)

The 13 fraternities at the University are represented by the Inter-Fraternity Council. Membership consists of two members from each fraternity, the president and one other member. The officers of IFC are elected in the Fall by the entire fraternity system. The Council sponsors programs for the fraternity system of an educational and social nature and assists in the development of University policies that affect fraternities. The Inter-Fraternity Council and Panhellenic Council (see below) are funded through Student Government and provide services for students and the community, including marathons, blood drives and big brother/big sister programs. Greek Week, leadership seminars, a competitive intramural schedule and many social events highlight Greek life on campus.

Panhellenic Council (PANHEL)

The Panhellenic Council is the representative council for sorority women on campus. PANHEL coordinates activities for 7 sororities and cosponsors events with IFC, such as Winter Carnival and Greek Week. PANHEL is also involved in a variety of philanthropic. The election of officers is held in the Fall of each year.

Service Boards

Guest Lecture Series (GLS)

The mandate of the GLS is to promote a well rounded education by presenting lectures on diverse topics and subjects to the University community. GLS sponsors three to four lectures each year and is also responsible for assisting various campus organizations and departments in presenting speakers of special interest through co-funding and other support.

Maine Day

The Maine Day Board organizes the University of Maine, Maine Day tradition. One which has been going for 57 years. Maine Day is an opportunity for the University as a whole to get involved in a day of community service, as well as enjoy the many events which of on that day.

Senior Council

Senior Council serves as the campus liaison between the senior class and the Administration in organizing and coordinating the activities and events surrounding Commencement.

Student Legal Services

Student Legal Services is a program of Student Government which provides free legal advice to undergraduate students on such issues as landlord-tenant matters, divorce, small claims, personal injury, auto accidents, problems with the University, and many others. Full court representation is also available, a small fee is charged in certain cases. The office is staffed by one attorney, two full-time paralegals and student paralegals.

These services are available to undergraduate students who have paid the student activity fee.

Residency Requirement for First Year Students

The University of Maine believes that living in campus residence halls is an educational opportunity that all first year students should experience. Campus residence halls provide students the opportunity to become part of a community and participate in a variety of educational experiences. To facilitate this experience, living in a residence hall is a requirement for all first year students who are under the age of 20, who do not live in the immediate area and who do not have exceptional circumstances which would prevent them from living on campus. For additional information on this policy, please contact Campus Living at (207) 581-4584.

Department of Public Affairs

Public Affairs Department serves as UMaine's official coordinator of campus and external communications, providing news media, radio-television production, and graphic design services as well as other resources intended to aid the campus community and public at large. The department works with the news media to provide outreach and promotion of University research, services, news and information. Radio and television specialists create professional-quality audio and video productions including the "Snapshots" monthly magazine show and the "University Review" radio program. Award-winning graphic artists provide high-quality design services for all forms of media and for all types of projects. Other services include the "Maine Perspective", a weekly publication of University news, events and commen-

tary; the Speakers Bureau, which maintains a "specialists list" with names and other information about University faculty and staff with expertise in many diverse fields; photographic services; and the University of Maine Visitors' Center, which provides tours and information services. For more information, call (207) 581-3743.

Office of Equal Opportunity

The Office of Equal Opportunity serves UMaine students, faculty, staff, applicants and users of university services. The Office is responsible for: investigating complaints of discrimination and/or harassment based on race, color, religion, sex, sexual orientation, national origin or citizenship status, age, handicap, or veterans status; ensuring accessibility to all programs for persons with disabilities; monitoring and promoting compliance with EEO/AA laws and regulations; providing consultation to administration, faculty and staff and educational presentations on issues related to equal opportunity/affirmative action and/or sexual harassment; and providing advocacy and support for the creation and maintenance of an environment which promotes diversity.

The Director of the Office of Equal Opportunity is responsible to the students and employees of the University for resolving discrimination and discriminatory harassment complaints. The Director will talk with you informally or formally about your concerns. Please feel free to contact the Office of Equal Opportunity, 5703 Alumni Hall, University of Maine 04469-5703: (207) 581-1226.

Computing and I Services

CAPS provides support research and administration of the University computing center. The Computing Center provides programming system support, conducts short courses, works with individual staff on computer related

University facilities include a 200J mainframe with RS/6000 UNIX workstations in a public laboratory. The current mainframe includes more than 100 ports and more than 100 tape drives. Six tape drives are in a VM/X system. Interactive and batch facilities are provided. CICS provides transaction batch capabilities. The system is connected to the Ethernet campus and to the Internet. The system is supported by CAPS. The system is used in departments, labs and the URSUS library system campus and state-wide. The system is used to educational and research throughout the world.



Academic Information

Questions on Policy

Policies set forth in this publication provide specific guidance for students at the University of Maine. It is the responsibility of each student to be familiar with policies which govern their courses of study. Questions concerning material in the catalog should be directed to the student's academic advisor or to the dean of the appropriate college.

Responsibilities

It is the student's responsibility to fulfill all academic requirements required to achieve his or her selected educational objective. It is the responsibility of the faculty and staff to advise and assist the student in this effort.

Immunization Law

The State of Maine requires all students born after 1956 to furnish proof of immunization against measles, rubella, tetanus, and diphtheria. Proof of immunization must be on file at Cutler Health Center prior to registration. Students should forward proof of immunization to Cutler Health Center as soon as possible after notification of admission.

Registration

Undergraduates at the University of Maine will register in accordance with the following procedures:

First-Year Students

All first-year students are required to attend both orientation sessions held during the summer and in the fall immediately prior to the start of classes. The dates of these sessions are furnished to new students and their parents.

Registration for the fall semester occurs during the summer orientation period in consultation with representatives from the faculty.

Upperclass students

Upperclass students who transfer to the University of Maine will contact the dean of their college after admission to register for the upcoming semester.

All currently active students who plan to return to UMaine will meet with their advisor.

Academic advisors are assigned to all students to assist in planning their educational programs, to ensure they are meeting gradu-

ation requirements, to provide counsel and guidance in academic work, and to advise with study or classwork problems. Each student is, however, ultimately responsible for satisfying degree requirements.

Course Numbering System

Courses numbered 0-99: Associate degree, vocational courses or other courses not normally transferable toward a baccalaureate degree.

Courses numbered 100-299: Associate and/or lower level baccalaureate degree.

Courses numbered 300-399: (junior/senior) baccalaureate degree courses

Courses numbered 400-499: Upper level baccalaureate courses; with appropriate qualification and permission, may be taken for graduate credit.

Courses numbered 500-599: Graduate level courses; with appropriate qualification and permission, may be taken for undergraduate credit.

Courses numbered 600-699: Graduate level courses.

Grading System

Letter grades on a scale of A to E are given by faculty at the University. Faculty may grant plus and minus grades. These letter grades carry the following numerical values:

	A = 4.00;	A- = 3.67
B+ = 3.33;	B = 3.00;	B- = 2.67
C+ = 2.33;	C = 2.00;	C- = 1.67
D+ = 1.33;	D = 1.00;	D- = 0.67

Passing undergraduate grades: A, Excellent; B, Good; C, Satisfactory; D, Low-level passing, below average required for graduation; P, Passed (for pass/fail course).

Failing grades: E, Failure; F, Failed (for pass/fail course); L, Stopped attending (computed as an "E").

Progress grade: R, final grade deferred (graduate thesis only); ACC, Acceptable (graduate thesis only).

Progress grade: T, final grade deferred (undergraduate thesis only).

Non-credit grades: W, withdrew passing; H, Audited.

Missing Grades: MG, no grade submitted by instructor.

Incomplete Grades: I, the Incomplete grade indicates that the decision on a final course grade has been postponed because work ordinarily expected to be completed by the end of the semester has not been finished as the result

of circumstances beyond the control of the student. When used, the grade must be accompanied by an estimate of the likely course grade upon completion of all requirements: for example, a grade would be reported as "I" (probable C).

When the "I" grade is awarded, the faculty member awarding the grade must file a written statement (using the Incomplete Grade Authorization form), and including:

- written statement from the student explaining the extenuating circumstances which justify the "I" grade;
- the specific conditions that must be met in order to complete the course requirements and have the "I" replaced by a regular grade;
- the length of time (within the parameters defined below) the student is allowed in which to complete all requirements.

The Incomplete Grade Authorization form should be returned to the appropriate Dean's office.

The "I" grade must be made up within the time limit specified in writing by the faculty member. For a grade of incomplete, the work must be done and the grade filed by the tenth week of the next full semester. Exceptions to this rule must be approved by the faculty member, the chairperson or school director and dean. In all cases the incomplete work must be finished within one year of the end of the semester in which the course was taken. If the incomplete is not made up within the time allotted by the faculty member, the grade will automatically be changed to an "E". Students receiving an "I" grade are not allowed to re-register for the course until the incomplete has been made up or converted to an "E".

A student may graduate with a "I" on the transcript providing:

- the course was taken within one academic year preceding graduation;
- the student has at least 120 credits of graded work
- all college and departmental requirements have been satisfied
- the incomplete, when counted as an "E", does not reduce the accumulated grade point average below the minimum required for graduation.

No incomplete grade allowed to remain on the record at the time of graduation will subsequently be replaced on the original record. If the incomplete work is made up following graduation within the regularly allowable time period, the grade(s) will be noted at the end of the completed transcript and will not affect the grade point average which was in effect at the time of graduation.

Degree hours are the sum of the course credit hours of courses which may be counted toward a degree, provided a passing grade has been received.

Accumulative average is quality points divided by GPA hours, carried to two decimal points. Quality points are the number of credit hours taken multiplied by the numerical value of the letter grade. The GPA hours are the sum of the course credit hours from all courses taken except those taken on a Pass-Fail basis.

Pass-Fail registrations do not affect the grade point average.

Grade reports are sent in the student's name to an address designated by the student. (Campus addresses are not normally considered valid grading addresses.) A student's academic performance is considered confidential information and written permission of the student is normally required to fulfill inquiries by persons outside the administrative or academic community of the University of Maine.

Considerable care is taken to ensure that all grades entered on a student's permanent record are accurate. Any student who suspects an error in a semester final grade report should contact the instructor without delay. Records are considered to be correct if a student does not report errors to the Registrar's Office within six months of the completion of a course.

Dean's List Requirements

- 12 or more hours in a semester exclusive of pass-fail and no incompletes.
- Academic and Career Exploration 3.20
Arts and Humanities 3.30
Business Administration 3.00
Education 3.00
Engineering 3.00
Natural Resources, Forestry and Agriculture 3.00
Sciences 3.30
Social and Behavioral Sciences 3.30
University College 3.25

Presidential Achievement Pin

The University recognizes sustained academic achievement with the "3.5" pins. Full-time and part-time students who meet the following criteria are eligible for this award.

Full-time Students

Attainment of a 3.0 GPA or better based on two consecutive full-time semesters (a minimum of 24 credit hours) of accumulated UMaine course work. Attainment of a 3.5 GPA or better for the last semester—minimum of 12 credit hours. Only graded work counts toward the 24 credit hours (P/F courses do not count). Incomplete grades within the two semester time frame disqualifies the student. A student must be currently regis-

tered at UMaine (graduates from UC who transfer to an Orono college are qualified). The award may only be granted once per student.

Part-time Students

Attainment of a 3.0 GPA or better based on 30 credit hours of accumulated UMaine course work. Attainment of a 3.5 GPA or better for the last 12 credit hours. Only graded work counts toward the 30 credit hours (P/F courses do not count). Incomplete grades within the last 30 credit hour time frame disqualifies the student. A student must be currently registered at UMaine (graduates from UC who transfer to an Orono college are qualified). The award may only be granted once per student.

Academic Requirements

Students must meet the specific academic requirements as shown in the University catalog in effect at the time of their initial matriculation. If a student is absent from the University for two or more years, the academic requirements shown in the catalog in effect at the time of re-matriculation will normally apply.

Academic Probation, Suspension, Dismissal

The Committee on Academic Standing meets to determine which students are not making satisfactory progress. Those students not meeting academic requirements are placed on probation, or suspended, or dismissed.

Academic Probation

Academic Probation signifies unsatisfactory performance that does not warrant suspension or dismissal but does indicate that the student's academic future is in question. For students placed on Academic Probation, the Dean may establish specific criteria for academic performance.

Academic probation is determined generally by the following scale:

Total Hours	Minimum Accumulative Average*
0-30	1.7
31-60	1.8
61-90	1.9
91 and above	2.0

*Most associate degree programs require 1.8, 1.9 and 2.0 at the end of the first, second, and third semesters respectively. In individual situations, the dean of a college may place a student on probation for unsatisfactory performance even though his/her accumulative average exceeds the above listed minimums.

Remedial Probation

Associate degree students may be placed Remedial Probation. While in this status, they must pursue a directed program of remedial courses. No degree credit will be granted for this work.

Academic Suspension

Academic Suspension indicates that a student is separated from the University for one semester with return guaranteed upon application for readmission.

Suspension is the usual academic act when a student's performance in a single semester is poor (usually under 1.0) or when required courses have been failed with an otherwise satisfactory record.

Academic Dismissal

Academic Dismissal indicates that a student is separated from the University for a minimum of one semester. Return is not guaranteed. A student must file an application for readmission. Students dismissed twice from the University are not ordinarily allowed to return.

Dismissal is the usual action when a student fails to make normal progress toward graduation. Situations that lead to academic dismissal are:

1. Failure to maintain an accumulative grade point average at a level necessary to make acceptable progress towards the accumulative grade-point average required by the college for graduation.
2. First-semester new students who receive a GPA below 1.0; (1.3 for University College)
3. Students on probation who fail to improve in the subsequent semester, or
4. Upperclass students readmitted following suspension or dismissal who show no improvement.

Provisional Dismissal

First-semester new students and first semester Transfer Students who are experiencing academic difficulties may be placed in a Provisional Dismissal Status. This status requires the student to discuss his or her academic record with the Dean of the College to determine whether the student will continue in classes during the following semester.

During Suspension or Dismissal

Students under dismissal or suspension may not register for a course or courses in any division of the University for credit. They may, with the approval of the dean of the college from which they have been dismissed or suspended and the Vice President for Academic Affairs, take a course or courses on a non-credit basis for remedial purposes. Students under dismissal or suspension who register for a course or course:

Other institutions should be aware that credit obtained will not ordinarily be accepted by the University of Maine if and when the student is readmitted.

Appeal Policy

1. The student may appeal to the dean of his/her college. (The dean may request that this appeal be first presented in writing).

2. If the decision of the college is unsatisfactory to the student, he/she may appeal in writing to the Vice President for Academic Affairs. The decision of the Vice President of designee(s) will be final.

Under normal circumstances, all levels of appeals must be initiated within the first week of classes of the term (spring, summer, fall) immediately following the academic action.

Academic Credit for Prior Learning

Undergraduate credit for prior learning in any academic discipline may be awarded only by recommendation of regular faculty in that discipline.

To assure that standards are maintained and that the process assures academic quality, a representative council, appointed by the President, will be responsible for policy and procedure development and monitoring.

Credit may be awarded for demonstrated learning related to specific courses or knowledge and skills incorporating a broad spectrum within a discipline. The academic teaching unit in the related discipline will be the final arbiter for the granting of prior learning credit.

Prior learning credit may be awarded for up to a maximum of 24 semester credit hours in any four year undergraduate degree program and up to a maximum of 12 semester credit hours in a two year undergraduate program. Colleges may elect to establish a lower limit. Nothing in this policy shall apply to transfer of credit from other accredited post-secondary institutions.

Any registered student may submit a proposal for prior learning credit for review by a designated learning assessment counselor. Three methods of learning assessment that may be used include: 1) Written "challenge" examinations; 2) National standard course equivalency recommendations such as the American Council on Education (ACE), National Guide; 3) National League for Nursing, and 4) Evaluation of portfolio documentation.

For information, contact Continuing Education Division and Summer Session, (207) 581-3143. (This policy may not apply in all Colleges.)

Graduation

Candidates for associate and baccalaureate degrees must: (a) receive passing grades in all

courses required by the major department, (b) accumulate the number of degree hours specified by the college in which the student is registered, and (c) achieve an accumulative average of not less than 2.0.

To be considered for graduation, a student must complete an Application for Degree or Certificate form during the final semester and pay a commencement fee. These forms are available in the Registrar's Office. If application is made, but no degree is conferred, another application must be submitted prior to the next commencement and another commencement fee paid.

Degrees with distinction are conferred at commencement for the following attainments of rank:

summa cum laude: 3.70 or the top 5 percent of graduates within each college. (Effective May 1996)

magna cum laude: 3.5 GPA or the top 10 percent of graduates within each college.

cum laude: 3.3 GPA or the top 20 percent of graduates within each college.

These criteria state that the average grade is based on the students work on the Orono campus and must include 60 hours or 50% of the total degree hours required in the student's program of study, whichever is greater. A minimum of at least 15 credit hours by the senior year must be taken at the University of Maine for the attainment of any associate degree. A minimum residence of one year is required for the attainment of any bachelor's degree. This regulation refers to the senior year. Two exceptions to this regulation were approved by the Trustees in 1978: 1. Exceptions may be made for students who have already completed three or more years at the University of Maine who may be given permission by their academic dean, when there is sufficient and valid reason, to complete the senior year elsewhere under the general supervision of their dean's office. 2. Students who have completed a minimum of three years of work at the University of Maine and who have been admitted to an accredited professional school of medicine, dentistry, veterinary medicine, or divinity may qualify for the appropriate bachelor's degree at the University of Maine upon receipt of the professional degree, provided that their collegiate dean at the University of Maine approves. This policy is retroactive. Inquiries about degrees awarded under this exception should be addressed to the Registrar.

Degrees with Honors, with High Honors, or with Highest Honors are awarded to seniors who successfully complete the Honors Program.

From the graduating seniors at the May Commencement (comprised of degree candidates from December and May), the two highest ranking baccalaureate degree candidates are designated class valedictorian (highest) and salutatorian (next highest). For May graduates, this rank is based upon the first seven semesters of full-time attendance, all of which must have

been in resident instruction at the University of Maine. Full-time means 12 hours, exclusive of Pass-Fail or Incompletes.

Students who have declared a double major or a double major across-college lines must satisfy the requirements for each major prior to the award of the appropriate degree.

Students who have taken sufficient courses outside of their primary major to qualify for a second degree must have at least 150 degree hours prior to the award of the second degree if they are in one of the colleges that require 120 hours for graduation. Students in colleges which require more than 120 hours for graduation must have 30 hours beyond their normal degree requirements to be awarded a double degree.

Outside Clinical Work

Many divisions of study at the University, at both the undergraduate and graduate level, require as a condition of graduation the completion of one or more training programs or courses in an outside clinical or professional setting, such as a hospital, clinic, professional office, or public classroom. These outside institutions, offices and schools which provide the environmental opportunities to our students sometimes impose additional requirements upon our students as conditions of participation in their programs. Such requirements might include evidence of a recent medical examination, evidence of health, auto or other insurance, a written agreement to personally accept and abide by the rules and regulations of the that institution, the execution of an indemnity agreement or release relative to personal liability of liability to others and similar requirements pertinent to the particular study program. The University assumes there will be assent and compliance to such requirements, rules and regulations by each student upon his or her enrollment in those courses involving outside clinical study.

Veteran's Benefits

Contact the Office of Veteran's Affairs, 5781 Wingate Hall, (207) 581-1316, for:

- A. Counseling Veterans regarding Educational Benefits.
- B. Processing applications for Veterans Educational Benefits.
- C. Maintaining a file of each Veteran receiving Benefits.
- D. Certification of student drawing Benefits.
- E. Providing assistance in solving problems related to educational assistance.
- F. Making special arrangements related to Veterans Educational Benefits.
- G. Directing Veterans to various other agencies to help solve problems not related to Educational Benefits.



Financial Information

General Information

The University expects the student to be financially responsible. All accounts are carried in the name of the student. Bills and statements are mailed to the student, not the parent. All charges are payable in full two weeks before the first day of class for each semester. After that, a \$50.00 late fee is assessed. After the fourth week of classes students with accounts that have not been paid or deferred to financial aid will have their class registrations for the semester cancelled. Financially delinquent students will not be allowed to register for courses and academic records will be withheld until all financial obligations to the University have been satisfied.

The financial requirements of the University, changing costs, state and legislative action and other matters may require an adjustment of these charges and expenses. The University reserves the right to make such adjustments to the estimated charges and expenses as may from time to time be necessary in the opinion of the Board of Trustees up to the date of final registration for a given academic term. The applicant acknowledges this reservation and agrees to the financial terms and conditions of the University by the submission of an application or by registration.

Invoices and Statements

Semester bills are mailed to the student's home address approximately 30 days before the start of a semester. Charges are calculated using pre-registrations, room sign-up information, and data supplied by the Admissions Office.

Schedule of Charges

Application Fee

A nonrefundable application fee of \$20.00 must accompany each application.

Matriculation Fee

A one-time fee of \$15.00 is required of each student who elects to pursue a degree program.

New Student Fee

All new students (first year and transfers) are charged a one-time New Student Fee of \$50.00. Students who reside in a residence hall during the New Student Orientation program are charged for those services.

Tuition

Undergraduate and Associate Maine Residents \$105.00 per credit hour. Non-Residents \$297.00 per credit hour.

Non-Resident students enrolled under the New England Board of Higher Education Exchange Program are billed at 50 percent above the Maine Resident rate.

Room and Board

(1994-1995 rates subject to change)

	Semester	Year
REGULAR RESIDENCE HALL		
Double occupancy with meal plan	\$2339	\$4678
Double occupancy with meal plan and break housing	\$2370	\$4740
YORK VILLAGE		
(room only)	\$1211	\$2422

COMMUTER MEAL PLAN

Available as MaineCard Campus Funds in any amount in \$25.00 increments.

Mandatory Fees

A mandatory student activity fee of \$25.00 per semester, a communication fee of \$8.00 per semester and a recreation fee of \$10.00 per semester are charged to all students enrolled for six or more credit hours.

A mandatory comprehensive fee of \$167.50 per semester is charged to all students enrolled for 12 or more credit hours. Students enrolled for at least 7 credit hours but less than 12 credit hours will be assessed a comprehensive fee of \$83.75. Students enrolled for less than 7 credit hours will not be assessed the comprehensive fee.

Yearbook (Optional)

Students electing to purchase a yearbook will be billed for the yearbook during the Fall semester invoice.

Insurance Fee

A student health insurance plan is an excellent way for students to safeguard against medical expenses. All enrolled students are eligible to participate. The charge for this insurance coverage is \$499.00 per year.

Student Health Fee

The student health fee provides outpatient services at the Cutler Health Center including phy-

sician, nurse and physical therapy visits as well as on-premises lab testing and X-rays. Students who are enrolled for 12 (twelve) or more credit hours receive this coverage as part of their comprehensive fee.

Students enrolled for 7 through 11 credit hours have the option of selecting the health care coverage, at no additional cost, as part of their comprehensive fee.

Students enrolled for 1 through 6 credit hours may, for a \$83.75 per semester part-time fee, voluntarily subscribe to the health care program.

Late Fee

A \$50.00 late fee will be assessed to students who register for class and/or pay their bills after the due date. To avoid being charged the late fee, students who have not received a bill should contact the Business Office before the start of classes for an estimation of charges.

Books and Supplies

The cost of books and supplies depends on the courses in which a student is enrolled. Books and supplies are not billed on the semester invoice. They must be paid to the University Bookstore at the time of purchase. Average semester expenses total \$300.00.

Course Fees

Course fees are charged in several courses. The amounts are listed in the Schedule of Classes. Course fees for courses dropped after the second week of classes are not retracted.

Acceptance Deposits

Students accepted to the University of Maine for the fall semester will be required to submit a \$150.00 non-refundable acceptance deposit by the Candidates Reply Date of May 1. Students accepted after May 1 will be required to submit the non-refundable confirmation deposit within two weeks of notification. The acceptance deposit is credited to the student's account in the University Business Office.

Students accepted to the University of Maine for the spring semester will be required to submit a \$150.00 non-refundable deposit by January 1.

Withdrawal From The University

Students who are considering withdrawal from the University should report to the Center for

Student Services, Memorial Union for information about the correct procedure. Returning students electing to live in residence halls for the next academic year should contact Campus Living, 5734 Hilltop Commons, Room 103, (207) 581-4584 for information and an application.

Refunds

Students leaving the University before the end of a semester may be eligible for a refund.

A. Tuition Tuition will be refunded according to the scale and provisions set forth below for students withdrawing during the first four (4) weeks of a term.

1. Scale: The period of attendance is counted for the first day of classes and includes weekends and holidays. The refund will be calculated as of the date the student notifies the Registrar of withdrawal.

1st week	100%
2nd week	75%
3rd week	50%
4th week	25%

No refund is made after the 4th week.

2. Provisions:

(1) In no case will tuition be reduced or refunded because of voluntary absence from classes.

(2) Tuition adjustments attributable to involuntary absence, e.g., extended illness will be processed on a case by case basis.

B. Fees University fees are not refundable.

C. Room and Board Room and board refunds are made in accordance with the Residence and Dining academic year contract. The academic year contracts must be signed by each student living in a residence hall. No refund will be made for withdrawals occurring less than 14 days prior to the end of a semester.

The room and board contract is for the academic year or the balance of the academic year if entering after the start of the fall semester. If an occupant leaves the residence hall and does not withdraw from the University, the charges for room and board will be through the end of the academic year. Exceptions will be made only in cases of illness, extreme hardship or when an occupant leaves for the convenience of the University. The charges in these cases will be determined by the Campus Living Department according to the circumstances of each case.

Students applying for an exception to the above must complete an exception request form available at the Campus Living Office. Additional medical or financial documentation may be requested and should be submitted with the completed form. Upon completion, a meeting may be scheduled with the Assistant Director of Campus Living - Business and Administrative Services to review and discuss the request. If the decision of the Assistant Director is unsatisfactory to the student, he/she may make a

final appeal to the Director of Campus Living. If the request is denied the terms of the contract remain in force. If an exception is granted, the student must move out by the date indicated on the exception form. Failure to move out by this date shall render the exception null and void.

Add-Drop Refund Policy

Students will be given financial credit for courses which are dropped during the Add-Drop period only (the first two weeks of the semester). No financial adjustments will be made to students' accounts for courses dropped after this period.

Installment Plan

For students and parents who find it more convenient to make monthly payments, the University is offering this year two interest-free installment plans administered by Academic Management Services (AMS) or Tuition Management Systems (TMS). Each enables you to pay all or part of the annual charges in ten equal installments beginning in June. There is a fee for each service.

AMS and TMS are both excellent companies and you are urged to read carefully both brochures. If you decide to choose one, complete the specific application and return it directly to the company. When the University receives notification from either company of your participation in the installment plan, the student's Fall semester account will be credited for 50% of the contract amount and the Spring Semester bill will receive the remaining 50% credit.

Rules Governing Residency

Original Classification

A student is classified as a resident or a non-resident for tuition purposes at the time of admission to the University. The decision, made by the Director of Admissions, is based upon information furnished by the student's application and any other relevant information. No student once having registered as an out-of-state student is eligible for resident classification in the University, or in any college thereof, unless he or she has been a bona fide domiciliary of the state for at least a year immediately prior to registration for the term for which resident status is claimed. This requirement does not prejudice the right of a student admitted on a non-resident basis to be placed thereafter on a resident basis provided he or she has acquired a bona fide domicile of a year's duration within the state.

Change of Classification

For University purposes, a student does not acquire a domicile in Maine until he or she has been here for at least one year primarily as a permanent resident and not merely as a student. If the student is enrolled for a full academic program, as defined by the University, it will be

presumed that the student is in Maine for educational purposes and the burden will be on the student to prove otherwise. In general, members of the Armed Forces and their dependents are normally granted in-state tuition rates during the period when they are on active duty within the State of Maine.

Subject to the provisions of the preceding paragraph, the domicile of an unmarried minor follows that of the parents or legally appointed guardian. The bona fide year round domicile of the father, if living, otherwise that of the mother is the domicile of such a minor, but if the father and the mother have separate places of residence, the minor takes the domicile of the parent with whom he or she lives or to whom he or she has been assigned by court order. If neither of the parents are living, the unmarried minor takes the domicile of his or her legally appointed guardian.

Subject to the provisions of the first paragraph, an adult student, defined for the purposes of these rules is one who is either married or 18 years of age or older, will be classified as a resident of Maine if he or she has completed 12 consecutive months of domicile in Maine immediately preceding registration for the term for which residents status is claimed.

Subject to the provisions of the first paragraph, if a non-resident student marries a Maine resident and asserts a domicile in Maine, the student shall be deemed to have a residence in Maine.

Appeal Procedure

To change resident status, the following procedures are to be followed:

Submit a "Request for change of residency status" form to the Director of Business Services. If the decision of the Director of Business Services is considered incorrect, the student may appeal the decision in the following order:

1. Assistant to the President
2. Treasurer of the University Chancellor's Office, whose decision shall be considered final.

In the event that the Director of Business Services possesses facts or information indicating a change of status from resident to non-resident, the student shall be informed in writing of the change in status and will be given an opportunity to present facts in opposition to the change. The student may appeal the decision as set forth in the preceding paragraph.

No application will be considered for change after September 1 for the fall semester, after January 1 for the spring semester, and after May 1 for the summer session.

All changes approved during a semester will be effective for the beginning of the next semester; none are retroactive.

In all cases the University reserves the right to make the final decision as to the resident status for tuition purposes.

Admission

Admissions Staff

Associate Director for Undergraduate Admissions: William J. Munsey

Associate Directors: Albert F. Hackett, Kimberly Johnston, Alan D. Whittemore

Assistant Directors: Elizabeth Downing, Jamal Williamson

Enrollment Management

Enrollment Management Staff

Assistant Vice President for Enrollment Management: Joyce D. Henckler,
Enrollment Management Data Specialist: Janet Boucouvalas

The Office of Enrollment Management is the coordination focal point for the efforts of the Admissions Office. The mission of the Admissions Office is to attract and enroll students who can successfully achieve educational fulfillment and personal growth at the University of Maine.

The University invites applications from prospective degree candidates without regard to race, color, creed, sex, national origin, handicap or age. The University seeks candidates whose academic credentials, scholastic achievement and motivation indicate promise of success in the University environment.

All correspondence concerning undergraduate admission should be addressed to the Admissions Office, 5713 Chadbourne Hall, University of Maine, Orono, ME 04469-5713.

Candidates for admission to the Graduate School should contact the Dean of the Graduate School, 5732 Winslow Hall, University of Maine, Orono, ME 04469-5732.

To arrange a campus visit, interview or tour, contact the Admissions Office at (207) 581-1561.

The University of Maine belongs to the National Association of College Admission Counselors, and as such subscribes to the Statement of Principles of Good Practice. Accredited by the New England Association of Schools and Colleges, the University maintains standards of academic excellence and encourages the efforts of secondary schools and colleges to maintain or achieve regional accreditation to provide a measure of academic standards for the admission of degree candidates.

The approval of candidates for admission to University degree programs is on a selective basis.

The recommended date to apply for the fall semester is February 1. The recommended date to apply for the spring semester is November 1. The date to apply for fall semester Early Action is November 30. Deadline dates for the applica-

tion and supporting academic documents are recommended as a guide to students who also seek University housing and consideration for financial aid. Applications received after the recommended deadline dates are reviewed based upon availability of openings within academic colleges.

The Admissions Office reviews and notifies on-time prospective candidates of admission decisions between January and mid-April for fall semester enrollment.

First-year students with outstanding academic credentials who would like to receive early Action in January are encouraged to apply by November 30. Students considered for early action must rank in the top ten to fifteen percent of their class and have combined SAT scores of 1050 or higher, or an ACT composite score of 25 or higher.

Academic performance in the senior year as evidenced by mid-year grades is an important consideration when reviewing many student credentials. Students for whom mid-year grades are necessary to complete the review of the admissions application, will be notified between February and mid-April, once the office has received mid-year grades and completed the evaluation of the application and supporting academic credentials.

Candidates approved for admission prior to the completion of the academic year are accepted contingent upon successful completion of all academic work and the receipt of a final transcript of grades. The University reserves the right to withdraw the acceptance of a degree candidate if the applicant fails to achieve academic success in course work, or if the ability of the University to provide academic and student support services for the student has been reached.

International Candidates

Prospective students who are non-immigrants are invited to apply for admission as first year or transfer degree candidates. Candidates are required to submit the completed International Admissions Application and an application fee of U.S. \$25.00 payable by an international bank draft or money order. Please submit official or certified photocopies of all educational documents; the results of the Test of English as a Foreign Language (TOEFL), if English is not the candidate's native tongue, and/or results of the Michigan Placement Exam. The completed Financial Documentation form and certified documentation of adequate finances are required before an admissions decision is ren-

dered. Candidates must submit the application, application fee and all required documents by March 1. Any financial documents not in English *must be accompanied by certified English translations*. Educational records must include subjects studied by year, the number of weekly lecture and laboratory hours in each subject, grades, marks or percentages earned in year-end examinations, as well as copies of diplomas, titles, degrees, and certificates, final documentation must certify that the candidate has adequate funds for study at the University; the documentation must be officially certified or notarized and be less than one year old. International students and dependents residing in the United States are required to have medical insurance coverage under the University of Maine Student Health Insurance Program or equivalent provided by a sponsoring agency.

International candidates should contact the Office of International Programs, 5732 Winslow Hall, Room 100, for the International Application packet and assistance with the admissions process. The University is authorized under federal law to enroll non-immigrant alien students.

Permanent Resident Candidates:

Candidates who are permanent residents of the United States, as evidenced by the resident alien card issued by the United States Immigration and Naturalization Service, must submit a photocopy of *both sides* of their permanent resident card at the time of application. This is required to document the candidate's status with the I.N.S. The regular undergraduate application should be used by permanent residents.

Scholastic Aptitude Test (SAT)

The University of Maine College Board Code is 3916. Candidates for admission are required to submit test results of the Scholastic Aptitude Test (SAT). The ACT examination will be accepted in lieu of the SAT. Candidates for admission to associate degree programs in University College are advised to review the admission and testing requirements of University College programs found in a later section of this catalog.

High school seniors, and recent high school graduate candidates applying for admission must submit SAT or ACT Test results no later than February 1. Test scores submitted after February 1 may delay the reviewing and notification process for prospective students.

Arrangements to take the College Board SAT should be made with the local high school guid-

ance office. Registration must be completed at least six weeks before the test date.

The College Board will administer tests on each of the following dates during 1994-95.

Saturday, October 8, 1994 - SAT I only *

Saturday, November 5, 1994 - SAT I and II

Saturday, December 3, 1994 - SAT I and II

Saturday, January 28, 1995 - SAT I and II

Saturday, April 1, 1995 - SAT I only

Saturday, May 6, 1995 - SAT I and II

Saturday, June 3, 1995 - SAT I and II

Please forward official test results from the Education Testing Service by indicating the University of Maine College Board Code of 3916.

Test of English as a Foreign Language (T.O.E.F.L.)

Candidates whose native language is not English are required to document their proficiency in English by submitting test results from the International Test of English as a Foreign Language (T.O.E.F.L.). Permanent residents of the United States (as evidenced by the resident alien card) may be evaluated on a case by case basis depending upon the number of years they have lived in the United States and their fluency in the English language. Candidates who have attended high schools or colleges in the United States may be evaluated based on their academic performance and the length of time they have attended school or college in the United States. In all instances the T.O.E.F.L. is preferred and may be required of any candidate.

Achievement Tests

College Board Achievement Tests are not required of candidates applying to the University. The Departments of English and Mathematics administer on-campus placement examinations for the purpose of appropriate registration in introductory level courses. The Department of Foreign Languages and Classics offers the Foreign Language Placement Examination for purposes of both placement and credit. Placement testing is available during New Student Orientation and at the beginning of each academic semester.

Advanced Standing

Advanced Placement

The University recognizes advanced academic work completed in secondary schools by means of Advanced Placement Tests. Candidates interested in advanced placement and credit must take one or more of the Advanced Placement Tests administered by The College Board. Credit is granted for scores of 3, 4, and 5. Questions regarding Advanced Placement Credit

*SAT I only in Arizona, California, Florida, Georgia, Hawaii, Illinois, New Jersey, No. Carolina, Pennsylvania, So. Carolina, Texas and Virginia. Sunday administration will be held following each Saturday date.

should be directed to the individual college office.

CLEP (College Level Examination Program)

CLEP is a national program of credit-by-examination that offers, primarily to the older adult student, the opportunity to obtain academic recognition for college level achievement. Information on the policy of granting credit for CLEP examinations is available from the Office of Testing and Research.

Credit by Examination (Academic Departments)

Students who show evidence of advanced knowledge may be exempt from certain courses and requirements if they pass examinations developed by the academic department. A student who successfully passes such an examination earns course credit as well as exemption from the course. Whether or not students may challenge by exam any particular course or courses is the decision of the unit (department, school, or college) which has immediate academic authority for the course or courses. Students interested in credit by examination should contact the department chair or unit head for further information and fee structure.

Early Admission (Junior Year)

The Admissions Office may consider for early admission high school candidates who have not completed the requirements for the high school diploma. Upon the recommendation of the high school principal and guidance counselor, the University will consider candidates who have demonstrated outstanding academic achievement and whose motivation and maturity reflect a strong desire to pursue a University degree program. Candidates must have completed a minimum three years of college preparatory subjects in high school and submit test results of the Scholastic Aptitude Test or the ACT examination. Candidates are requested to arrange an on campus interview and will also be required to have the support and endorsement of their parents or legal guardian. High School students who enter the University of Maine prior to graduation from High School may not qualify for federally funded Financial Aid.

Deferred Admission

It is the policy of the University of Maine to permit approved degree candidates to defer University enrollment for up to one year. The intent of this deferred degree status is to allow students the opportunity to seek employment as a means of saving funds for college or the opportunity to travel and take a "break" from academic study. Deferred admission is not approved for candidates who seek to enroll at any other college, University, or postgraduate year of secondary school study. Candidates approved for deferred admission will be required

to submit a non-refundable deposit of \$1 which will be held on account by the University Business Office. Candidates requesting deferred enrollment status must make their request in writing to the Admissions Office prior to August 1 for fall semester enrollment and prior to January 1 for spring semester enrollment.

Deferred Admission (Active Military Duty)

Candidates approved for admission to the University of Maine who enter active military duty for a period of time which exceeds one year may request deferred enrollment. Requests for military deferred enrollment will be considered on an individual basis. Request must be received by August 1, for candidates who applied for the fall semester and by January 1 for the spring semester.

Admission to Continuing Education Courses

The University of Maine offers a variety of academic programs through the Continuing Education Division. Categories of enrollment in Continuing Education include:

1. Degree Students: Candidates for admission to degree status through the Continuing Education Division must meet all entrance requirements for either undergraduate or graduate degree enrollment. Application must be filed with the undergraduate Admissions Office or the Graduate School.
2. Non-degree Students: Students interested in taking University of Maine courses for personal or professional enrichment are advised to contact the CED office in Chadbourne Hall for class schedules and registration information.
3. Bachelor of University Studies: The Continuing Education Division offers, through University College, the Bachelor of University Studies degree. Course offerings are through the CED department. Interested candidates should contact the CED Office for more detailed information regarding entrance requirements.

Information and registration materials may be obtained by writing the Director, Continuing Education, 5713 Chadbourne Hall, University of Maine, Orono, ME 04469-5713.

Readmission

Former University of Maine degree candidates planning to return to the campus to resume undergraduate work must contact the Academic Dean of the undergraduate college in which the candidate plans to seek enrollment. Candidates will be notified by the Dean's office of the readmission decision.

Transfer Candidates

Each academic year the University of Maine enrolls transfer candidates who have successfully completed academic work at colleges and universities from throughout the United States and abroad. Transfer candidates must be in good standing both academically and in terms of student behavior to be considered for transfer admission. Students who have financial indebtedness (unpaid bills) at any other post secondary institutions at the time of application, and thus are unable to secure official transcripts of prior work will not be considered for transfer admission until such time as an official transcript or transcripts have been received in the Admissions Office. Official transcripts are records mailed directly to the Admissions Office from previous schools or colleges attended.

The admission of transfer students to the University of Maine is determined by the availability of openings in undergraduate degree programs and the competitive academic credentials submitted by candidates.

Candidates applying for transfer consideration are required to have a minimum 2.0 grade point average (on a 4.0 scale). It should be noted that meeting the minimum grade point average does not guarantee transfer acceptance to the University of Maine.

Candidates who desire to transfer to the University of Maine from another college or university of recognized standing, are encouraged to file application with the Admissions Office by November 1 for spring semester and March 1 for fall semester. Applications received after the recommended deadline dates are reviewed based on the available openings within academic colleges and the capability of university departments to complete work with required documents in a timely manner. Applications must include a statement of the names and addresses of all schools and colleges previously attended. Transfer candidates who have successfully completed a minimum of one year of transferable college course work commensurate with the intended academic field of study at the University, are not required to take the SAT test, if the examination was not previously completed by the candidate. If completed, the SAT or ACT scores should be included on the high school transcript.

Applicants must arrange for official college transcripts to be forwarded from previously attended colleges and universities to the Office of Admissions, 5713 Chadbourne Hall, Orono, ME 04469. Student copies of academic transcripts are not accepted as official documents.

The following statement was approved by the University of Maine System Board of Trustees on March 25, 1985. The statement serves as current University policy throughout the University of Maine System.

A student who has been suspended for either academic or disciplinary reasons by one campus of the University of Maine shall not be admitted as a matriculated student by the same

or another campus for the next academic semester nor thereafter until the conditions established for termination of that suspension have been met; a student who has been dismissed for either academic or disciplinary reasons by one campus of the University of Maine shall not be admitted as a matriculated student by the same or another campus for the next academic semester not thereafter until the conditions of the following sentences are satisfied.

A student who has been dismissed or suspended, seeking admission after dismissal or an exception to this policy, shall file a written petition with, and shall interview with a member of the Admissions Office staff after filing an application for admission. In the petition and interview the student shall present clear and convincing reasons to justify admission as a matriculating student to the campus that satisfactorily negate the likelihood of any repetition of the conduct or conditions which led to such dismissal or suspension.

Transfer Credit Evaluation

The evaluation of prior academic work is completed through the academic dean's office of the candidate's undergraduate college after candidates have been approved for admission to the University. Evaluations are normally completed during the spring and summer months once the final transcript has been received. Transcript evaluation for candidates entering the spring semester (January) may be delayed pending the receipt of final records.

Trustee policy is to provide the maximum opportunity for transfer within the University of Maine System. When a student is accepted for transfer within the University of Maine, all undergraduate degree credits obtained at any unit of the system will be transferable to any other unit, but will not be automatically applied to the specific academic degree program to which the student has entered. Each student will be expected to meet the established requirements of the academic program into which transfer is effected, and appropriate application of that credit is the responsibility of the particular academic unit. To determine which courses are transferrable for degree program credit, students should consult with the academic dean's office or their academic advisor prior to registration.

Articulation Agreement between the University of Maine and the Bangor Theological Seminary

This agreement outlines a transfer policy, effective January 1, 1992, for those students meeting established criteria who have completed two years of course work within the Bangor Theological Seminary's liberal studies program and wish to earn a bachelor's degree from the Uni-

versity of Maine's College of Arts and Humanities or College of Social and Behavioral Sciences. Upon successful completion of the bachelor's degree, students will be awarded the Bangor Theological Seminary's Master of Divinity degree for which the work will already have been completed.

Bangor Theological Seminary students who have completed two years of liberal studies in good academic standing may apply for admission to the University of Maine after receiving prior approval of the Program Coordinator at Bangor Theological Seminary and the Dean of the desired college at the University of Maine. Credits earned at Bangor Theological Seminary with a C grade or above will transfer for degree credit at the University of Maine. UM's transfer officials will determine which credits will count towards requirements in the student's chosen degree program, and make arrangements for advanced-standing consideration as outlined in the Bangor Theological Seminary "Faculty Statement on Transfer Credit Policy".

As registered students, Bangor Theological Seminary transfers will pay tuition and fees at the regular student rate to the University of Maine. Residency status will be determined using the University of Maine Systems Residency Policy.

Enrollment of Non-Degree Students (High School)

High School students who wish to enroll in University courses as non-degree students are required to apply to the Admissions Office and when approved may register through the Continuing Education/Summer Session Office for both day and evening classes. Registration for classes is completed on a space available basis. Interested students are advised to check with the Continuing Education Office or the academic college or department to determine if any academic prerequisites are required for course enrollment. Students enrolled in a non-degree status are not eligible to receive financial assistance to meet financial obligations.

New England Regional Student Program

New England's public state universities and colleges are working cooperatively to increase the number and variety of educational opportunities for college-bound students. Under this cooperative program, qualified New England residents are given preferred admission to New England state universities and colleges in specific academic programs not available in their home states. Students accepted in these programs are also granted the benefit of tuition reduction which is lower than that charged out-of-state students. This plan makes available to the residents of the region a wider variety of academic programs without additional funds to

duplicate specialized staff and expensive facilities in each state.

Each New England public institution of higher education involved in the regional student program has designated which of its academic majors are to be offered on a regional basis and maintain control over their own courses and programs.

Undergraduate programs begin during the student's first year of enrollment at the University. Enrolled students who change their major and thus become eligible for the regional major must notify the Registrar's Office at the University. Tuition reduction under the regional program takes effect the semester following notification.

Information may be obtained from any local high school guidance office in New England or from the New England Board of Higher Education, 45 Temple Place, Boston, MA 02111.

Acceptance Deposit

Students accepted to the University of Maine for the fall semester will be requested to submit a \$150.00 non-refundable acceptance deposit by the Candidates Reply Date of May 1. Deposits received prior to May 1 are considered non-refundable deposits. Students accepted after May 1 will be requested to submit the non-refundable confirmation deposit within two weeks of notification. The acceptance deposit is credited to the student's account in the University Business Office.

Students accepted to the University of Maine for the spring semester will be requested to submit a \$150.00 non-refundable deposit by January 1. Deposits received prior to January 1 are considered non-refundable.

Financial Aid and Scholarships

All applicants for financial aid are required to file the FAFSA with the College Scholarship Service annually and send the appropriate tax information to the Office of Student Aid. The FAFSA applications are available in each local high school guidance office in the late fall. Requests for financial assistance will be reviewed by the Office of Student Aid after candidates have been approved for admission to the University. The on-time application deadline to file for aid consideration is March 1.

Mailing of the FAFSA to the College Scholarship Service no later than mid February is recommended to meet the March 1 deadline. University based financial aid funds are awarded for the academic year (September to May) and, as such, candidates applying for January admission who do not file the FAFSA by March 1 of the previous spring may be restricted to the PELL Grant and the Stafford Loan (GSL) if financial qualifications have been met.

The University holds membership in the College Scholarship Service (CSS) of the College Board. Participants in CSS subscribe to the principle that the amount of financial aid granted should be based upon financial need. The College Scholarship Service assists colleges and universities and other agencies in determining the family financial contribution to meet college expenses.

Information and federal forms are available at the Office of Student Aid for upperclass students.

Further information may be found in this catalog in the section entitled "Office of Student Aid."

Academic Entrance Requirements

Academic course requirements for admission to the University are established by each undergraduate college. The academic courses listed within each college represent the years of high school study required for admission to the University. Students are expected to complete college preparatory curriculum which brings the University classroom developed skills: writing, reading comprehension, reasoning, mathematics, the natural sciences, history and social sciences, foreign languages and the fine arts.

Candidates out of high school who did not complete requirements for the high school diploma must present evidence of successful passage of the General Equivalency Diploma (GED) as approved by the Department of Education.

Music Audition (School of Performing Arts)

Candidates seeking admission to music degree programs will be contacted by the Music Department regarding the required music audition.

Non-music majors interested in music organizations are encouraged to contact the Music Department for information concerning participation in chorus, band, orchestra, and other music programs.

ACADEMIC REQUIREMENTS FOR ADMITTANCE INTO THE UNIVERSITY OF MAINE BY COLLEGE

Please Note: The required high school academic course of study, combined with academic electives, should equal at least 17 credits.
All subjects listed below are required unless otherwise noted.
In the case of a foreign language requirement, the 2 years of study must be in the same language.

Degree	College/Program	Entrance Requirements (in years)											Social Studies	Computer Science	Fine Arts
		English	Algebra I	Geometry	Algebra II	Trig./Senior Math	Foreign Language	Lab Biology	Lab Chemistry	Lab Physics					
	Academic & Career Exploration Program [^]	4	1	1	1	S-1	2	1 or	1 or	1	2	S-1	S-1		
B.A.	College of Arts & Humanities	4	1	1	1		2	1			2	S-1	S-1		
B.S.	College of Business Administration	4	1	1	1	1	2	1 or	1 or	1	2	S-1	S-1		
B.S.	College of Education [^]	4	1	1	1		2	1	1 or	1	2	S-1	S-1		
B.S.	College of Engineering	4	1	1	1	1/2	S-2		1	1	2	S-1	S-1		
B.S.	School of Engineering Technology	4	1	1	1	1/2	S-2		S-1	1	2	S-1	S-1		
B.S.	College of Natural Resources, Forestry & Agriculture	4	1	1	1	1		1	1 or	1	2	S-1	S-1		
B.A./B.S.	College of Sciences ^c	4	1	1	1	1	2	1	1 or	1	2	S-1	S-1		
B.A./B.S.	College of Social & Behavioral Sciences ^d	4	1	1	1		2	1			2	S-1	S-1		
B.S.	School of Nursing	4	1	1	1			1	1		2	S-1	S-1		
A.A./A.S. B.U.S.	University College	4													

Refer to specific program, requirements vary among academic departments.

[^] Academic & Career Exploration Program strongly recommends 2 years of lab science

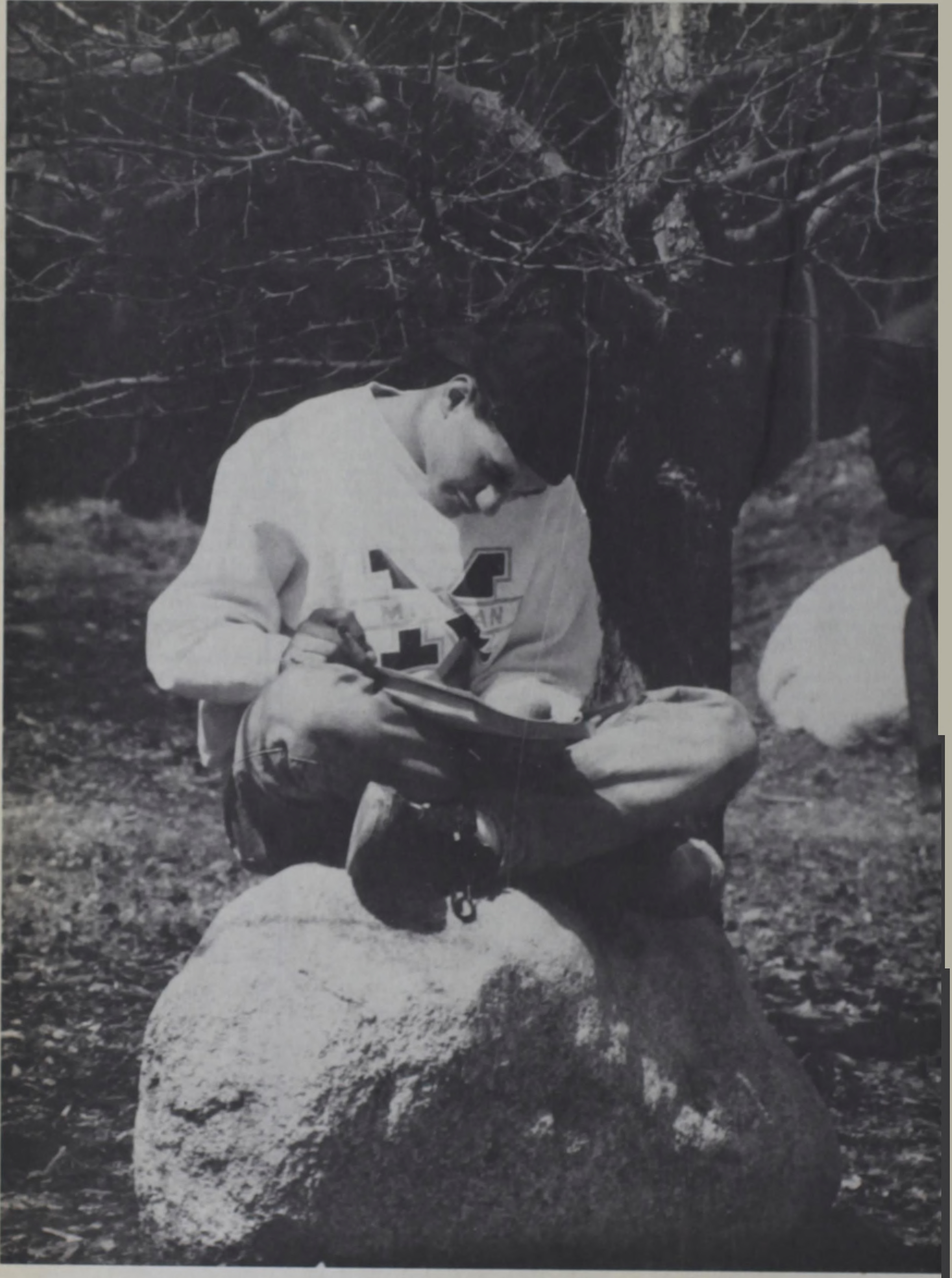
[^] College of Education requires 1 year of physical education

^c College of Sciences requires 2 years of a foreign language for its B.A. programs only

^c College of Sciences strongly recommends 3 years of lab science

^d College of Social & Behavioral Sciences requires 2 years of a foreign language for its B.A. programs only

Key:
S=Strongly Recommended



Abbreviations and Symbols

ACE	Academic and Career Explorations	EDW	Education-Workshop	MUY	Music-Theory
AED	Art Education	EET	Electrical Engineering Technology	NAV	Naval Science
AES	Applied Ecology and Environmental Science	EGS	Education-Gender Studies	NFA	Natural Resources, Forestry and Agriculture
ANT	Anthropology	EMA	Education-Mathematics Education	NFS	Nutrition
ARH	Art History	EML	Education-Middle Level	NRC	Natural Resources
ART	Art	ENG	English	NUR	Nursing
AST	Astronomy	EPT	Education-Psychology	OCE	Oceanography
AVA	Animal, Veterinary and Aquatic Sciences	ERL	Education-Reading and Language Arts	ONE	Onward-English
BIO	Biology	ERR	Education-Reading Recovery	ONM	Onward-Mathematics
BMB	Biochemistry, Microbiology and Molecular Biology	ESC	Education-Science Education	ONO	Onward-Orientation
BOT	Botany	ESS	Education-Social Studies	ONR	Onward-Reading
BRE	Bio-Resource Engineering	FOE	Forest Engineering	ONS	Onward-Science
BUA	Business Administration	FOR	Forest Resources	PAA	Public Administration
BUS	Business Management	FRE	French	PAX	Peace Studies
CAN	Canadian Studies	FSN	Food Science and Human Nutrition	PHI	Philosophy
CDS	Communication Disorders	FTY	Forestry	PHY	Physics
CEC	Education-Counseling	GEE	General Engineering	POS	Political Science
CET	Civil Engineering Technology	GEO	Geography	PPA	Pulp and Paper Technology
CHE	Chemical Engineering	GER	German	PSY	Psychology
CHF	Child Development and Family Relations	GES	Geological Sciences	QUS	Quaternary Studies
CHY	Chemistry	GET	General Engineering Technology	REP	Resource Economics and Policy
CIE	Civil and Environmental Engineering	GRE	Greek	RPM	Recreation and Park Management
CLA	Classics	GRR	Graduate Readings	RUS	Russian
CLD	Fashion Merchandising	HDF	Human Development and Family Studies	SCI	Science
COM	Communication	HED	Education-Higher Education	SCS	Sciences
COS	Computer Science	HIT	Health Information Technology	SED	Education-Special Education
DAN	Dance	HON	Honors	SOC	Sociology
DEA	Dental Assisting	HPR	Health, Physical Education and Recreation	SPA	Spanish
DEH	Dental Hygiene	HRA	Hotel, Restaurant and Tourism Administration	SPE	Speech
DRA	Drama and Theatre	HRM	Hotel, Restaurant and Tourism Management	SSC	Social Science
DSE	Developmental Studies-English	HTY	History	STT	Education-Student Teaching
DSI	Developmental Studies-Individual	HUD	Human Development	SVE	Surveying Engineering
DSM	Developmental Studies-Mathematics	HUM	Humanities	SWK	Social Work
DSR	Developmental Studies-Reading	HUS	Human Services	THE	Theatre
DSS	Developmental Studies-Study Skills	IEI	Intensive English Institute	TSO	Technology and Society
EAD	Education-Administration	IND	Independent Studies	WLE	Wildlife Ecology
EAE	Education-Adult Education	INM	Education-Media	WSC	Wood Science and Technology
EAS	Earth Sciences	INT	Interdisciplinary Listings	WST	Women's Studies
EBI	Education-Bilingual Education	ITA	Italian	ZOL	Zoology
ECE	Electrical and Computer Engineering	JMC	Journalism and Mass Communication		
ECO	Economics	LAT	Latin		
ECY	Ecology	LET	Legal Technology		
EDA	Education-Measurement and Testing	LIB	Liberal Studies		
EDB	Education-Appraisal and Basic Professional Courses	MAT	Mathematics and Statistics		
EDC	Education-Curriculum	MEE	Mechanical Engineering		
EDF	Education-Liberal Education	MET	Mechanical Engineering Technology		
EDG	Education-General	MIS	Military Science		
EDH/		MLC	Modern Languages and Classics		
EDL/	Education-History and Philosophy of Education	MUE	Music-Education		
EDM		MUH	Music-History		
EDS/		MUL	Music-Literature		
EDU	Education-Research	MUO	Music-Organizations and Ensembles		
EDV	Education-Vocational and Driver Education	MUP	Music-Performance Techniques		
		MUS	Music		

Interdisciplinary Listings

Departments listing the course are shown in parentheses.

INT 110 Modern Economic Problems (ECO, REP)

INT 211 Machine Tool Laboratory II and Welding (BRE, MET)

INT 219 Introduction to Ecology (PBP, ZOL)

INT 224 Sociology of Rural Life (REP, SOC)

INT 250 Forum on Food (FSN)

INT 256 Forest Production (AES, FTY, PBP)

INT 301 Soviet Cultural/Educational Exchange (FSN, MLC, PHY, POS, WLE)

INT 319 General Ecology (PBP, ZOL)

INT 323 Introduction To Conservation Biology (AES, BIO, NRC, PBP, WLE, ZOL)

INT 324 Contemporary Rural Problems (REP, SOC)

INT 329 The Individual and the Community (REP, SOC)

INT 330 Waste Management (CIE, REP)

INT 375 Field Studies in Ecology (FOR, OCE, PBP, WLM, ZOL)

INT 385 Computer Hardware Theory (COS)

INT 398 Undergraduate Research Participation (CHE, CHY, ECE)

INT 410 Introduction to the Study of Linguistics (ANT, ENG, MLC)

INT 450 Agricultural Pest Ecology (PBP)

INT 454 Optical Communications (ECE, PHY)

INT 458 Culture and Economic Change (ANT, ECO)

INT 476 School and Society Study Tour (FSN, HUD)

INT 480 Sociolinguistics (ANT, SOC, SPC)

INT 494 Field Experience (PAA, POS)

INT 500 Seminar in Quaternary Studies (AES, ANT, GES, PBP)

INT 501 Discourse Analysis (ANT, PSY, SPC)

INT 510 Marine Invertebrate Zoology (OCE, ZOL)

INT 514 Microeconomics Theory (ECO, REP)

INT 525 Tropical Deforestation Seminar (FMT, FOE, FTY, ZOL)

INT 528 Interdisciplinary Rural Health Care Delivery I (CDS, NUR, PSY, SWK)

INT 529 Interdisciplinary Rural Health Care Delivery II (CDS, NUR, PSY, SWK)

INT 530 Econometrics (ECO, REP)

INT 537 The Evolution and Development of Canadian Government and Politics (HTY)

INT 539 Ice Ages and Humankind (PBP, QUS)

INT 545 Late Quaternary Paleoecology (PBP)

INT 552 Behavior Genetics (PSY, ZOL)

INT 555 Pest-Plant Interactions (AES, PBP)

INT 563 Marine Benthic Ecology (OCE, PBP, ZOL)

INT 640 Seminar in Ecology (PBP, WLE, ZOL)

INT 135A Business Data Analysis (BUS, LIB)

INT 151A Essays on Human Ecology (BIO, ENG)

INT 168A Business Data Processing-COBOL (BUS, LIB)



Interdisciplinary Course Concentrations (ICCS)

The purpose of the Interdisciplinary Course Concentration is to provide students with the opportunity to integrate substantive material across several formal disciplines, thus to broaden their perceptions in a systematic and controlled fashion. Like the major, the concentration is directed toward a special learning goal rather than toward a special category of student. All students who are in good standing are invited to declare an interdisciplinary course concentration (i.e., fully matriculated students neither on probation or any other form of limited academic acceptance). To receive interdisciplinary credit a student must earn at least a 2.0 ("C") in each course in a given concentration. Successful completion of an ICC is noted on the student's transcript.

Students intending to declare an Interdisciplinary Course Concentration should do so during the second semester of their sophomore year. In some cases it may be desirable to declare a concentration earlier, and permission may be granted to declare a concentration later in a student's undergraduate career.

Most ICC's are administered by the Dean's Offices. Some ICC's (such as Peace Studies and Women's Studies) are administered by the Office of an Academic Program Director. Forms for declaring an ICC may be obtained from the Registrar's Office, or from the appropriate Dean's or Program Director's Office.

Canadian Studies

Faculty

Assoc. Prof. Raymond Pelletier, Modern Languages, Coordinator, Canada House
 Prof. Robert Babcock, History, 200 Stevens Hall
 Assoc. Prof. John Battick, History, 130 Stevens Hall
 Assoc. Prof. Cathleen Bauschatz, Modern Languages, 252 Little Hall
 Prof. Harold Borns, Geology, 304A Boardman Hall
 Assoc. Prof. Howard Cody, Political Science, 31 N. Stevens
 Prof. Edward Collins, Political Science, 27 N. Stevens Hall
 Assoc. Prof. David Decker, Art, 111 Carnegie Hall
 Prof. Stewart Doty, History, 145 Stevens Hall
 Prof. Alaric Faulkner, Anthropology, 44 S. Stevens Hall
 Assoc. Prof. Jacques Ferland, History, 275C Stevens Hall
 Assoc. Prof. James Gallagher, Sociology, 201 Fernald Hall
 Lecturer James Herlan, Modern Languages, Little Hall

Assoc. Prof. Stephen Hornsby, Anthropology, Coordinator, Canada House
 Prof. Edward Ives, Anthropology, 42 S. Stevens Hall
 Prof. Alan Kezis, Agricultural and Resource Economics, 206 Winslow Hall
 Prof. Peter Morici, Economics, 235 Stevens Hall
 Assoc. Prof. Kenneth Norris, English, 304 Neville Hall
 Assoc. Prof. Michael Palmer, Political Science, 31 N. Stevens Hall
 Prof. David Sanger, Anthropology, 26 S. Stevens Hall
 Assoc. Prof. Kathryn Slott, Modern Languages, 268 Little Hall
 Prof. David Smith, History, 150 Stevens Hall
 Prof. Emerita Alice Stewart, History, Canada House
 Prof. James Wilson, Agricultural and Resource Economics, Winslow Hall
 Prof. Bernard Yvon, Education, 317 Shibles Hall

Rationale and Requirements

The Canadian Studies Program at UM offers a greater number and wider range of courses in this area than any other University in the United States. Canadian Studies provides a valuable area of study for (1) students entering fields of education, business, and government where knowledge of Canada is increasingly important; (2) those specializing in international relations; and (3) undergraduates wishing to pursue graduate work either in a Canadian field or in an area with a Canadian component.

For an undergraduate program of study, students may obtain either a concentration or minor in Canadian Studies. In most colleges, a concentration in Canadian Studies requires 18 credit hours or 6 courses. The courses must include CAN 101: Introduction to Canadian Studies, two core courses and three related courses which can be selected from either Canadian Core courses or Canadian Related courses. Courses taken at a Canadian University through the Canada Year Program administered by the Canadian-American Center can also be included in the Concentration.

For twenty years the Center has sent students in the Canada Year Program to Canadian Universities. University of Maine students have studied in Newfoundland (Memorial University), Prince Edward Island (University of Prince Edward Island), Nova Scotia (Dalhousie University, Acadia University), New Brunswick (University of New Brunswick, Mount Allison University), Québec (Université Laval, McGill University, Université de Sherbrooke, Concordia University, Université du Québec à Chicoutimi), Ontario (University of Toronto, York Uni-

versity, Carleton University, University of Guelph), Alberta (University of Calgary) and British Columbia (University of British Columbia, Simon Fraser University, University of Victoria).

Although participation in Canadian Studies is not a prerequisite to the Canada Year program, applications from students in Canadian Studies will be given preference by the selection committee. Study in Canada allows a student to strengthen his or her major by adding courses not offered at Orono and to live in an area with a different culture or language.

Courses with a 400 number are for selected undergraduate and graduate students.

Canadian Core Courses

CAN 101 Introduction to Canadian Studies
 CAN 300 Seminar in Canadian Studies
 CAN 401 Readings in Canadian Studies
 ARH 162 Modern Architecture and Design
 ARH 168 Canadian Art
 ARH 361 Topics in Art History
 ANT 472 North American Prehistory
 BUA 328 Canadian/U.S. Business: A Comparison
 ECO 439 International Trade and Commercial Policy
 ECO 440 Canadian Economics: Issues and Policies
 ENG 236 Canadian Literature
 ENG 436 Topics in Canadian Literature
 FRE 205 French Conversation and Composition I
 FRE 206 French Conversation and Composition II
 FRE 254 Popular Culture in French Canada
 FRE 256 French Canadian Civilization
 FRE 297 French May Term in Québec City
 FRE 442 French Language of North America
 FRE 452 The Novel of Québec
 FRE 456 Seminar in Québec Studies
 FRE 490 Topics in French
 FRE 550 Seminar in French Canadian Literature and Language
 FRE 552 Films, Video Drama, and Literature in French Canada
 GEO 402 Geographical Perspectives on Atlantic Canada
 GEO 450 Historical Geography of Canada
 HTY 459 Colonial Canada
 HTY 460 Modern Canada
 HTY 499 Contemporary Problems in History
 HTY 521 Canada and the United States, 1783 to the Present
 HTY 550 Readings in Bibliography and Criticism in Canadian History
 HTY 599 Special Topics in History
 POS 243 Canadian Government and Politics

POS 252 United States-Canada Relations
 POS 344 Public Policy in Canada
 POS 456 Canadian Political Parties
 POS 496 International Affairs Internship
 POS 531 Topics in Comparative Politics
 POS 587 Problems in International Law (Canada)
 STT 496 Advanced Internship (Elem) in Canada
 STT 497 Advanced Internship (Sec) in Canada

Canadian Related Courses

ANT 221 Introduction to Folklore
 ANT 425 Oral History and Folklore
 ANT 451 North American Indian Ethnology
 ANT 473 Historic Archaeology
 ANT 474 Analysis of Historic Artifacts
 ANT 570 Seminar in Northeastern North American Prehistory
 ANT 573 Advanced Methods in Historic Archaeology
 BUA 345 International Management
 BUA 376 International Marketing
 ECO 439 International Trade and Commercial Policy
 ECO 445 Regional Economics
 MLC 490 Topics in Foreign Languages: Bilingualism and Biculturalism
 FRE 203 Intermediate French
 FRE 210 Readings in French Literature
 FRE 440 Franco-American Civilization
 GES 324 Geology of North America
 GES 543 Quaternary History of Northeastern North America
 INT 539 Ice Ages and Humankind
 JMC 214 The Foreign Media
 OCE 270 Oceanography Today
 OCE 370 Introduction to Oceanography
 POS 387 International Law
 SOC 442 Population and Society

For complete details about the Canadian Studies concentration, contact the Canadian-American Center, Canada House, 154 College Avenue.

Classical Studies

Faculty

Assoc. Prof. Kristina M. Passman, Co-ordinator, Modern Languages and Classics, 254 Little, (2080)
 Assoc. Prof. Jay Bregmen, History, 200A Stevens (7808)
 Asst. Prof. Michael Grillo, Art, 151 Carnegie (3252)
 Assoc. Prof. Michael Howard, Philosophy, The Maples (3864)
 Assoc. Prof. Michael Palmer, Political Science, 31 N. Stevens (1879)
 Prof. J. Norman Wilkinson, Theatre, 209 E. Annex (2405)
 Assoc. Prof. John R. Wilson, English, 208 Neville Hall

Rationale

The classical period in Western history, defined as the period from the Bronze Age to the fall of the Roman empire in the 5th century C.E., com-

prises the "roots" of modern society. In order to understand where we are and where we are going, it is necessary to know where we have been. European and American literature, philosophy, law, religion, politics, language, and art have all been either directly or indirectly formed in reaction to Classical culture. By examination and study of Classical civilization, the student will develop a sense of how the ancients responded to the universal questions of human experience. Through an implicit comparison of the cultures of ancient Greece and Rome to our own, the student will also come to have a fuller understanding of the humanist and cultural impulses which have formed and which continue to form our own experience. This course concentration is particularly useful to the student with interests in ancient history, in philosophy, art history, anthropology, literature, and political science. It will also prove useful to the student preparing for a career in law.

Requirements:

A minimum of 18 credits or 6 courses. The student who elects this concentration normally chooses Latin as a fulfillment of the language requirement. The advanced student may choose ancient Greek rather than Latin (as available), with permission of the instructor. The student will take *either* two semesters of Latin beyond the elementary level or two semesters of Greek at elementary level or above. In addition, the student will take HTY 401, History of Greece or HTY 402, Roman History, and the remaining three courses in one or two areas listed below. The list below is flexible; new courses, special seminars, pertinent readings in upper level Honors courses, and independent study may be approved for Classical Studies.

Course Offerings

Art History:

ARH 155 Art History I
 ARH 251 Classical Art
 ARH 361 Topics in Art History: Greek Art

Classics:

CLA 101 Greek Literature in English Translation
 CLA 102 Latin Literature in English Translation

Modern Languages: English

ENG 300 The Bible as Literature
 MLC 231 Western Tradition in Literature: Homer through Renaissance

Greek:

GRE 101 Elementary Greek I
 GRE 102 Elementary Greek II
 GRE 203 Readings in Greek Literature I
 GRE 204 Readings in Greek Literature II

History:

HTY 105 European Civilization I
 HTY 401 History of Greece
 HTY 402 Roman History
 HTY 433 Greek and Roman Mythology

HTY 434 Greek and Roman Heritage in America

Latin:

LAT 203 Readings in Latin Literature I
 LAT 204 Readings in Latin Literature II
 Upper level Latin as offered

Philosophy:

PHI 203 Ancient Greek Religion
 PHI 210 History of Ancient Philosophy
 PHI 282 The New Testament and Early Christianity

Political Science:

POS 212 Introduction to Political Theory
 POS 389 Classical Political Thought

Theatre:

THE 112 Masterpieces of World Drama I

Developmental Disabilities

Faculty

Assoc. Prof. Barbara Csavinszky, Human Development, Chairperson, 32 Merrill Hall
 Asst. Prof. James Artesani, Special Education, 148 Shibles Hall
 Asst. Prof. Caroly Bell, Public Administration, 25 North Stevens Hall
 Assoc. Prof. Stephen Butterfield, Physical Education, 103 Lengyel Hall
 Prof. Herbert Crosby, Mechanical Engineering, 215A Boardman Hall
 Prof. Kathryn Gainguest, Sociology, 201B Fernald Hall
 Asst. Prof. Deborah Goessling, Special Education, 305 Shibles Hall
 Dr. Jon Heeren, EMMC, UAP Chairperson, Webber Bldg., Suite 310, 417 State St., Bangor, ME 04401
 Assoc. Prof. Elizabeth Hoffman, Art Education, 157 Carnegie Hall
 Field Coordinator Nancy Kelly, School of Social Work, 112 Annex C
 Assoc. Prof. Judy Kuhns-Hastings, School of Nursing, 160 College Ave.
 Assoc. Prof. John Pettit, Communications Disorders, L5 North Stevens Hall
 Assoc. Prof. David Samuelian, Human Services, 107 Caribou Hall, UC
 Asst. Prof. Janice Zeman, Psychology, Little Hall
 Assoc. Prof. Lucille Zeph, Director I.C.C., Center for Community Inclusion, 117 Alumni Hall

Center for Community Inclusion, Maine's University Affiliated Program, (UAP), Interdisciplinary Concentration in Developmental Disabilities

The Interdisciplinary Concentration in Developmental Disabilities provides students with an opportunity to learn about people with developmental disabilities within an interdisciplinary academic concentration. Students declare this concentration in addition to their major.

field of study. The components of the concentration are: A common core of courses which includes one course in normal development, a course in exceptionality, an interdisciplinary course on persons with developmental disabilities across the life span, and two or more courses elected from a list of approved courses offered by participating colleges. Students also complete a practicum experience and an interdisciplinary seminar related to persons with developmental disabilities. Through these experiences, students develop an appreciation of the many factors effecting development, and develop and understanding of how their own specialty can operate with other disciplines to create supports that will improve the quality of life for people with disabilities.

The interdisciplinary concentration in developmental disabilities is open to selected undergraduate students in the following departments and areas:

Art Education/ Art
 Child Development/Family Relations
 Elementary Education
 Health and Family Life Education
 Health, Physical Education and Recreation
 Human Nutrition and Foods
 Human Services
 Nursing
 Public Administration
 Psychology
 Social Work
 Sociology
 Speech Communication

To apply for admission, consult with one of the above faculty from your department, and complete the declaration Form.

Course Offerings

A. CORE:

- Choose one (Normal Development - 3 Credits).
 CHF 201 Introduction to Child Development 3
 PSY 323 Psychology of Childhood 3
 CHF 433 Adolescence 3
 CHF 434 Adult Development and Aging 3
 PSY 324 Psychology of Adolescence 3
- Choose one (Atypical Development/Exceptionality - 3 Credits)
 SED 402 Mainstreaming Exceptional Students 3
 SED 400 Survey of Exceptionality 3
 HPR 376 Kinesiology
 PSY 428 Psychology of the Exceptional Child 3
 CDS 381 Fundamentals of Speech Pathology I 3
 CDS 382 Fundamentals of Speech Pathology II 3
- An Introduction to persons with Developmental Disabilities across the lifespan - (3 Credits)
- A UAP Interdisciplinary Practicum Experience (1 - 6 Credits)

5. An Interdisciplinary Seminar in Developmental Disabilities (3 Credits)

B. ELECTIVES:

Choose at least two electives for six credits. These courses may not include requirements for student's major or for any additional concentration in which the student is enrolled.

FSN 101 Introduction to Nutrition	3
FSN 270 World Food and Nutrition	3
FSN 301 Life Cycle Nutrition	3
HPR 270 Motor Development and Learning	3
HPR 367 Mainstreaming in Physical Education/ Recreation	3
HPR 380 Health, Physical Education and Recreation Programs in the Elementary School	3
NUR 420 Women and Health	3
NUR 423 Ethical Issues in Health Care	3
NUR 424 Perspectives on Aging	3
NUR 430 Perspectives on AIDS	3
PAA 200 Public Management	3
PAA 220 Introduction to Public Policy	3
PAA 425 Health Care and Human Services Administration	3
PAA 430 Public Organization and Management	3
PSY 308 Theories of Personality	3
PSY 312 Abnormal Psychology	3
PSY 425 Social Issues in Developmental Psychology	3
EDU 380 Multicultural Education	3
SED 401 Introduction to the Education of Severely Handicapped Students	3
CDS 130 Introduction to Communication Disorders	3
CDS 480 Language and Speech Development	3
CDS 388 Hearing Impairment	3
SOC 201 Social Inequality	3
SOC 213 Deviant Behavior	3
SOC 319 Domestic Violence and Social Structure	3
SOC 337 The Sociology of Mental Illness	3
SOC 339 Sociology of Health and Medicine	3
SOC 425 Sociology of Social Policy and Social Change	3
PHI 235 Biomedical Ethics	3
SWK 320 Introduction to Social Work and Social Welfare	3
SWK 365 Problems in Child Abuse and Neglect	3
SWK 368 Psycho-Social Aspects of Disability	3
SWK 440 Social Welfare Policy and Issues	3

C. TRANSCRIPTS:

Satisfactory completion of the concentration will result in the concentration specifically being indicated on a student's transcript.

Franco-American Studies

Faculty

Assoc. Prof. Raymond Pelletier, Modern Languages and Classics, Coordinator, 266 Little Hall
 Prof. Jacob Bennett, English, 313 Neville Hall
 Lecturer James Bishop, English, 126 College Avenue
 Assoc. Prof. Robert Brinkley, English, 209 Neville Hall
 Assoc. Prof. Stuart Bullion, Journalism and Mass Communication, 107 Lord Hall
 Prof. Stewart Doty, History, 170 Stevens Hall
 Assoc. Prof. Jacques Ferland, History, 200 Stevens Hall
 Assoc. Prof. James Gallagher, Sociology, 201 Fernald Hall
 Lecturer James Herlan, Modern Languages and Classics, 264 Little Hall
 Dir. Yvon Labbé, Franco-American Affairs, 126 College Avenue
 Assoc. Prof. Kristin Langellier, Speech Communication, 355 Stevens Hall
 Asst. Prof. Cynthia Mahmood, Anthropology, 40A Stevens Hall
 Prof. Ruth Nadelhaft, English, Honors Center
 Asst. Prof. Therese Shippis, Nursing, 162 College Avenue
 Assoc. Prof. Kathryn Slott, Modern Languages and Classics, 268 Little Hall
 Professor Bernard Yvon, Education, 317 Shibles

Rationale

The last two decades have witnessed the emergence on campuses throughout the nation of academic programs that document the contribution of America's ethnic communities to the creation of a multicultural society. In New England, and particularly in Maine where citizens of French-Canadian and Acadian descent number approximately 35 percent of the population, Franco-Americans provide a unique example of a cultural group that has been dedicated to keeping its language and culture alive for the past one hundred years. As such, Franco-Americans provide an essential key to understanding the region's cultural identity and diversity and a strong link to developing political and economic ties with French-speaking Canadians.

A program of Franco-American studies relates to North American history, to sociological, anthropological, linguistic, literary, and educational issues and is designed to integrate theories and methodologies from each of these disciplines. The initial focus of this course concentration is on the people of French-Canadian and Acadian ancestry in New England. As the student progresses through the concentration, options become available to relate cultural, linguistic, historical, and social characteristics, and educational policies to the mother country or to place them in the context of American society. All aspects of the rich past of Franco-American culture, ranging from the study of language and lifeways to the examination and

analysis of contemporary issues, are aimed at creating a greater understanding and appreciation of the state and the region.

The participating faculty members in this course cluster are committed to the idea that a society can best be approached on its own terms and through an interdisciplinary curriculum. They are also committed to achieving a better understanding of America's multicultural society.

This course concentration is currently being revised. Concentration faculty are regularly kept abreast of anticipated modifications and can advise interested students on course selection. In particular, students may wish to inquire about an interdisciplinary course in Franco-American studies currently being developed.

Course Offerings

In order to qualify for a course concentration in Franco-American studies, a student must develop competency in the following areas:

- A. Franco-American Culture and History
All students must earn six credits chosen from among the following courses:
FRE 440 Franco-American Civilization
FRE 442 French Language of North America
HTY 458 History of French Canada and Franco-Americans
- B. French Language
Students are required to complete the FRE 203/204 sequence or the FRE 205/206 sequence for Franco-Americans fluent in French or to demonstrate comparable proficiency by examination. All students are strongly encouraged to go beyond this minimum level of proficiency by participating in the variety of courses and programs offered by the Department of Foreign Languages.
- C. Franco-American Culture as it Relates to a Broader Range of Academic Disciplines
Students are required to take 12 semester hours outside their major from any of three of the following clusters, with no fewer than two courses chosen from each cluster. (For example, a history major will probably take at least two courses in the history cluster, but in order to satisfy the requirements for this concentration, he or she must also select two courses from the French cluster and two courses from the Society and Culture clusters.)

Education

- EBI 380 Methods and Materials for Bilingual Instruction
EBI 390 Introduction to Bilingual Education
EBI 560 Advanced Studies in Bilingual Education

Folklore

- ANT 423 Folksong
ANT 425 Oral History and Folklore: Fieldwork

French

- FRE 256 French Canadian Civilization
FRE 452 The Novel of Québec

FRE 456 Seminar in Québec Studies

Geography

- GEO 210 Geography of Maine
GEO 215 Cultural Geography
GEO 301 Historical Geography of North America

History

- HTY 459 Colonial Canada
HTY 460 Modern Canada

Language

- INT 410 Introduction to the Study of Linguistics
INT 480 Sociolinguistics
ANT 481 Language and Culture

Society and Culture

- SOC 338 Race and Culture Conflict
ANT 439 Psychological Anthropology
ANT 468 Social Anthropology of Complex Societies

Geography

Faculty

- Assoc. Prof. Stephen Hornsby, Anthropology, Coordinator, Canada House ql
Professor Marshall Ashley, Forestry, 208 Nutting Hall ql
Professor Richard Blanke, History, 115C Stevens Hall ql
Prof. Alanic Faulkner, Anthropology, South Stevens Hall
Prof. Irving Kornfield, Zoology, 215 Murray Hall ql
Prof. David Sanger, Anthropology, South Stevens Hall
Assoc. Prof. Edward Schriver, History, 115A Stevens Hall ql
Prof. William TeBrake, History, 275B Stevens Hall ql
Assoc. Prof. David Tyler, Civil Engineering, 120 Boardman Hall ql
Professor Claude Westfall, Engineering Technology, 202 E. Annex

(The above list represents faculty currently teaching courses included in the Geography Course Cluster. Changes occur from semester to semester and year to year.)

Rationale

Geography is an established discipline at most American universities. The last 30 years have seen considerable growth of geography departments as the discipline moved from a focus on regional studies to the development of spatial and locational theory. The discipline, however, remains broadly based in earth sciences and humanities as well as in the social sciences. Geographers pursue research and teaching in areas as diverse as geomorphology, hydrology, transportation, urban planning, cultural ecology, human-environment relationships, and pre-history. Geography courses and degrees appeal to undergraduates seeking a general yet practical University education. Geography graduates find employment in such career

fields as resource management, urban and regional planning, and environmental assessment, as well as in the traditional occupation of elementary and secondary school teaching.

Although the University of Maine does not offer either the B.A. or B.S. degree in geography, a considerable number of geography and geography-related courses are taught on a regular basis. The Geography Course Cluster provides students interested in the field the opportunity to combine, with their major, a general or focused set of courses (minimum, 18 credit hours) in human geography. Students interested only in aspects of physical geography are urged to consider courses in geology and the Environmental Issues and Ecological Studies cluster.

GEO 201, Introduction to Human Geography, or GEO 210, Geography of Maine, should be taken by the interested student in the first or second year. The student is also urged to discuss and plan course selection with the Coordinator, Associate Professor Stephen Hornsby (Anthropology-Geography).

Course Offerings

- A. Core Curriculum. Three to six credit hours
 1. Prerequisite
GEO 201 Introduction to Human Geography
GEO 210 Geography of Maine
 2. Students are urged to select one of the following courses:
GEE 116 Cartographics
SVE 111 Plane Surveying
FOE 206 Photogrammetry and Remote Sensing
ANT 497 Departmental Projects (Field Experience in Geography - May term)
- B. Elective Courses. Twelve to 15 credit hours, with no more than three credit hours below the graduate level.
Although it is possible to take a wide range of elective courses, most students will find it useful to select courses which lead to typical teaching and career orientations in geography. The elective courses are grouped to reflect such orientations.

1. Cultural-Historical

Like historians, some geographers are concerned with the past, and, like anthropologists, others are involved in the study of different cultures. In both respects, a geographical perspective adds considerable breadth of knowledge on topics such as the spread of settlements, the diffusion of cultural traits, and the nature of past landscapes. Students, particularly those selecting majors in anthropology and history, can enrich and broaden their programs of study with courses in historical and cultural geography.

- ANT 464 Cultural Ecology
ANT 472 North American Prehistory
ANT 473 Principles of Colonial Archaeology

ANT 475 Paleoenvironmental Archaeology
 HTY 277 History of the Treatment of the American Environment
 GEO 401 Historical Geography of the United States
 GEO 402 Geographical Perspectives on Atlantic Canada
 GEO 450 Historical Geography of Canada

2. Human Use of Earth

The human relationship with the environment is a matter of increasing concern to society. This theme has always been a major consideration of geography. The student interested in the human use of the earth, whether as a step to a career in environmental resource management or to gain a broader understanding of the human place in the environment, is urged to select courses from the following:

INT 219 Introduction to Ecology
 AES 144 Soil and Water Conservation
 ANT 475 Paleoenvironmental Archaeology
 HTY 217 Environmental History of Europe
 HTY 277 History of the Treatment of the American Environment
 INT 319 General Ecology
 REP 371 Introduction to Natural Resource Economics and Policy
 REP 474 Land Use Planning
 AES 428 Landscape Design Problems
 FTY 457 Forest Watershed Management
 INT 500 Seminar on Quarternary Studies
 RPM 554 Forest Recreation Planning
 REP 572 Agricultural Trade and Economic Growth

Latin American Studies

Faculty

Prof. James Acheson, Anthropology, Coordinator, 40B S. Stevens Hall
 Professor Melvin Burke, Economics, 220 Stevens Hall
 Assoc. Prof. Laura Luszczynska, Modern Languages and Classics, 216 Little Hall
 Assoc. Prof. Kathleen N. March, Modern Languages and Classics, 276 Little Hall
 Asst. Prof. Daniel Sandweiss, Anthropology, 38 South Stevens Hall
 Assoc. Prof. James Troiano, Modern Languages and Classics 274 Little Hall

Rationale

The Latin American course cluster offers a series of courses in foreign languages, anthropology, history and economics concerning Latin America designed to broaden the student's undergraduate education and increase his or her job opportunities.

Although North Americans and Latin Americans share the "New World," they have little understanding of each other. North Ameri-

cans have reacted to Latin America either by ignoring it, or through the most unfortunate stereotypes.

Latin America cannot be ignored much longer. The area is rich in natural resources (most of the oil used in New England comes from Venezuela). It also presents a huge market for U.S.-made goods. The area currently is undergoing rapid and sometimes violent social change, as witnessed by recent events in Central America. Spanish speakers recently have become the largest immigrant group in the United States; and Cuba's Castro is an acknowledged leader in the "Third World."

The size and diversity of Latin America make it difficult to comprehend. Brazil alone is larger than the continental United States. Latin American communities range from sparkling modern cities like Caracas and Rio de Janeiro to thousands of rural, traditional hamlets in the Amazon Basin and Central America. Although Spanish and Portuguese are the predominant languages, there are hundreds of different Indian societies, totaling millions of people which have maintained their traditional languages and cultures.

Measured by North American standards, Latin America appears eccentric, inconsistent, and full of surprises. Measured by its own standards, it is orderly, consistent, and comprehensible.

The Latin American Course Cluster combines training in languages, literature, and social sciences to allow students to begin to deal with this very different and increasingly important part of the world. The faculty involved in this course cluster have spent substantial time in Latin America.

Course Offerings

A minimum of 18 hours are required for the Latin American Course Cluster.

A. Language Competence.

The student must demonstrate proficiency in Spanish at the intermediate level. Proficiency may be demonstrated either by examination or by completing SPA 203/204 with a mark of "B" or higher. Students will not be admitted to the program until they have completed SPA 101/102. Course work in intermediate Spanish (SPA 203/204) will be counted toward the Course Cluster, however. (In the near future students may be able to fulfill the language requirement in Portuguese).

B. Social Sciences and Literature.

In addition, the student is required to take at least one course in three of the following four areas:

History

HTY 447 Latin America: Under the Conquerors
 HTY 448 Latin America: Reform and Revolution
 HTY 452 Topics in Latin American History

Anthropology

ANT 453 Peoples and Cultures of Mesoamerica
 ANT 467 Peasant Studies

ANT 476 Mesoamerican Prehistory
 ANT 459 Peoples and Cultures of South America
 ANT 480 South American Prehistory

Economics

ECO 438 Economic Development
 ECO 436 Marxian Economics

Literature

SPA 307 Readings in Peninsular Literature
 SPA 308 Readings in Spanish American Literature. Another more advanced course in Latin American literature may fulfill this requirement (SPA 408, SPA 409, SPA 410)

Additional courses in Spanish, Portuguese, Latin American Literature, History, and Anthropology are recommended.

Legal Studies

Faculty

Prof. Erling Skorpen, Philosophy, Coordinator, 5 The Maples
 Assoc. Prof. Steven Barkan, Sociology, 201A Fernald Hall
 Assoc. Prof. R. Brucher, English, 415 Neville Hall
 Professor Edward Collins, Political Science, 15 N. Stevens Hall
 Assoc. Prof. Roger S. Craig, Journalism and Mass Communication, 107 Lord Hall
 Assoc. Prof. Edward Laverty, Public Administration, 200 Alumni Hall
 Assoc. Prof. Harlan J. Onsrud, Surveying Engineering, 117A Boardman Hall
 Professor Jefferson White, Philosophy, 11 The Maples

Rationale

In antiquity, Socrates held that the laws were his "true parent." For then as now, laws help to constitute and regulate family, school, church, commercial, and governmental institutions. They therefore affect the lives of everyone throughout, although conversely human beings make the law. Legal foundations, developments, and effects are consequently of intrinsic interest and concern to many disciplines and their students. This interdisciplinary course concentration is accordingly designed not so much for the pre-law student, as for any student whose liberal education seeks to understand the formative bases of human civilization and culture.

Course Offerings

The Legal Studies Curriculum is divided into two clusters as follows:

- A. Courses "About" Law (three to be selected for nine credits)
 ENG 229 Topics in Literature (Law)
 PHI 244 Philosophy of Law
 POS 382 Introduction to Law
 SOC 314 Law and Society
 SVE 321 Cadastral Systems
 PHI 344 Theories of Justice

B. Courses "In" Law (two to be selected for six credits)

- HTY 499 Contemporary Problems in History
 COS 492 Computer Related Law
 JMC 370 Telecommunication Law and Policy
 JMC 375 Mass Media Law and Ethics
 PAA 405 Administrative Law
 PAA 410 Local Government Law
 POS 383 Constitutional Law
 POS 384 Constitutional Law: Civil Liberties
 POS 387 International Law
 POS 388 World Order through International Organization and Law
 SOC 345 Women, Crime and Criminal Justice
 SVE 221 Legal Aspects of Land Surveying
 SVE 522 Environmental Law and Resource Regulation

Linguistics

Faculty

- Assoc. Prof. Henry Munson, Anthropology, Coordinator, 36B S. Stevens Hall
 Assoc. Prof. Paul Bauschatz, English, 304 Neville Hall
 Professor Jacob Bennett, English, 313 Neville Hall
 Prof. Catherine J. Garvey, Psychology, 286 Little Hall
 Coop. Assoc. Prof. Sharon Jackiw, Foreign Languages, 24 Coburn Hall
 Asst. Prof. Rex Pyles, Foreign Languages, 270 Little Hall
 Prof. Robert Rioux, Foreign Languages, 214 Little Hall
 Professor Jefferson White, Philosophy, The Maples

Rationale

Linguistics is the field of study concerned with language, both as a general human faculty and as manifested in particular languages. The discipline includes such topics as: the acquisition of language, its sounds, meaning, structure, social and cultural aspects, families and dialects, and change.

The linguistics program entails a minimum of 15 credit hours, as follows:

A. Core

At least one course must be completed in each of the following categories for a minimum total of nine credit hours.

1. Introduction
INT 410 Introduction to the Study of Linguistics
2. Language Structure
MLC 453 Phonology
ENG 477 Modern Grammars
3. Language in Context
INT 480 Sociolinguistics
ANT 481 Language and Culture
CDS 480 Language and Speech Development
INT 501 Discourse Analysis

B. Electives

Students may select courses from among the following which, when added to those in the core, will complete the total of 15 credit hours.

- ENG 476 History of the English Language
 ENG 579 The Theory of Composition (also listed as SPC 579)
 GER 403 History of the German Language
 FRE 420 French Phonetics
 FRE 442 French Language of North America
 FRE 499 Applied French Linguistics
 FRE 500 History of the French Language
 FRE 520 French Linguistics
 COS 220 Introduction to Computer Science I
 COS 221 Introduction to Computer Science II
 COS 301 Programming Languages
 COS 470 Introduction to Artificial Intelligence
 MAT 241 Mathematical Logic
 PHI 260 Philosophy of Language
 PHI 250 Logic I
 PHI 363 Theory of Knowledge
 PSY 522 Social Development in Children
 SPC 356 Speech Play and Performance
 SPC 454 Communication Development in Children
 SPC 405 Women and Communication
 CDS 483 Anatomy and Physiology of the Speech Mechanism
 CDS 484 Introduction to Speech Science
 CDS 585 Children's Language Disorders

The enumeration here is not definitive; new courses, projects, special seminars, or pertinent reading in upper honors courses may be approved for this program.

Note: The three areas for B.A. distribution requirements are represented among the courses listed for this concentration. Working towards a concentration in linguistics is, therefore, compatible with satisfying distribution requirements for the B.A. degree.

Although one may fulfill the minimum requirements by taking five courses from Category A and none from Category B, it is expected that students will choose one or more of the elective courses.

Peace Studies

For a description of the Interdisciplinary Course Concentration in Peace Studies, see University-wide Programs.

Public Relations

Faculty

- Inst. Sheila J. Pechinski, College of Business Administration, Coordinator, 332 Donald P. Corbett Business Building
 Asst. Prof. Patricia Dooley, Journalism and Mass Communication, 107 Lord Hall
 Asst. Prof. Jim Sherblom, Speech Communication, 320 Stevens Hall
 Asst. Prof. Tim Weiss, English, 213 Neville Hall

Students intending to declare an Interdisciplinary Course Concentration (ICC) in Public Relations should do so during the second semester of the sophomore year. A form for declaring an ICC may be obtained from the Office of the Registrar and must be signed by the program coordinator.

To receive interdisciplinary credit a student must earn at least 2.0

("C") in each course in the concentration. Successful completion of the program will be noted on the student's transcript.

Rationale

As public and private organizations have grown larger and more complex, effective two-way communication with clients, constituents, and the general public is vital to the concentration of public opinion in management decisions. Public relations practitioners draw on a wide range of knowledge and skills in assessing public opinion, advising policy makers and carrying out communication activities to establish mutually beneficial relationships between clients and publics.

The Public Relations Course Concentration provides students with an introductory course of study to prepare themselves for the broad field of public relations. Early in their academic careers, students should consult a member of the Public Relations ICC faculty regarding appropriate majors, minors, elective courses and internship activities to complement Public Relations ICC courses.

The cluster requires a minimum of 18 credits distributed as follows:

Course Offerings

A. Core

Four graded courses are required for the core of this program. Pass-fail grading is not acceptable, nor are grades below C-. (Individual courses may have prerequisites and are given in parentheses.)

1. Speech Communication in Public Relations
SPC 267 Public Relations: Oral Communication Strategies (Junior or Senior standing, 3 hours of SPC courses or permission)
2. Journalism in Public Relations
JMC 100 Introduction to Mass Communication
JMC 236 Introduction to Writing for the Electronic Media
3. English in Public Relations
ENG 317 Technical Writing (ENG 101)

B. Electives

An additional 2 courses must be selected from this category. Only one course in a student's major will be accepted from this category.

- BUA 220 The Legal Environment of Business (BUA 201 or permission an sophomore standing)

- BUA 325 Principles of Management and Organization (6 credits in ECO Junior standing)
- BUA 370 Marketing (6 credits in ECO and BUA 201)
- ENG 301 Advanced Composition (ENG 101 and ENG 212 or permission)
- ENG 417 Advanced Technical Editing (6 credits in writing, including 317, and permission)
- ENG 418 Advanced Technical Editing (6 credits in writing, including 317, and permission)
- JMC 237 Newswriting and Reporting I (ENG 101)
- JMC 250 Introduction to Advertising
- JMC 355 Advertising Copywriting and Layout (JMC 250)
- JMC 375 Mass Media Law and Ethics (JMC 100)
- PAA 200 Public Management (PAA 100 or POS 100)
- POS 358 Public Opinion (POS 100, Junior standing)
- SPC 257 Business and Professional Communication
- SPC 403 Persuasion and Social Influence
- SPC 470 Communication in Organizations (Junior or Senior standing)

Religious Studies

Faculty

- Prof. Jay Bregman, History, Coordinator, 115B Stevens Hall
- Prof. Douglas Allen, Philosophy, The Maples
- Assist. Prof. Bahman Baktiari, Political Science, 125 Stevens Hall
- Assoc. Prof. John F. Battick, History, 130 Stevens Hall
- Asst. Prof. Michael Grillo, Art, 151 Carnegie Hall
- Prof. Burton N. Hatlen, English, 309 Neville Hall
- Prof. Michael Lewis, Art, 104 Carnegie Hall
- Prof. Ngo Vinh Long, History, Stevens Hall
- Asst. Prof. Margaret A. Lukens, English, 207 Neville Hall
- Asst. Prof. Cynthia K. Mahmood, Anthropology, 30 Stevens Hall
- Prof. Kyriacos Markides, Sociology, 210 Fernald Hall
- Assoc. Prof. Matthew Moen, Political Science, 27 North Stevens Hall

- Assoc. Prof. Linne R. Mooney, English, 305 Neville Hall
- Assoc. Prof. Henry Munson, Anthropology, S. Stevens Hall
- Assoc. Prof. Kristina Passman, Modern Languages and Classics, 254 Little Hall
- Prof. William H. Tebrake, History, 275B Stevens Hall
- Assoc. Prof. John R. Wilson, English, 205 Neville Hall
- Assoc. Prof. Nancy Ogle, Music, 205 Lord Hall

Rationale

Traditionally, questions about the ultimate meaning of human existence have been posed in the form of religion. Today we live in a world in which religion and religious ideas are often in serious conflict; it is thus also important to understand some of the problems connected to religion. Courses included in the religious studies cluster are designed to help students understand what these questions are, what kind of answers people have found to them, and how societies have given institutional form to the world-views which emerge from the answers. A student who elects this cluster should develop an awareness of the broad range of religious phenomena and an ability to analyze and elucidate the significance of such phenomena. All students who elect this cluster should begin by taking PHI 105, Introduction to Religious Studies. Thereafter the student should take at least four courses from one of the following subclusters: i.e., four courses from "A," or four courses from "B," or four courses from "C," or four courses from "D." These courses should be taken from at least three different disciplines.

Course Offerings

- A. Religion in the Development of Western Civilization
- ARH 252 Mediterranean Medieval Art and Architecture
- ARH 253 Northern European Medieval Art and Architecture
- ARH 255 Italian Renaissance Art
- ARH 257 Northern Renaissance Art
- ARH 258 Baroque Art and Architecture
- ARH 255 Medieval and Renaissance Art
- ARH 257 Northern Renaissance Art
- ENG 230 The Bible as Literature
- ENG 435 The Bible and Near Eastern Literature
- ENG 241 American Literature Survey: Beginnings Through Romanticism

- ENG 451 Chaucer and Medieval Literature
- ENG 457 Nineteenth Century Fiction, Poetry and Essay
- HTY 403/404 The Middle Ages
- HTY 405 The Renaissance and Reformation
- HTY 427/428 Ideas and European Society
- HTY 433 Greek and Roman Mythology
- HTY 499 Contemporary Problems in History: Greek Religion
- LAT 482 Medieval Latin
- MLC 190 Topics in Modern Languages: Mythology of the Near East, North Africa, and Greece
- POS 393 Medieval Pol

- B. Theoretical Perspectives on Religion
- ANT 469 Theories of Religion
- PHI 105 Introduction to Religious Studies
- PHI 381 The Nature of Religious Experience
- PHI 465 Advanced Topics in Philosophy
- PHI 490 Topics in Religious Studies
- ENG 429 Topics in Literature: The Traditional Theory of Literature
- SOC 482 Sociology of Religion
- HON 301 Honors Group Tutorial I (Psychology and Mysticism)
- C. Religion in the Non-Western World
- ANT 456 Ethnic Conflict
- PHI 286 Religions and Philosophies of the East: Hinduism
- PHI 287 Religions and Philosophies of the East: Buddhism
- HTY 435/436 History of China
- HTY 437 History of Modern Japan
- ANT 441 People and Cultures of the Pacific Islands
- ANT 451 North American Indian Ethnology
- ANT 453 Peoples and Cultures of Mesoamerica
- ANT 454 Cultures and Societies of the Middle East
- ANT 460 Peoples and Cultures of the Circumpolar Area
- D. Religion in the Contemporary World
- PHI 106 Social Issues in Recent Religious and Philosophical Thought
- PHI 385 Recent Religious Thought
- ENG 429 Topics in Literature: Tolkien and Modern Fantasy

Women's Studies

For a description of the Interdisciplinary Course Concentration in Women's Studies, see University-wide Programs.



Bachelor of Arts Degree Requirements, Rules and Regulations, and Special Programs

Requirements for the B.A. Degree

Entrance Requirements

Information on requirements for admission to the University, as well as specific academic preparation necessary for entrance into a B.A. degree program, is given in full in the Admission section of this catalogue. All deficiencies in entrance requirements must be made up before registering for the junior year.

NOTE: For admission to a B.A. degree program, two years of the same high school foreign language is required. Students who have not fulfilled this entrance requirement must take two semesters of a foreign language. Check with each Dean's Office for specific information.

Academic Advising

The University of Maine is committed to fostering and maintaining a positive relationship between students and their academic advisors. All first year students will have the opportunity to participate in academic orientation programs conducted in the summer and just prior to the fall semester. These orientations are intended to provide students with knowledge and skills of use in making a successful academic adjustment to college life.

Upon the completion of 53 degree hours (usually during the student's fourth semester), students declare a major; the faculty in the department in which the major is located become responsible for approving course registration during the final two years of academic study.

Special advising options are available, as follows:

A. *Pre-Law Advising.* A comprehensive advising service is available students interested in attending law school upon graduation from the University. Recognizing that there is no set pattern of undergraduate courses required by law schools, students will be encouraged to give attention to the "Statement on Prelegal Education" of the Association of American Law Schools, which emphasizes the development of basic skills and insights involving education for "comprehension and expression in words, critical understanding of the human institutions and values with which the law deals, and creative power in thinking." Students will be aided in the selection of courses, furnished informa-

tion on careers in law, the requirements of different law schools, the nature of the Law School Admission Test, when to take it and how to interpret results, and advised of the range of schools to which their records and scores might indicate successful application. Catalogues of a large number of law schools are available. A Pre-Law Society of students meets many times during the year. For further information contact the department of Political Science, North Stevens Hall.

B. *Premedical, Predental and other Health Professions Advising.* Students interested in medical and dental schools, as well as any other health professions schools, should register in their first year with the Health Professions Committee, 330 Aubert Hall. This committee provides liaison between the University and medically-related professional schools and works closely with students during the application process. Specific information on premedical, predental, and preoptometry curricula is provided elsewhere in this catalog (refer to index).

Bachelor of Arts Degree Requirements

The B.A. degree requirements are designed to ensure that by the end of a student's college career she or he will have been exposed not only to the required courses for the major, but also to a broad range of subjects.

A. *College Composition:* During the first two years, students must demonstrate satisfactory completion of ENG 101, College Composition, with a grade of "C" or above. This may be done as follows:

1. Students may write the one-hour placement test administered during summer orientation. Students who write exceptionally strong essays in response to the test prompt earn credit by examination for ENG 101. These credits count toward the 120 required for graduation.
2. Students whose placement essays fall below the standard required for admission in ENG 101 must enroll in and successfully complete ENG 001 as a prerequisite for ENG 101. The credit hours earned through ENG 001 do not count toward the 120 hours required for graduation.

Additional writing requirements are discussed in the section on distribution requirements which follows.

B. *Distribution Requirements:* Students must distribute some of their course work among each of three areas, as follows:

<i>Area I</i>	<i>Credits</i>
Social Sciences	12
<i>Area II</i>	
Arts (visual and performing) and Humanities	15
<i>Area III</i>	
Natural Sciences and Mathematics	<u>11</u>
	38
ENG 101 College Composition	<u>3</u>
	41

In addition, the following requirements must be met:

1. *Area II (Arts (visual and performing) and Humanities):* At least three, but not more than six credit hours of the fifteen required in Area II must be taken from the list of courses meeting area requirements in the Visual and Performing Arts. At least nine, but not more than twelve credit hours of the fifteen must be taken from the list of courses meeting requirements in the Humanities.
2. *Area III (Natural Sciences and Mathematics):* Of the eleven credit hours required in Area III, at least one course must include an associated laboratory. Additionally, a two-semester sequence in a single discipline must be taken from an approved list (e.g., GES 101, 102).
3. *Upper Level Credits:* A minimum of six credit hours in Area I (Social Sciences) and a minimum of six credit hours in Area II (Arts and Humanities) must be taken in upper level courses. Upper level courses are designated as such in each area's listing of courses.

Many individual courses are designated as fulfilling a requirement in one of the three areas indicated above. Students are advised to meet their distribution requirements by taking courses *outside* their own major and as widely distributed as possible throughout the three areas. A complete listing of courses by area requirement is available in each Dean's Office.

C. *Credits Outside the Major:* Of the 120 credit hours required for graduation, 72 credit hours are required *outside* the major. If a particular major requires courses in another discipline, either within the same department or in another department, those credit hours may still count towards the 72 hours.

D. *Writing Skills:* In addition to ENG 101, each student is required to take two writing courses,

one specified as a "writing experience" course and the other as a "writing intensive" course. Courses which meet these requirements are indicated as such in each area's list of courses. The requirement may be fulfilled with courses from any of the three areas. During the junior year, all B.A. degree students will have to demonstrate writing proficiency in their major.

E. Foreign and International Perspectives: Each student must take at least one, three-credit course which places its primary emphasis on a foreign and/or international perspective, as designated in each area's list of courses. Note: A course designated as "Writing Experience" or "Writing Intensive" may at the same time satisfy credit hour requirements in one of the three general areas, credit hour requirements for a major, and Foreign and/or International Perspectives course requirements. Likewise, a course emphasizing a foreign or international perspective may at the same time satisfy credit hour requirements in one of the three general areas, credit requirements for a major, and Writing-Experience or Writing-Intensive course requirements.

Requirements in Fulfillment of the Major

On the completion of 53 degree hours, students, in conference with their advisor and with the approval of their dean, select their major subject. The department in which the major subject falls becomes for administrative purposes the student's major department. The major curriculum is the nucleus of related courses selected by the student as representing her or his chief field of interest or major subject. The minimum number of credit hours acceptable for a major, as well as specific course requirements for a given major, are set by the department in which the major resides.

Foreign Language Requirements

Most departments that offer the B.A. degree have special language requirements or recommendations for B.A. degree students, as follows:

NOTE: Intermediate level proficiency means the equivalent of two semesters of an intermediate level language course, e.g. SPA 203, 204.

ANTHROPOLOGY: Intermediate language proficiency strongly recommended.

ART: Intermediate level French or German is required for students who major in art history.

CHEMISTRY: One year of either French, German, or Russian.

COMPUTER SCIENCE: The intermediate level of a foreign language is strongly recommended.

ENGLISH: Proficiency at the intermediate level.

GEOLOGY: Students contemplating graduate work are strongly encouraged to take either French, German, or Russian.

HISTORY: Students majoring in History are required to demonstrate intermediate level proficiency in a foreign language through course work or examination.

JOURNALISM AND MASS COMMUNICATION: A minimum of six credit hours taken from Modern Languages and Classics department offerings.

MATHEMATICS: The intermediate level of a foreign language is strongly recommended.

MUSIC: One year of a foreign language which can be either the continuation of the language taken in high school or a new language.

PHILOSOPHY: One year of a foreign language is recommended for the B.A. degree, two years for those going on to graduate study.

PHYSICS: One year of a foreign language is recommended for the B.A. degree, two years for those contemplating graduate study.

POLITICAL SCIENCE: At least one year of a modern foreign language beyond the intermediate level for students majoring in international affairs.

SOCIOLOGY: Recommended if considering graduate study.

SOCIAL WORK: Recommended if considering graduate study.

SPEECH COMMUNICATION: A foreign language course may be elected by the student to meet one of the department's outside requirements.

THEATER: Intermediate level proficiency in a foreign language.

ZOOLOGY: Proficiency at the intermediate level.

In addition, students may elect to fulfill one or more of the B.A. distribution requirements with a foreign language chosen from an approved list.

Students who have presented two years of a high school foreign language for admission should not enroll in an elementary level course in that particular language. It is recommended that these students take:

1. An intermediate or advanced course in the high school language (credits earned in those courses count towards the advanced course credits in the humanities category).
2. An elementary course in a new language (credits earned here count towards the introductory course credits in the humanities category).

Finding the appropriate level at which to take a language course is essential for success. The foreign language placement examination will be given only to incoming first-year students who have completed at least two years of a high school foreign language or the equivalent.

If a student receives a qualifying score on the foreign language placement examination, then she/he may opt to take the foreign language CLEP. Foreign Language CLEP examinations in French, German, and Spanish are offered four times a year to students who have either received a qualifying score on the foreign language placement examination or have taken a

minimum of three years of a foreign language in high school.

Credit by examination can be achieved as follows:

1. If the score on the CLEP examination is sufficiently high (see following table), the student will receive three hours of degree credit equivalent to the first semester of the intermediate course.
2. As an incentive to continue language study, a student is eligible to receive an additional three credit hours equivalent to the second semester of the intermediate course by skipping an intermediate course and passing with a grade of "B" or better two semesters of language study beyond the intermediate level. For example, a student who scores 53 on the French examination would receive three credits equivalent to French 203. The student would then have the choice of taking French 204, or skipping French 204 and taking FRE 205 and FRE 209 or 210, or an advanced course. A student who completes, for example, a three-hour French course above the intermediate level with a "B" grade or better will receive an additional three credit hours equivalent to French 204. **STUDENTS TAKING FRENCH 203 OR 204 FOR CREDIT CANNOT RECEIVE CREDIT FOR THESE COURSES BY EXAMINATION.**
3. The student who scores extremely high will receive six hours of credit equivalent to the intermediate course. It is recommended that these students continue to take advanced courses in the language for which they have demonstrated considerable proficiency.

Exam	Score Range	
	3 Hrs. Credit	6 Hrs. Credit
French	53-62	63 and above
German	48-60	61 and above
Spanish	50-59	60 and above

The Foreign Languages and Classics Department accepts Advanced Placement Examinations in Foreign Languages and Literature for degree credit. Scores of four and five on either examination will receive six credits; scores of three will receive three credits.

Students who did not have two years of the same language in high school are admitted to a B.A. degree program on a "CONDITIONAL" status. They are required to take two semesters (six hours) of the same foreign language without degree credit to remove this "CONDITIONAL" status. Students are expected to make up this deficiency during their first year at the University of Maine.

Graduation Requirements

In order to graduate, students must be in good academic standing, i.e., not on an academic action, and must have no outstanding deficiencies (check student handbook for specific details). In addition, the following requirements must be satisfied:

1. Minimum completion of 120 degree hours, with an accumulative grade point average of

- 2.0 ("C" average) in the major and overall. (NOTE: in computing averages, each hour of "A" is multiplied by 4, "B" by 3, "C" by 2, "D" by 1, and "E" by 0)
- Seventy-two hours of course work outside the major field
 - Satisfactory work in written English, as demonstrated by proficiency examination
 - Satisfactory completion of all distribution requirements
 - Satisfactory completion of writing experience, writing intensive, and foreign/international perspectives course requirements.
 - Satisfactory completion of requirements for the major.

Degree Options

In addition to traditional programs leading to a single four-year degree in a specified subject area, a variety of options exist.

Interdisciplinary Course Concentrations (ICC'S)

The purpose of the Interdisciplinary Course Concentration is to provide students with the opportunity to integrate substantive material and understandings across several formal disciplines, thus to broaden their perceptions in a systematic and controlled fashion. Like the major, the concentration is directed toward a special learning goal rather than to a special category of student. All students who are in good standing are invited to declare an interdisciplinary course concentration (i.e., fully matriculated students neither on probation nor any other form of limited academic acceptance). To receive interdisciplinary credit a student must earn at least a 2.0 ("C") in each course in a given concentration. Successful completion of an ICC is noted on the student's transcript.

Students intending to declare an Interdisciplinary Course Concentration should do so during the second semester of their sophomore year. In some cases it may be desirable to declare a concentration earlier, and permission may be granted to declare a concentration later in a student's undergraduate career. Most ICC's are administered by the Dean's Offices. Some ICC's (such as Peace Studies and Women's Studies) are administered by the Office of an Academic Program Director. Forms for declaring an ICC may be obtained from the Registrar's Office, or from the appropriate Dean's or Program Director's Office.

The following is a list of the Interdisciplinary Course Concentrations available along with the Faculty Coordinator for the concentration.

- Canadian Studies*, Assoc. Prof. Raymond Pelletier, Canada House
Classical Studies, Assoc. Prof. Kristina Passman, Little Hall
Developmental Disabilities, Assoc. Prof. Barbara Csavinszky, Merrill Hall
Franco-American Studies, Assoc. Prof. Raymond Pelletier, Little Hall

Geography, Assoc. Prof. Stephen Hornsby, Canada House

Latin American Studies, Prof. James Acheson, S. Stevens Hall

Legal Studies, Prof. Erling Skorpen, The Maples
Linguistics, Assoc. Prof. Henry Munson, S. Stevens Hall

Peace Studies, Prof. Kathryn Gaiangust, Fernald Hall

Public Relations, Inst. Sheila Pechinski, Donald P. Corbett Business Building

Religious Studies, Assoc. Prof. Jay Bregman, Stevens Hall

Women's Studies, Prof. Ann Schonberger, Fernald Hall

For descriptions of each of the above programs, including participating faculty, program descriptions and course selections, refer to the index.

International Affairs

A student may major in International Affairs in anthropology, economics, foreign languages, history, or political science. For complete information, refer to "International Affairs" in the index.

Clinical Laboratory Sciences

The B.A. in Clinical Laboratory Sciences is offered by the faculty of the Department of Zoology. Students may major in Medical Technology or Cytotechnology. Admission is not automatic and depends upon academic performance and aptitude for the field. Medical Technology/Cytotechnology students are on campus for three years, and spend their senior year in a twelve-month practicum. Upon completion of the practicum, students are eligible to take the certifying examination administered by the American Society of Clinical Pathology.

For further information, see the description of Clinical Laboratory Sciences under the College of Sciences.

Provisional Certificates for Teachers

Certification for elementary or secondary school teaching may be earned by students registered in a B.A. degree program. Thirty-two hours of basic work (EDB 202, EDB 221, EDB 204, SED 402, one methods course, a practicum experience, one curriculum course, a student teaching seminar, and student teaching) meets the professional subject requirements for the General Secondary Provisional Certificate, which must be renewed after two years. One full semester of student teaching is required for certification.

In addition to the 32 hours in professional courses, completion of a 36-hour concentration in one academic subject commonly taught in secondary schools is required.

Students who wish to pursue certification for elementary school teaching should take (EDB 202, EDB 221, EDB 204, SED 402, five methods

courses, a practicum experience, a student teaching seminar and student teaching.

All students must have an overall grade point average of at least 2.5 to enter student teaching.

Students planning on teacher certification should ascertain in advance whether their planned area of academic concentration is acceptable. *Because students must meet both the State and College of Education requirements, it is recommended that students wishing to become certified should contact the College of Education early in their academic career.* Information may be obtained from Maxine Harrow, Coordinator of Educational Field Experiences in 112 Shibles Hall, in the College of Education. An application for admission to the teacher certification option can be obtained at this office. Students should apply for the teacher certification option when they begin to take coursework.

Premedical, Predental, and Preoptometry Studies

Medical, dental, and optometry colleges in general desire students who are not only well prepared in the sciences and mathematics but who also are broadly educated. To the first point, they require certain courses in biology, chemistry, mathematics, and physics; to the second, they recommend a liberal background in the humanities and the social sciences. In order to meet the minimum requirements of most medical, dental, and optometry schools, students choosing to obtain a B.A. or B.S. degree should plan, with the aid of their advisors, to include the following specific courses within the framework of their major program, all to be completed before the senior year:

CHY 111/112 General Chemistry	8
OR	
CHY 113/114 Chemical Principles	8
CHY 251/252 Organic Chemistry Lecture	6
CHY 253/254 Organic Chemistry Laboratory	4
Two Sem. English Composition or Literature	6
PHY 111/112 General Physics	8
OR	
PHY 121/122 Physics for Engineers and Physical Scientists	8
BIO 100 Basic Biology	4
AND	
ZOL 204 Animal Biology	4

Most medical, dental, and optometry schools will accept advanced placement in lieu of one or more of these subjects.

Chemistry and Biology should be taken in the first year.

Many medical, dental, and optometry schools require or recommend certain additional courses. Among those most commonly listed are the following:

- Calculus
- Psychology
- Microbiology

Physiology
Principles of Genetics
Quantitative Analysis
Comparative Anatomy
Biochemistry
Physical Chemistry
Computer Science

Although most premedical, pre-dental, and pre-optometry students major in a science, they may major in any of the non-science departments according to their interests. The student would be well advised, however, to take a program during the first two years that will allow the greatest possible freedom of choice in later selecting an undergraduate major. The first year specimen curricula given for majors in chemistry, physics, or zoology will leave many options open. Those who major in a non-science department and meet only the minimum science and mathematics requirements should achieve superior grades in order to demonstrate their proficiency in these critical subjects. Students interested in medical, dental, and optometry schools should register at the beginning of their first year with the Health Professions Committee (285 Aubert Hall). This committee provides liaison between the University and medical, dental, and optometry professional schools and works closely with students during the application process. Applicants should take the appropriate admissions test during the spring semester of their junior year.

Students should be familiar with the admission policies of professional schools to which they plan to apply. They also must meet the requirements of the undergraduate college and department in which they plan to major.

Special/Support Programs

In addition to the various degree options listed above, several support programs have been developed to provide additional assistance and flexibility to students in designing their academic curriculum and augmenting their horizons, as follows:

Honors Program

First Year students of marked academic ability are invited to apply for admission to the University Honors Program. The work of the first and second years, under the direction of staff drawn from all colleges of the University, provides the stimulus and guidance which should enable a superior student to begin building a balanced view of the liberal arts and sciences and to lay the foundation for the more specialized work

which is to come. The Honors Program reaches its peak in a project which is written during the senior year and considers some special area within the student's major field. Students may be admitted at any stage of the Honors Program up to the opening of the junior year. HON 101, 102, 201, 202, and 301 are taken in common with students of all colleges within the University. These courses, plus HON 498 and 499, constitute the core of the Honors Program. Formal recognition is conferred following a successful completion of the Honors Program, in the form of graduation honors of three grades: honors, high honors, highest honors.

The Honors Committee of each college consists of faculty currently teaching in the program, as well as departmental representatives selected by the Chairs and ratified by the Dean. The principal duties of this committee are to serve on Senior Thesis Examinations and to serve as a liaison between departments and the Honors Program. Each college has its own Honors Secretary.

Cooperative Education

Cooperative Education, Internship, and Field Experience at the University of Maine include numerous types of work/learning opportunities that relate to the student's academic major or program while complementing classroom theory. Cooperative education may provide a year or more of practical work experience on a full-time basis by alternating work semesters of classroom courses. This career-related work may also be completed while working part-time and taking other courses. Students are usually compensated by their employer, a practice which results in an important source of financial assistance. Internship and field experience are general terms applied to many forms of experiential learning which enhance the student's personal and career development.

All work-learning experiences are eligible for degree credit under the specific requirements of each academic department. To qualify for credit, the student must obtain approval from the department faculty coordinator who will review a job description, determine whether the nature of the work relates directly to the student's major, and the number of credits to be allowed. To officially register for credit, the student must register for a specific department work/learning course preferably prior to the start of the employment period. Most departments require junior or senior standing.

The student should plan to meet with their department faculty coordinator and the cooperative education and field experience coord-

inator for further information about the program and assistance in obtaining career-related employment. Students are referred to work-learning opportunities in industry, business, government or community service agencies. For assistance, call or visit the Career Center, 5713 Chadbourne Hall, Third Floor, Orono, 581-1359.

Study Abroad

The University of Maine supports a number of study abroad opportunities throughout the world. Several of these programs are direct one-to-one exchanges with international universities in Canada, Eastern and Western Europe, Australia, Asia and Latin or South America. English-speaking programs are available widely, even in countries where English is not the native language. There are many opportunities for language immersion programs in French, German, Russian, Spanish and other languages. Through our reciprocal student exchange programs, students pay tuition, fees, and sometimes room and board to the University of Maine at the current rate, as they would while enrolled at UM they then pay no regular fees at the host institution. Financial aid and scholarships may be used as appropriate. Applicants must have a minimum GPA of 2.75. For information, contact the Study Abroad office.

National Student Exchange

The National Student Exchange (NSE) program offers University of Maine students a unique opportunity to study at more than 120 universities and colleges throughout the United States and its territories for a semester or a full academic year, at in-state tuition rates. The program provides an opportunity for students to experience a different academic and social environment while maintaining progress toward their academic goals, expanding their educational horizons, clarifying personal and professional goals, and experiencing another region of the United States or its territories with its diversity of cultures.

Students whose goals are consistent with the purposes of the NSE program are encouraged to explore this option. Applicants must be full-time students, of at least second-year standing, and maintain an accumulative grade point average of 2.5 or better. For information and applications forms, contact the National Student Exchange Office, 5713 Chadbourne Hall, Room 215, or call 581-1297.

College of Arts and Humanities

Leslie A. Flemming, *Dean*

Paula E. Petrik, *Associate Dean*

The College of Arts and Humanities is dedicated to providing a sound education in the liberal arts and to imparting the specific knowledge and skills required for careers in one of its several representative disciplines. Together with the College of Sciences and the College of Social and Behavioral Sciences, it provides the comprehensive curriculum essential to the liberal arts tradition. The College's own programs of study lead majors and non-majors alike to participate in and understand the forms, images and documents through which the human spirit and human society have evolved. This education, both in its breadth and its approach to learning, leads students to an enlightened sense of themselves, their heritage and their world; prepares them for responsible and active citizenship; and prompts those habits of thought and expression crucial to a lifetime of active learning.

The 7 departments within the college offer a total of 15 undergraduate degrees and 22 graduate degree concentrations. Unless otherwise noted, all undergraduate degrees are the B.A. (Bachelor of Arts). The Department of Music also offers the professional degrees of Bachelor of Music in Performance and in Education. The Department of Art offers both a Bachelor of Science in Art Education and a Bachelor of Art with a concentration in Art Education.

Also a part of the College is the Intensive English Institute, which offers non-credit instruction in English language to non-native speakers of English.

ART: Studio Art, Art History, Art Education
ENGLISH: English

HISTORY: History, International Affairs

MODERN LANGUAGES AND CLASSICS:
French, German, Spanish, Latin, Modern Languages, Romance Languages, International Affairs

MUSIC: Music (B.M. Performance, B.M. Education)

PHILOSOPHY: Philosophy

THEATRE/DANCE: Theatre

Minors

Department of Art

Studio Art: The minor in studio art is designed for non-majors who are interested in developing a basic understanding of art theory, processes, and media. A total of 21 credit hours is required. Transfer credit is subject to approval by the Department of Art studio faculty.

The requirements for the minor in studio art include:

12 credit hours in foundation studio courses:

ART 101 Drawing I	3
ART 102 Drawing II	3
ART 111 Basic 2-D Design	3
ART 121 Basic 3-D Design	3

3 credit hours in foundation art history courses:

Choose one of the following:

ARH 155 Western Survey I	3
ARH 156 Western Survey II	3

6 credit hours in specialty studio area courses:

3-6 credit hours in the following introductory courses:

ART 221 introduction to Sculpture	3
ART 233 Basic Painting I	3
ART 241 Introduction to Printmaking	3

OR

3 credit hours in one of the above introductory courses and 3 credit hours in its related advanced level courses:

ART 321 Advanced Studio Problems in Sculpture	3
ART 234 Basic Painting II	3
ART 242 Intermediate Printmaking	3

Art History: The minor in art history is designed to serve the needs of students from a broad range of fields. After studying a comprehensive survey of the Western Tradition, students may select upper level courses according to their interests. These courses include offerings in both the Modern era (1800 onward) and the Pre-Modern eras that preceded it. The required introductory studio course will expose students directly to issues of artistic creativity, an essential component to understanding the History of Art. A total of 21 credit hours is required. Transfer credit will be accepted for one hundred level course only.

The requirements for the minor in Art History include:

6 credit hours in foundation art history:

ARH 155 Western Survey I	3
ARH 156 Western Survey II	3

3 credit hours in foundation studio course:

Choose one of the following courses:

ART 101 Drawing I	3
ART 111 Basic 2-D Design	3
ART 121 Basic 3-D Design	3

12 credit hours in upper level art history courses:

ARH 2XX Pre-Modern Survey	3
ARH 2XX Modern Survey	3

ARH 3XX Pre-Modern Seminar	3
ARH 3XX Modern Seminar	3

Department of English

Minor in Professional Writing: Its purpose is to develop abilities and versatility in written communication in professional settings, and provide non-English majors with a means of focusing their study on writing. This will address the need for professional communicators in many technical, scientific, and humanities fields, such as arts and medical administration, technical writing in non-profit institutions, and public relations advising to innovative small corporations. Courses will be chosen in consultation with a minor advisor. Normally, the minor will culminate in a field experience, English 496.

The requirements for a minor in Professional Writing are as follows:

3 credit hours in Discourse Analysis:

ENG 225 Topics in Language and Literacy	3
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6 credit hours in Expository Writing:

3 credit hours in:	
ENG 212 Intermediate Composition	3
AND	

3 credit hours to be chosen from the following courses (with appropriate prerequisites):

ENG 301 Advanced Composition	3
ENG 310 Writing and Careers in English	3
ENG 395 English Apprenticeship	3
ENG 401 Topics in Writing	3

9 credit hours in Professional Writing:

3 credits in:	
ENG 317 Business and Technical Writing	3

(ENG 317 must be completed before the last semester of the senior year)

AND

6 credits to be chosen from the following:

ENG 417 Advanced Professional Writing	3
ENG 418 Topics in Professional Writing	3
ENG 496 Field Experience in Professional Writing	3

Department of History

The History minor shall consist of at least 18-22 credit hours of which at least 12 must be upper level courses. These credits should include courses that cover more than one continent and more than one century.

Medieval and Renaissance Studies

The medieval and Renaissance Studies Program opens to students the diverse cultures of Europe, Western Asia, and Northern Africa that thrived within the period from the third century through the seventeenth. It incorporates offerings from the departments of History, English, Modern Languages and Classics, and History of Art to explore issues of social structure, philosophy, religion, politics, language, poetry, prose, and artistic expression from an interdisciplinary perspective.

The minor will consist of 18 credit hours, typically six courses. Students who elect this concentration usually begin their exploration of the period through introductory courses, such as ARH 155, HTY 105, or HTY 202, only one of which counts towards the total credits of the concentration. Students are encouraged to take courses from all of its disciplines.

The course offerings are as follows:

English:

ENG 231 Western Tradition in Literature (also listed as MLC 231)

ENG 251 Survey of British Literature

ENG 253 Shakespeare: Selected Plays

ENG 451 Chaucer and Medieval Literature

ENG 454 Elizabethan and 17th Century Lyric and Narrative Poetry

ENG 476 History of the English Language

History:

HTY 105 History of European Civilization I

HTY 202 Medieval Civilization

HTY 402 History of Rome

HTY 403 The Early Middle Ages

HTY 404 The Late Middle Ages

HTY 405 The Renaissance and Reformation

HTY 419 Science and Society until 1800

HTY 423 History of Russia I

HTY 425 History of Germany I

HTY 427 European Intellectual History I

HTY 455 History of England I

HTY 491 Technology and Society until 1800

History of Art:

ARH 155 Introduction of Western Civilization I

ARH 252 Mediterranean Medieval Art and Architecture

ARH 253 Northern European Art and Architecture

ARH 255 Italian Renaissance Art and Architecture

ARH 257 Northern European Renaissance Art and Architecture

ARH 362 Medieval Art and Architecture Seminar

ARH 363 Renaissance Art and Architecture Seminar

ARH 493 Medieval Research Seminar

ARH 494 Renaissance Research Seminar

Modern Languages and Classics:

MLC 231 Western Tradition in Literature (Also listed as ENG 231)

FRE 404 Medieval and Renaissance French Literature

FRE 504 Seminar in Medieval and Renaissance French Literature

LAT 482 Medieval Latin

SPA 425 Medieval Spanish Literature

Marxist/Socialist Studies

The Marxist/Socialist Course Cluster encourages students to look at the world from a Marxist/Socialist perspective. Many departments offer approaches which have their foundation in the work of such economic theorists as Adam Smith and such political philosophers as Thomas Hobbes and John Locke. Such approaches seem to assume that capitalist values are "natural," "according to human nature," progressive, just, or simply the only way that rational people would view the world. Marxism challenges such assumptions and judgments and such a world outlook.

Course Offerings

All students who elect the Marxist/Socialist Course Cluster should take PHI 342, Marxist Philosophy I: The Philosophy of Karl Marx, and at least three other courses from the "core courses" and two courses from the "elective courses." In addition, these courses should be taken from at least three different disciplines.

CORE COURSES:**Economics**

ECO 431 Contemporary Alternatives in Political Economy

ECO 436 Marxian Economics

English

ENG 470 Topics in Literary Theory and Criticism

History

HTY 448 Latin America: Reform and Revolution

HTY 467-468 20th Century U.S. History

HTY 472 American Labor History

Philosophy

PHI 106 Social Issues in Recent Religious and Philosophical Thought

PHI 342 Marxist Philosophy I: The Philosophy of Karl Marx

PHI 343 Marxist Philosophy II: Twentieth Century Marxist Philosophy

Sociology

SOC 343 Sociology of Work and Labor

ELECTIVE COURSES:

ARH 262 Early Modern Art

ARH 263 Late Modern Art

ARH 351 Art History Theory and Criticism

ARH 352 Critical Methods in History of Art

ARH 362 Medieval Art and Architecture

ARH 363 Renaissance Art and Architecture

Economics

ECO 435 History of Economic Thought

ECO 437 Comparative Economic Systems

ECO 438 Economic Development

English

ENG 429 Topics in Literature: Race, Class, and Gender in 20th Century American Literature

ENG 453 The Works of Shakespeare

ENG 456 The English Romantics

ENG 481 Topics in Women's Literature

History

HTY 272 The Industrial Worker in America

HTY 407 The Age of Revolution, 1789-1860

HTY 409 Twentieth Century Europe, 1919 to Present

HTY 424 History of Russia II

HTY 441 History of Modern China

HTY 473-474 American Diplomatic History

HTY 447 Latin America: Under the Conqueror

HTY 482 Canada and the American Economy

HTY 499 Contemporary Problems in History (The U.S. and Vietnam)

Philosophy

PHI 240 History of Western Social and Political Philosophy

PHI 344 Theories of Justice

PHI 439 Feminist Social and Political Theory

PHI 465 Topics in Philosophy: Freedom, Equality and Community

PHI 465 Topics in Philosophy: Democracy, State and Society

Political Science

POS 336 The Communist Government of the Soviet Union

POS 478 Foreign Policy of the Soviet Union

Sociology

SOC 101 Introduction to Sociology

SOC 202 Social Problems

SOC 213 Deviant Behavior

SOC 314 Law and Society

SOC 460 Major Ideas in Sociology

Speech Communication

SPC 410 Social Influence on Mass Communication

SPC 444 Political Rhetoric

Department of Modern Languages and Classics

The minor is offered in French, German, Latin, Russian, and Spanish. The requirements are a minimum of 12 credit hours above the intermediate level, except for Russian. The minor in Russian consists of the following:
 4 credit hours in: RUS 204
 6 credit hours in: MLC 490.001
 2-3 credit hours in Independent Study

Department of Music

The minor in Music is designed to give the student a significant educational experience in the musical arts. An audition is not required for admission, however auditions are required for studio instruction and some performing ensembles. A non-music major fee structure applies. The requirements are as follows:

Credit hours in lower level Music Theory and Literature:

UL 202 The Art of Listening to Music	3
UL 200 The Art of Listening to Music Lab	1
UY 111 Elementary Harmony I	2
UY 112 Elementary Harmony II	2

Credit hours in advanced Music Theory and History:

JH 2XX	
JY 2XX	

Credit hours in Performance and/or Applied Music:

JO XXX	
JS XXX	
JE 2XX	

Credit hours in music electives to be selected in consultation with the music minor faculty advisor:

JX XXX	
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Department of Philosophy

The requirements for the minor in Philosophy consist of 12 credit hours in Philosophy courses

with at least 6 credit hours to be taken above the 100 level, as well as the following:

3 credit hours in:

PHI 200 Problems in Recent Philosophy	3
<i>3 credit hours to be chosen from:</i>	
PHI 210 History of Ancient Philosophy	3
PHI 312 History of Modern Philosophy	3

Department of Theatre/Dance

The minor in Theatre consist of 21-23 credit hours including these required courses:

15 credit hours in:

THE 112 (or) 113 Masterpieces of World Drama	3
THE 116 Play Production	3
THE 117 Fundamentals of Acting	3
THE 118 Stage Makeup	3
THE 119 Fundamentals of Theatre Practice	3

Plus 6-8 additional credit hours in any Theatre courses at the 200 level or above provided that prerequisites are met.

The minor in dance is designed to provide the student with a basic foundation in dance technique, dance history, and choreography, with a focus towards production and performance. Students will receive dance technique training in ballet, modern, and jazz. In addition students will study composition and gain expertise in choreography. Those students who wish to concentrate in dance history may select from a variety of courses addressing historical and contemporary issues. Dance students are encouraged to participate in the annual dance concert as well as informal studio showings and the activities of the UM Dance Company Club. Production credits may be available for these efforts.

Twelve (12) credits: Required, two semesters of beginner level for each discipline.

DAN 101 Modern Dance (Repeated for credit)	3
DAN 102 Beginner Ballet (Repeated for credit)	3
DAN 250 Dance Composition I (Prior dance experience or permission)	3
<i>2 credits from:</i>	
DAN 201 Intermediate Modern Dance (DAN 101 or Permission)	2
DAN 202 Intermediate Ballet (DAN 102 or permission)	2
DAN 203 Intermediate Jazz (DAN 103 or permission)	2
<i>4 credits from:</i>	
DAN 112 Production/Rehearsal (P/F Audition or permission)	1-2
DAN 266 Dance History	3
DAN 375 Dance in the 20th Century (DAN 266 or permission)	3
DAN XXX Dance technique courses above 100 level	2-4
Total Credits	18

Degree Requirements

Requirements for the B.A. degree are described in a separate section of this catalog dealing with all B.A. degrees at the University of Maine. Questions pertaining to degree programs in the College of Arts and Humanities should be directed to the appropriate department chairperson.

Entrance Requirements

Admission requirements for the College of Arts and Humanities are the same as those for the University and are described elsewhere in this catalog.

Fees

IEI students are charged a set fee for each three-credit course.

Facts about the IEI

The IEI accepts both matriculated and non-matriculated students. Students may enroll in one course in a particular skill area or take a full 20 hour course load. Mid-semester start-ups are allowed. The IEI charges course fees for all courses. International tuition waivers do not necessarily apply to IEI courses although the Institute does offer its own scholarships if funds are available.

The Intensive English Institute

The Intensive English Institute offers English as a Second Language instruction to all those who wish to improve their skills in the English language. Students who study at the IEI are international students who generally wish to improve their English skills for the purpose of succeeding in university courses at both the graduate and undergraduate levels.

Full-time students at the IEI receive twenty hours of instruction per week in the following subjects: reading, writing, speaking, vocabulary and grammar. Depending on their level of competency, students may also take TOEFL preparation classes, language lab, directed study skills and cultural orientation, especially university life.

In addition to its core program, the IEI offers instruction to groups of students who may have a need for improvement in any of the following areas:

- Pronunciation and accent improvement
- English for Special Purposes (business, tourism, etc)
- ESL teacher training programs
- Summer ESL courses
- TOEFL preparation (July and August 6-week and 4-week sessions)

Placement

All Students are given in-house tests to determine the proper level for placement. This test is given on the first day of each quarter startup.

Calendar for 1994 - 1995

May 23 - July 15 : Spring C Intensive English
 July 11 - August 19 : Summer TOEFL A
 August 1 - August 26 : Summer TOEFL B
 September 6 - October 28 : Fall A. Intensive English
 November 30 - December 22 : Fall B. Intensive English
 January 16 - March 3 : Spring A. Intensive English
 March 17 - May 12 : Spring B. Intensive English

Seven Levels of English language training for International students

Level 1 & 2 TOEFL: No score or below 400

Content: Foundation courses in reading, writing, listening, speaking, vocabulary, grammar. Language lab required. Student status: Normally, Level 1 & 2 students are full-time, non-matriculated. IEI students.

Level 3 & 4 TOEFL: 400 - 480

Content: Developmental work in reading, writing, listening, speaking, vocabulary. College prep with TOEFL practice. Student status: Normally, Level 3 & 4 students are full-time. Many have conditional acceptance to UM.

Level 5 & 6 TOEFL: 480 - 550

Content: Academic prep. for college degree work. Advanced coursework in reading, comp., vocabulary, grammar, and speech. TOEFL prep. UM/ cultural studies. Student status: Some Level 5 students are part-time, taking one UM course for credit or non-credit. Conditional acceptance, matric. and nonmatric.

Level 7 TOEFL: 530 - 600

Content: Semester-length courses in comp., the-

sis prep., and interpersonal communication. Cultural studies. Student status: Generally, students are either matriculated or conditional acceptance.

Courses in English as a Foreign Language

IEI 021 Beginning to Low Intermediate English as a Second Language

Basic skills in reading, writing, listening, and speaking are each taught as a separate course five days per week. Because the curriculum is integrated and because each skill complements the other, students are encouraged to study all four skills. Communicative skills are emphasized along with vocabulary enrichment, basic grammar, pronunciation, and cross-cultural understanding. A major theme is learning how to acquire a second language outside the classroom. Language lab is required two hours per week. Placement test given on registration day is required. (Pass/Fail grade only). Cr 3-12.

IEI 022 Intermediate English as a Second Language

Builds on the skills learned in IEI 021. Reading, writing, listening, and speaking are each taught as a separate course five days per week, one hour per day. All courses focus on developing and expanding language learning skills. Reading focuses on skills such as locating main ideas and predicting outcomes. Writing continues to focus on mechanical accuracy and rewriting for clarity, conciseness, and presentation skills. Listening focuses on comprehension of reduced speech, colloquialisms, and speech at various speeds of delivery and formal and informal

registers. Language lab, required two hours per week. Placement test given on registration day is required. (Pass/Fail grade only). Cr 3-12.

IEI 023 High Intermediate English as a Second Language

Reading focuses on academic subject matter. Students learn to form hypotheses and read in a meaningful way. Vocabulary is heavily enriched. Focus is on awareness of reading strategies. Writing continues to develop clear style and proofreading and editing skills. Emphasis is on writing for specific rhetorical purposes. Speaking continues to improve accent. Provides practice in oral summaries, paraphrasing, formal presentation skills, and applying sociolinguistic rules of oral communication. Listening focuses on comprehension of electronic media, notetaking skills, critical listening and comprehension of formal lectures. Weekly language lab and/or lecture required once a week. Placement test given on registration day is required. (Pass/Fail grade only). Cr 3-12.

IEI 024 Academic Composition and Critical Reading

Prepares non-native speakers of English to meet both undergraduate and graduate level standards of presenting their own research in written reports or formal papers. Students will work on critical analysis of research material and writing skills that include analysis, evaluation, response and documentation. Also emphasizes development of the students' skills of critical assessment of their own research and writing. Prerequisite: Permission of the IEI director required. (Pass/Fail grade only). Cr 3-12.



Associate Professor Hicks (Chairperson);
 Professors de Moulpied, Groce, Hartgen (Emeritus), Lewis, Linehan;
 Associate Professors Decker, Ghiz;
 Assistant Professors Grillo, Hoffman, Smith

The B.A. Degree

The Department of Art, as part of the College of Arts and Humanities, offers the opportunity to study studio art, art history and art education within a strong liberal arts curriculum. In addition, it offers a program of study for acquiring teacher certification in the visual arts. As a complement to the traditional humanities, the visual arts induce students to explore non-verbal modes of thinking and communication skills increasingly important in the modern world.

Studio Art

The Art Department offers the B.A. degree in art with a concentration in studio art. The concentration consists of 36 credit hours in studio art (ART) and 12 credit hours in art history (ARH). It is also possible for interested students to take an enriched studio option (48 hours in studio, 12 hours in art history). The emphasis of the art program is creative studio work in the areas of drawing, painting, printmaking and sculpture. Elective studio work is occasionally available in photography and graphic arts. Art history is seen as necessary to intelligent studio development, as is the socializing of the student to the attitudes, philosophies, and language of the contemporary art world.

The studio degree can lead to (1) specialized work as an artist in one of the fine art areas, (2) graduate study in studio art, (3) art related jobs in commercial art, layout, or design. It should be noted, however, that in this specific area we do not offer a specialized program of study.

History of Art

The Art Department also offers the B.A. degree in Art with a concentration in History of Art.

History of Art students begin the program with introductory courses that survey historically significant objects and monuments, including paintings, graphics, drawings, sculptures, pottery, photographs, and architecture, from ancient times through the present. These courses consider form, content, role and meaning of expressive works in light of their social, political, philosophical, and cultural contexts. The program stresses from its foundation courses through its highest level seminars, an awareness of how diverse methodological approaches frame our knowledge of each particular subject.

Advanced courses reflecting the world outlook of the cultures studied, identify four traditions in the history of western art. Geography

Specimen Curriculum for B.A. Degree in Art: Studio			
First Year			
First Semester		Second Semester	
ART 101 Drawing I	3	ART 102 Drawing II	3
ART 111 Basic 2-D Design	3	ART 121 Basic 3-D Design	3
OR		OR	
ART 121 Basic 3-D Design	(3)	ART 111 Basic 2-D Design	(3)
Distribution Requirements, Area I		Distribution Requirements, Area I	
or III	6	or III	6
Elective	3	Elective	3
	<u>15</u>		<u>15</u>
Sophomore Year			
First Semester		Second Semester	
ART 221 Introduction to Sculpture	3	ART 221 Introduction to Sculpture	3
OR		OR	
ART 201 Intermediate Drawing*	(3)	ART 202 Figure Drawing*	(3)
ART 233 Basic Painting I	3	ART 234 Basic Painting II	3
ARH 155 Art History I	3	ARH 156 Art History II	3
Distribution Requirements, Area I		Distribution Requirements, Area I	
or III	6-7	or III	4
	<u>15-16</u>	Elective	<u>1-3</u>
			<u>14-16</u>
*ART 221 is required, and may be taken in either the Fall or Spring semester. Either ART 201 or ART 202 is required in the alternate semester.			
Junior Year			
First Semester		Second Semester	
ART 241 Introduction to Printmaking	3	ART 321/333 Advanced Studio Problems	3
ARH Art History	3	OR	
Electives	9	ART 242 Intermediate Printmaking I	(3)
	<u>15</u>	ARH 262 Modern Art	3
		Electives	9
			<u>15</u>
Senior Year			
First Semester		Second Semester	
ART 321/333 Advanced Studio Problems	3	ART Elective (e.g., ART 321, 333, 341, 397 etc.)	3
Electives	12	Electives	12
	<u>15</u>		<u>15</u>

defines the older two: the Classical Tradition of the Mediterranean World and the Northern European Tradition, which parallel one another in time, running up to the end of the sixteenth century. Time separates the third and fourth traditions; the Enlightenment era studies the seventeenth and eighteenth centuries, while the Modern era explores the nineteenth and twentieth centuries. Two required upper level semi-

nars let students study the principal underpinnings of the field: its essential theories and its critical methods.

In addition to courses in History of Art, the program requires students to take two Studio Art courses to provide insight into the working methods of artists, the creative processes which foster intuitive thinking, and non-verbal conceptualization and articulation. Also, students

ART 132 Fundamentals of Painting II

Exercises in color, technique, and composition including studio and outdoor subjects utilizing all media. Prerequisite: ART 131 or permission. (Not open to art majors). Lab 6. Cr 3.

ART 161 Basic Photography

Fundamentals of black and white photography, including film processing, printing and print control, camera basics, exposure, photographic history, lighting, and the art of photography. Prerequisite: Art majors must have advisors' permission; Arts and Humanities credit. Lab 6. Cr 3.

ART 201 Intermediate Drawing

Advanced study of the unique characteristics of various drawing media: charcoal, conte, pencil, ink, silverpoint. Focus on the creation, imaginative and expressive compositions. Prerequisite: ART 102. Lab 6. Cr 3.

ART 202 Figure Drawing

Creative drawing based on the human figure. Focus on understanding the basics of form and structure in human anatomy and incorporating this understanding with technical and aesthetic mastery of drawing concepts. Prerequisite: ART 102. Lab 6. Cr 3.

ART 211 Graphic Design I

The design of booklets, catalogs, magazines, newspapers, posters, etc. Exercises in lettering and layout. Prerequisite: ART 111 or permission. Lab 6. (Offered on sufficient demand.) Cr 3.

ART 212 Graphic Design II

Continued study of graphic design. Prerequisite: ART 211 or permission. Lab 6. Cr 3.

ART 221 Introduction to Sculpture

Study of sculpture form and expression (control and understanding of spatial relationships). Deals with the manipulation of space and materials through bending, forging, carving, casting, and joining. Students are expected to familiarize themselves with the machines and tools of sculpture. Prerequisite: ART 121. Lab 6. Cr 3.

ART 233 Basic Painting I

Exploration of various painting concepts. Stress on composition, color, technical mastery of media, and creative imagination. Prerequisite: ART 102, ART 111. Lab 6. Cr 3.

ART 234 Basic Painting II

Continued study of painting concepts. Prerequisite: ART 233. Lab 6. Cr 3.

ART 241 Introduction to Printmaking

The fundamentals of intaglio and lithographic printing will be discussed, analyzed and investigated through studio experiences. Emphasis on mastery of technical, aesthetic and expressive elements. Prerequisite: ART 102, ART 111. Lab 6. Cr 3.

ART 242 Intermediate Printmaking I

Study of intermediate studio techniques in intaglio and lithography through creative produc-

Specimen Curriculum for B.A. Degree in Art: Art Education

First Year			
First Semester		Second Semester	
ART 101 Drawing I	3	ART 102 Drawing II	3
ART 111 Basic 2-D Design	3	ART 121 Basic 3-D Design	3
ARH 155 Art History I	3	ARH 155 Art History I	3
OR		OR	
ARH 156 Art History II	(3)	ARH 156 Art History II	(3)
Arts and Humanities Distribution Requirements, Area I or III	3	Arts and Humanities Distribution Requirements, Area I or III	3
PSY 100 General Psychology	3	PSY 100 General Psychology	3
OR		OR	
ENG 101 College Composition	(3)	ENG 101 English Composition	3
	15		15
Sophomore Year			
First Semester		Second Semester	
ART 221 Introduction to Sculpture	3	ART 234 Painting II	3
ART 233 Basic Painting I	3	EDB 221 Educational Psychology	3
ARH 262 Modern Art	3	Arts and Humanities Distribution Requirements, Area I or III	7
EDB 202 The American School	3	Arts and Humanities Elective	3
Arts and Humanities Distribution Requirements, Area I or III	3		16
	15		
Junior Year			
First Semester		Second Semester	
ART 201 Intermediate Drawing	3	Arts and Humanities Elective	3
OR		ART 241 Printmaking	3
ART 202 Figure Drawing	(3)	AED 473 Advanced Curriculum in Art Education	3
AED 371 Methods and Materials in Art Education	3	AED 474 Topics in Art Education	3
AED 372 Foundations of Art Education	3	ARH 351 Art Theory and Criticism	3
AED 373 Introduction to Curriculum	3		15
ARH Upper Level Elective	3		
	15		
Senior Year			
First Semester		Second Semester	
ARH Upper Level Elective	3	STT 494 Full Day Student Teaching	12
ART Upper Level Elective	3		12
SED 402 Mainstreaming Exceptional Students	3		
Arts and Humanities Distribution Requirements, Area I or III	7		
	16		
Summer Session or Overload			
Additional Courses			
Arts and Humanities Electives	6		

tion with emphasis on technical and conceptual advancement. Concentration in the students choice of intaglio or lithography. Prerequisite: ART 241. Lab 6. Cr 3.

ART 321 Advanced Studio Problems in Sculpture I

Advanced, guided study stressing special problems in technique and creative production and interdependence of thought and material in ar-

tistic expression. May be repeated for credit. Prerequisite: ART 221. Lab 6. Cr 3.

ART 333 Advanced Studio Problems in Painting

Advanced, guided study stressing special problems in technique and creative production and the interdependence of thought and material in artistic expression. May be repeated for credit. Prerequisite: ART 234. Lab 6. Cr 3.

ART 341 Intermediate Printmaking II

Study of intermediate studio techniques in the student's choice of intaglio or lithography through creative production. Considerable emphasis is on technical and conceptual advancement. Prerequisite: ART 241. Lab 6. Cr 3.

ART 342 Advanced Printmaking

Study of advanced studio techniques in various printing media. Stress is on mastery of technical, aesthetic, and expressive elements. May be repeated for credit. Prerequisite: ART 242. Lab 6. Cr 3.

ART 397 Independent Study in Art

Advanced independent study or research projects in art and related areas. Prerequisite: Juniors and seniors only, and permission of the instructor. Cr Ar.

ART 398 Directed Study in Art

Advanced independent study or research projects in art and related areas. Prerequisite: Juniors and seniors only, and permission of the instructor. Cr Ar.

ART 496 Field Experience in Art

Students engaged in professional activities related to their area of study may apply for supervision and credit for the project. Prerequisite: Seniors and/or permission. Cr Ar.

ART 497 Independent Study in Studio Art

Advanced studio tutorial in painting, sculpture, printmaking, or related areas. Independent studio research on problems designed by the student. Prerequisite: Permission only. Cr Ar.

ART 498 Directed Study in Studio Art

Advanced studio tutorial in painting, or related areas. Independent studio research on problems designed by the student. Prerequisite: permission. Cr Ar.

AED 171 The Teaching of Art

Current approaches, methods and materials for the teaching of art in the elementary grades. Art Education theory and curricula taught in conjunction with general art knowledge and experiences. Junior or senior elementary education majors or permission. Not open to art education majors. Lec 2, Lab 1. Cr 3.

AED 371 Methods and Materials in Art Education

Introduction to instructional methods and strategies in art education. Exploration, development and evaluation of approaches to teaching, teaching and learning styles, educational materials, media and technologies. Provides an opportunity for in-school teaching observations. Required for art education majors and art certification students. Open to non-art education majors by permission only. Prerequisites: EDB 202 and EDB 221; ART 101, ART 102, ART 111 and ART 121; ARH 155 and ARH 156; 15 credits of college requirements. Corequisites: AED 372 and AED 373. Lec 1, Lab 2. Cr 3.

AED 372 Foundations of Art Education

Includes historical, philosophical, political, psychological and sociological foundations of art

education; theories of child art; and critical examination of current research, trends and issues in art education. Art education majors or art certification students only. Corequisites: AED 371 and AED 373. Lec 3. Cr 3.

AED 373 Introduction to Curriculum

Introduction to art curricula strategies and development. Includes instructional planning, lesson writing and organization, and practicum experience. Art education majors or art certification students only. Corequisite: AED 371 and AED 372. Lec 2, Lab 1. Cr 3.

AED 375 Art Education Workshop and Laboratory

Plan of study, projects and credit arranged. Limited to art education majors. Cr Ar.

AED 473 Advanced Curriculum in Art Education

An examination of current theory, research and practice pertaining to curriculum development in art education. Including an exploration of traditional and innovative approaches to curriculum development in art education, problems and issues relevant to art curricula design and implementation, critical examination of existing curricula, and practice in developing and evaluating art curricula. Art education majors, art certification students or by instructor's permission only. Prerequisites: AED 371, AED 372 and AED 373 or permission. Lec 3. Cr 3.

AED 474 Topics in Art Education

Seminar in advanced research and practice in art education and related areas. Specific topic to be announced. Cr 3.

AED 496 Field Experience in Art Education

Students involved in pre-professional activities with art education in schools or community agencies may apply for supervision and credit for the project. Prerequisite: AED 371, AED 372, AED 373 and permission. Cr Ar.

AED 497 Independent Study in Art Education

Advanced projects, readings, or seminars in art education. Topic and form of study to be determined by student in consultation with faculty member. Prerequisite: AED 371, AED 372, AED 373 or equivalents and permission. Cr Ar.

AED 498 Directed Study in Art Education

Advanced projects, readings, or seminars in art education. Topic and form of study to be determined by student in consultation with faculty member. Prerequisite: AED 371, AED 372, AED 373 or equivalents and permission. Cr Ar.

AED 574 Topics in Art Education

Advanced seminar and workshop with research projects in art education and related areas. Specific topic to be announced or arranged. The course may be repeated once for credit. Prerequisite: Art teaching experience. Cr 3.

ARH 151 Principles of Two-Dimensional Art

An analysis of the fundamental premises underlying such two-dimensional art forms as painting, drawing and printmaking. Not an his-

torical survey, although masterpieces are studied. Lec 3. Cr 3.

ARH 152 Principles of Three-Dimensional Art

An analysis of the fundamental premises underlying such three-dimensional art forms as architecture and sculpture. Not an historical survey, although masterpieces are studied. Lec 3. Cr 3.

ARH 155 Art History I

Introductory survey of painting, sculpture, architecture, and other arts in their various contexts from the Upper Paleolithic and Ancient World to the end of the Middle Ages. Lec 3. Cr 3.

ARH 156 Art History II

Introductory survey of painting, sculpture, architecture, and other arts in their various contexts from the Renaissance to the present. Lec 3. Cr 3.

ARH 162 Modern Architecture and Design

A broad survey of modern European and American architecture and design. Investigates historical building systems and decorations in terms of their relationship to 20th century achievements in building and engineering. Focus on the aesthetic and social ideas of structures, spaces and design as well as key monuments, schools, and major figures. Special emphasis on urban planning and environmental design. Lec 3. Cr 3.

ARH 168 Canadian Art

Survey of Canadian art and architecture from the native peoples to the 20th century. Emphasis on the major ideas and styles and their relationship to American and European prototypes and analogues. Lec 3. Cr 3.

ARH 251 Classical Art

Survey of the art and architecture of Greece and Rome in their historical context since the beginnings of Aegean civilization to the Christianization of the Roman Empire. Prerequisite: ARH 155 or permission. Lec 3. Cr 3.

ARH 252 Mediterranean Medieval Art and Architecture

An in-depth survey of the art and architecture of the Mediterranean world, including Southern Europe, the Mid-East and northern Africa, from the first decades through the fourteenth century, examines how diverse Christian and Islamic cultures built upon the strong legacy of the Classical world. The unique artistic vision of each region spawned cross-cultural developments, facilitated by the relative ease of movement that the Mediterranean permitted. Prerequisite: ARH 155 or permission. Cr 3.

ARH 253 Northern European Medieval Art and Architecture

Surveys the art and architecture of the major civilizations of Northern Europe that developed there from the fourth century through the fifteenth, including the Carolingian, Ottonian, Romanesque and Gothic eras, focusing up

the diversity of particular cultural identities and their interrelationships among one another and the Mediterranean cultures with which they interacted. Prerequisite: ARH 155 or permission. Lec 3. Cr 3.

ARH 255 Italian Renaissance Art
Survey of the major works of painting, sculpture and architecture of the Italian Renaissance in their historical context from the 13th century to the early 16th century. Prerequisite: ARH 156 or permission. Lec 3. Cr 3.

ARH 257 Northern Renaissance Art
Survey of the art of the Netherlands, France, Spain, and Germany in its historical context from Late Gothic of the 14th century to Mannerism of the 16th century. Prerequisite: ARH 155 and ARH 156 or permission. Lec 3. Cr 3.

ARH 258 Baroque Art and Architecture
Surveys the art and architecture of the Baroque era in Southern and Northern Europe, along with their settlements in the Americas, focus on the major shifts in the European world outlook. The course investigates how the art of the period reflects the rise of strong national identities, radically shifting political powers, growing colonialism around the globe, religious reformation and increased interests in empirical knowledge and scientific inquiry. Prerequisite: ARH 156 or permission. Lec 3. Cr 3.

ARH 260 The Modern Classical Tradition
This topical survey develops the Classical tradition in western visual arts from 1700 to 1900 within the broader context of the political, social and cultural changes of the era. It considers issues from the Rococo and Neoclassical movements to Realism, Impressionism and Post-Impressionism. Prerequisite: ARH 156 or permission. Lec 3. Cr 3.

ARH 261 The Modern Romantic Tradition
This topical survey of the romantic tradition in western visual arts from 1700 to 1900 looks to the broader political, social and cultural contexts of the era. This class considers movements in art from Romanticism to Symbolism and Post-Impressionism. Prerequisite: ARH 156 or permission. Lec 3. Cr 3.

ARH 262 Early Modern Art: From Fauvism to Surrealism
A thematic consideration of art and its related concepts from 1900 to 1945, this course places particular emphasis on the notions of modernity and the diversity of artistic forms that the period spawned. Prerequisite: ARH 156 or permission. Lec 3. Cr 3.

ARH 263 Late Modern Art: From Abstract Expressionism Through New Forms
This thematic course considers art forms and conceptual developments from the mid-Twentieth century through the middle of the 1970's. It places particular emphasis on the expanding nature of the work of art and the changing role, place and function of the artist during the period. Prerequisite: ARH 156 or permission. Lec 3. Cr 3.

ARH 351 Art Theory and Criticism
Examination and discussion of aesthetic theory and its relationship to the visual arts; study of a wide range of ideas in the development of aesthetic thought with primary emphasis on contemporary theory; application of theoretical systems in the critical analysis of a work of art. Prerequisite: ARH 155 and ARH 156 or permission. Lec 3. Cr 3.

ARH 352 Critical Methods in History of Art
This seminar immerses students within the historiography of History of Art, making them familiar with the philosophical underpinnings, historical context, rhetorical tones, critical vocabularies and intended goals of each investigative strategy. The exploration of the various methodological approaches that the field has supported includes: Connoisseurship, Iconography, Reception Theory, Marxism, Feminism, Deconstruction, Visual Linguistics and perhaps other emerging schemes. Prerequisite: permission. Lec 3. Cr 3.

ARH 361 Topics in Art History
Identifies and develops a particular topic within the field of History of Art not covered by traditional notions of period, geographic identity, or style. Specific topics will vary from semester to semester. May be repeated for credit. Prerequisite: ARH 155 or ARH 156 or permission. Lec 3. Cr 3.

ARH 362 Medieval Art and Architecture Seminar
Addresses focussed topics within the field of Medieval History of Art, such as the spread of the Gothic style across Europe, the regional flavors of the Romanesque, the relationship between the Byzantine and Roman churches, etc. Students define their own research projects, work with them over the course of the semester, present them within the forum of the seminar and develop them as major papers. Prerequisites: ARH 252, ARH 253 or permission. Cr 3.

ARH 363 Renaissance Art and Architecture Seminar
Addresses focussed topics defined by the instructor within the field of Renaissance History of Art, such as the post-Plague decades of the fourteenth century, the origins of Mannerism, the rise of artistic theory, etc. Students define their own research projects, work with them over the course of the semester, present them within the forum of the seminar and develop them as major papers. Prerequisites: ARH 255 or ARH 257 or permission. Cr 3.

ARH 364 Baroque Art and Architecture Seminar
Addresses focussed topics within the field of Baroque History of Art, such as the development of genre painting, the rise of viewer engagement, visions of the New World, etc. Students define their own research projects, work with them over the course of the semester, present them within the forum of the seminar and develop them as major papers. Prerequisite: ARH 258 or permission. Cr 3.

ARH 365 Nineteenth Century Art and Architecture Seminar
In an in depth consideration, this seminar focuses upon the culture, period, artists or artist or of a particular issue in the history of art and/or architecture of the nineteenth century. Specific topics vary from semester to semester. May be repeated for credit. Prerequisites: ARH 260 or ARH 261 or permission. Cr 3.

ARH 366 Twentieth Century Art and Architecture Seminar
In an in depth consideration, this seminar focuses upon the culture, period, artists or artist, or of a particular issue in the history of art and/or architecture of the twentieth century. Specific topics vary from semester to semester. May be repeated for credit. Prerequisites: ARH 262 or ARH 263 or permission. Cr 3.

ARH 368 History of Art Gender Studies Seminar
In a focussed study, this seminar will identify specific gender issues in the history of art, such as cultural vision and the male-gaze, feminist activism in the arts, gender codings of style, etc. Students will define their own research projects, work with them over the course of the semester, present them within the forum of the seminar and develop them as major papers. Prerequisites: ARH 155 or ARH 156 or permission. Cr 3.

ARH 369 Film and Video Theory Seminar
This seminar identifies specific topics in film and video theory, with careful attention to their critical language, philosophical underpinnings and social contexts and develop them in terms of select examples. Students define their own research projects, work with them over the course of the semester, present them within the forum of the seminar and develop them as major papers. Prerequisites: ARH 155 or ARH 156 or permission. Cr 3.

ARH 397 Independent Study in Art History
Advanced independent study or research and writing projects in the history of art and related areas. Prerequisite: Juniors and seniors only, permission. Cr Ar.

ARH 398 Directed Study in Art History
Advanced independent study or research and writing projects in the history of art and related areas. Prerequisite: Juniors and seniors only, permission. Cr Ar.

ARH 493 Medieval Research Seminar
Focus on special topics selected by the instructor in the field of Medieval History of Art. Students will define and research their own individual projects, present them within the forum of the seminar, with the aim of delivering them at a professional conference and bring them to fruition as publishable papers. Prerequisite: permission. Cr 3.

ARH 494 Renaissance Research Seminar
Focus on special topics selected by the instructor in the field of Renaissance History of Art. Students will define and research their own

individual projects, present them within the forum of the seminar, with the aim of delivering them at a professional conference and bring them to fruition as publishable papers. Prerequisite: permission. Cr 3.

ARH 495 Modern/Post-Modern Seminar

An advanced examination of major theoretical tendencies in modern and contemporary visual art, this seminar stresses connections with the other arts and various conceptual frames, such as Marxism, existentialism, structuralism and

post-structuralism. Entails intensive reading, research and writing on selected topics that vary semester to semester. May be repeated for credit. Prerequisites: ARH 262 or ARH 263 or permission. Cr 3.

ARH 496 Field Experience in Art History

Students engaged in professional activities related to their area of study may apply for supervision and credit for the project. Prerequisite: Juniors and seniors only, permission. Cr Ar.

ARH 497 Independent Study in Art History
Advanced independent study or research and writing projects in the history of art and related areas. Prerequisite: Juniors and seniors only, permission. Cr Ar.

ARH 498 Directed Study in Art History
Advanced directed study or research and writing projects in the history of art and related areas. Prerequisite: Juniors and seniors only, permission. Cr Ar.



English

Associate Professor Kail (Chairperson);
 Professors Bennett, Donovan, Hatlen, Wicks;
 Associate Professors Bauschatz, Brinkley, Brogunier, Brucher, Burnes, Cowan, Evans, Everman,
 Ford, Hunting, Jacobs, MacKnight, Mooney, Nees-Hatlen, Norris, Rogers, Wicks, J. Wilson;
 Assistant Professors Lukens, Weiss;
 Instructors Callaway, Hakola, M. Wilson; Lecturer Pollet

The Department of English offers a variety of courses in literature, film, and writing, as well as specialized courses dealing with language and teaching. The skills these courses develop include reasoning, logical analysis, and persuasive communication, as well as an understanding of literary forms and literary and cultural history. An English major may go on to a number of fields, including teaching, publishing, or journalism, and English is also a valuable pre-professional major for such diverse fields as law, business, and federal service. English is very attractive as a double major, too, as communication skills are important in all other disciplines.

English majors may choose a regular literature program or may elect a program in creative writing, expository writing or professional writing. The requirements for the English major, effective January 1990, are outlined below:

Regular Major

Writing courses (exclusive of ENG 101) including at least 3 hours at the 300-level or above	6
Foundations of Literary Analysis (ENG 270)	3
A year-long survey of American (ENG 241/242), British (ENG 251/252), or World (ENG 231/232) Literature	6
English courses in literature at the 400-level or above, to include at least 9 hours British literature (at least 3 hours Pre-1800), 6 hours American literature, and 3 hours elected from 400-level courses (not to include writing courses)	18
At least three additional hours of courses in English beyond ENG 101 or INT 410	<u>3</u>
TOTAL CREDITS	36

Concentration in Writing (Creative, Expository or Technical)

Writing courses (exclusive of ENG 101) (see item 6 under additional requirements)	12
Foundations of Literary Analysis (ENG 270)	3
A year-long survey of American (ENG 241/242), British (ENG 251/252), or World (ENG 231/232) Literature	6

4. English courses in literature at the 400-level or above, to include at least 9 hours British literature (at least 3 hours Pre-1800) and 6 hours American literature	<u>15</u>
TOTAL CREDITS	36

A typical four-year program in English

First Year	
Regular Major	Concentration in Writing
ENG 101 and one other lower-level ENG course. Prospective English majors are especially encouraged to take ENG 129, which is limited to First Year students.	ENG 101 and one other lower-level ENG course. Prospective English majors are especially encouraged to take ENG 129, which is limited to First Year students.
Sophomore Year	
Regular Major	Concentration in Writing
1. The year-long survey: ENG 231 and ENG 232, or ENG 241 and ENG 242, or ENG 251 and ENG 252. 2. ENG 270 either fall or spring semester. 3. An intermediate-level writing course.	1. The year-long survey: ENG 231 and ENG 232, or ENG 241 and ENG 242, or ENG 251 and ENG 252. 2. ENG 270 either fall or spring semester. 3. ENG 212 (for students in the expository writing track); ENG 205 or 206 (for students in the creative writing track).
Junior Year	
Regular Major	Concentration in Writing
1. Three to four 400-level English courses. 2. An intermediate-level writing course, if not already completed.	1. ENG 307 and/or ENG 308 (for students in the Creative Writing track); ENG 317 and if possible, one other writing course (for students in the Professional Writing track); ENG 301 or ENG 310 or ENG 395 (for students in the Expository Writing track). 2. Two to three 400-level Literature courses, exclusive of writing courses.
Senior Year	
Regular Major	Concentration in Writing
1. Three to four 400-level English courses. 2. An advanced-level writing course (300 or 400 level)	1. ENG 405 and/or 406 (for students in the Creative Writing track); ENG 417, ENG 496, and if necessary, one other writing course (for students in Professional Writing track); ENG 401 or ENG 405 or ENG 406 or ENG 496 (for students in the Expository Writing track). 2. Two to three 400-level English courses, exclusive of writing courses.

Additional Requirements and Considerations:

- At the advisor's discretion, some topics offerings may be designated as satisfying the British or American literature requirements. A maximum of 6 hours in topics courses (i.e., ENG 429, ENG 430, ENG 436, ENG 470, ENG

- 480, and ENG 481) may be taken toward satisfaction of these core requirements.
- The major requires a minimum of 36 hours in English. Students may, however, take up to 48 hours of ENG courses beyond ENG 101.
 - The major requires proficiency in a second language at the intermediate level. Normally, "intermediate proficiency" means the equivalent of four semesters of college work. The final course in the sequence may not be taken Pass/Fail.
 - To satisfy the Junior-level writing proficiency requirement, all majors must place in their student file two papers from literature courses at the 400 level, with statements from instructors of these courses certifying that these papers meet the Junior-level proficiency requirement. See your advisor for specific guidelines.
 - Courses in language and linguistics with INT designation may count as ENG courses.
 - Majors with a Concentration in Writing, which requires 12 hours of writing courses beyond ENG 101, choose a creative writing track, a professional writing track, or an expository writing track. Creative writing students usually take ENG 205 and/or ENG 206, ENG 307 and/or ENG 308, ENG 405 and/or ENG 406. ENG 405 may be repeated for credit. Professional writing students usually take ENG 317, 417 and 496, and one other upper-level writing course with advisor's approval. Expository writing students choose four courses from among the following courses: ENG 212, 301, 310, 395, 401, 405, 406, and 496.
 - Majors in the creative writing track submit a full-length manuscript as part of their graduation requirements.

Graduate Study

The Department of English offers the Master of Arts degree in English. Candidates for this degree may follow the regular literature program or choose a concentration in creative writing or in composition. Students in the literature program may choose either a thesis program of 30 hours (24 of course work and 6 of thesis) or a non-thesis program of not fewer than 30 hours of course work. Students in the creative writing concentration must take 15 hours of course work in literature courses and must complete a creative thesis for which they normally receive 6 hours of thesis credit. Students in the concentration in composition must take 15 hours of course work in literature and 15 hours of course work in rhetorical theory and the teaching of writing. For further details, see the Graduate School Catalog.

Placement in Writing Courses

Satisfactory performance on a one-hour placement examination in writing, administered during New Student Orientation, is required for all students who scored below 460 on the Verbal

SAT or did not take the SAT. Students who scored above 560 on the SAT are eligible to take the placement exam and will receive credit for ENG 101 if their exam is successful. All other students should enroll in ENG 101 during the appropriate semester. Students whose examinations indicate that they do not meet minimum entrance standards for ENG 101 will be required to enroll in ENG 001, The Writer's Workshop, at the first opportunity; this course is a prerequisite for enrollment in ENG 101 for such students and does not carry graduation credit, although it does provide from 1 to 3 semester credit hours.

Courses in English

ENG 001 Writing Workshop

Designed for students who need to develop and to practice the basic writing habits necessary for successful university-level writing. Taught largely on a small group basis. Students will be selected on the basis of their SAT verbal scores and a written diagnostic essay, or on the recommendation of faculty members. See the paragraph "Placement in Writing Courses" above. Credit does not count toward graduation. (Pass/Fail Grade Only). Cr Ar.

ENG 101 College Composition

Students practice the ways in which writing serves to expand, clarify, and order experience and knowledge, with particular attention to persuasive writing. Satisfactory completion of the course depends upon quality of weekly writing assignments as well as demonstration of proficiency in college-level writing. See the paragraph "Placement in Writing Courses" above. Cr 3.

ENG 120 Introduction to Language and Literature

The role of language and literature in human consciousness and action. Students learn the basic elements of expressive and persuasive discourse by reading fiction and by writing imitations and analyses of works studied. May be taken before or after ENG 101. Open only to first and second year students. Cr 3.

ENG 121 Introduction to the Drama

Close reading and analysis of a dozen to fifteen masterpieces of the drama. Prerequisites: open only to first and second year students; ENG 101 is strongly recommended. Cr 3.

ENG 122 Introduction to Poetry

Close reading and analysis of the various kinds of poetry (lyric, narrative, elegiac, occasional, the sonnet, the ode, the epic, etc.) and an examination of the techniques (rhythm, pattern, sound, tone, imagery, metaphor, allusion, for example) used by poets of note. Prerequisite: open only to first and second year students; ENG 101 is strongly recommended. Cr 3.

ENG 123 Introduction to Fiction

Close reading and analysis of selected short stories, novellas, and novels. By considering the elements of fiction such as theme, character,

plot, image, and point of view, students increase their ability to understand and appreciate the art of fiction. Prerequisites: open only to first and second year students; ENG 101 is strongly recommended. Cr

ENG 124 Introduction to Non-Fictional Prose

Extended practice in reading, reacting to, analyzing, evaluating, and imitating a variety of non-fictional forms, such as essays, biographies, and autobiographies. Students write at least 4,000 words over the semester. Prerequisite: ENG 101 or ENG 129. Cr

ENG 129 First-year Seminar in English

An intensive study of texts focusing on a common theme. Specific topics vary. Special attention given to strategies for reading and writing about literary works. Prerequisites: First-year students only. Cr

ENG 205 An Introduction to Creative Writing

Offers students experience in writing in the major forms: autobiographical narrative, fiction, and poetry. Prerequisite: ENG 101 equivalent. Cr

ENG 206 Descriptive and Narrative Writing
Special emphasis on the informal, autobiographical essay. Prerequisite: ENG 101 equivalent. Cr

ENG 212 Intermediate Composition

Designed for students wanting practice in the forms of expository, analytical, and persuasive prose required in the writing of essay test questions, term papers, research projects, and extended arguments. Students write on topics from their own disciplines. Prerequisites: ENG 101 and at least sophomore standing. Cr

ENG 225 Topics in Language

Looks at texts and rhetorical issues which would fall outside traditional genres of literature. Topics are announced in advance. Recent topics have included Language and the Creation of Public Worlds and The Language of Television and Periodicals. Prerequisite: ENG 101. Cr

ENG 229 Topics in Literature

Recent topics have included: science fiction, utopian fiction, literature and the law, literature of the third world and literature of the Vietnam war. Prerequisite: ENG 101 or equivalent and at least sophomore standing. Cr

ENG 230 The Bible as Literature

An exploration of the literature of the Old and New Testaments as they relate to Western literature. The first half of the semester covers primary books of the Old Testament; the second half of the semester covers most of the New Testament. Prerequisite: ENG 101 or equivalent and at least sophomore standing. Cr

ENG 231 Western Tradition in Literature: Homer Through the Renaissance

Survey of the major writers in the Western literary tradition. The development of our culture

heritage and the evolution of major literary forms. Recommended for English majors. Prerequisite: 3 hours of literature or permission. This course is identical with MLC 231.) Cr 3.

ENG 232 Western Tradition in Literature: Enlightenment to 20th Century

Survey of the major writers in the Western literary tradition. The development of our cultural heritage and the evolution of major literary forms. Recommended for English majors. Prerequisite: 3 hours of literature or permission. This course is identical with MLC 232.) Cr 3.

ENG 235 Literature and the Modern World

An examination of the modern sensibility as it was manifested itself in 20th century literature. Some attention also to the history, music, visual arts, social thought, and science of the contemporary epoch. Prerequisite: ENG 101 or equivalent and at least sophomore standing. Cr 3.

ENG 236 Canadian Literature

Survey of Canadian literature from 1850 to the present. Interpretation and analysis of the poetry and prose of major literary figures. Some examination of the impact of British and American models upon the tradition of Canadian literature. Prerequisite: 3 hours of literature or permission. Cr 3.

ENG 241 American Literature Survey: Beginnings Through Romanticism

The major themes, ideas, attitudes and techniques which have developed in our national poetry, fiction, drama, and essay and which have defined them as particularly American. Recommended for English majors. Prerequisite: 3 hours of literature or permission. Cr 3.

ENG 242 American Literature Survey: Realism to The Present

The major themes, ideas, attitudes and techniques which have developed in our national poetry, fiction, drama, and essay and which have defined them as particularly American. Recommended for English majors. Prerequisite: 3 hours of literature or permission. Cr 3.

ENG 243 African-American Literature

Survey of the main traditions and writers in African-American literature from the origins to the present. Prerequisite: ENG 101 or equivalent and at least sophomore standing. Cr 3.

ENG 244 Writers of Maine

The Maine scene and Maine people as presented by Sarah Orne Jewett, E. A. Robinson, Anna St. Vincent Millay, Mary Ellen Chase, R. P. Coffin, Kenneth Roberts, E. B. White, and others. Prerequisite: ENG 101 or equivalent and at least sophomore standing. Cr 3.

ENG 245 American Short Fiction

Study of genre, form, and theme in representative works of American short fiction from the beginning to the present. Prerequisite: ENG 101 or equivalent and at least sophomore standing. Cr 3.

ENG 246 American Women's Literature

Survey of the main traditions and writers in American women's literature from the origins

to the present. Prerequisite: ENG 101 or equivalent and at least sophomore standing. Cr 3.

ENG 251 English Literature Survey: Beginnings Through Neoclassicism

The major patterns of development within the English literary tradition, with emphasis on the cultural and historical forces which have shaped this tradition. Recommended for English majors. Prerequisite: 3 hours of literature or permission. Cr 3.

ENG 252 English Literature Survey: Romanticism to the Present

The major patterns of development within the English literary tradition, with emphasis on the cultural and historical forces which have shaped this tradition. Recommended for English majors. Prerequisite: 3 hours of literature or permission. Cr 3.

ENG 253 Shakespeare: Selected Plays

A study of ten to twelve plays, selected to represent the range of Shakespeare's achievement as a playwright. Recommended for non-majors. Not open to students who have taken ENG 453. Prerequisite: ENG 101 or equivalent and at least sophomore standing. Cr 3.

ENG 256 British Women's Literature

A survey of British women writers and their traditions from the origins to the present. Prerequisite: ENG 101 or equivalent and at least sophomore standing. Cr 3.

ENG 270 Foundations of Literary Analysis

An introduction to the close reading of literature. Students write frequently, exploring how conventions of genre, form, and style work in literature. Required of English majors. Prerequisites: ENG 101 and at least sophomore standing. Cr 3.

ENG 280 Introduction to Film

A survey of the history of motion pictures and an exploration of the rhetoric of film, designed to give students with no prior film study an integrated approach to understanding the moving image and how it functions. Prerequisite: 3 hours of literature. Cr 3.

ENG 301 Advanced Composition

A course in exposition and argument that combines a study of rhetorical theory and practice in developing a command of various expository styles. Prerequisites: ENG 101 and ENG 212 or permission. Cr 3.

ENG 307 Writing Fiction

A course in the writing of fiction, for students of demonstrated ability. Submission of writing sample. Prerequisite: ENG 205 or ENG 206 and approval of a portfolio. Cr 3.

ENG 308 Writing Poetry

A course in the writing of poetry, for students of demonstrated ability. Submission of writing sample. Prerequisite: ENG 205 or ENG 206 and approval of a portfolio. Cr 3.

ENG 310 Writing and Careers in English

Students research, write, and revise scholarly projects in language and literary study, using

methods and sources common to the profession, while exploring issues in the future of the discipline. Prerequisites: ENG 270 and junior standing. Cr 3.

ENG 317 Business and Technical Writing

Supervised practice in the writing of business and technical reports, professional correspondence, and related materials. Prerequisites: ENG 101 or equivalent and junior or senior standing. Cr 3.

ENG 395 English Internship

An advanced course in writing and collaborative learning. Students first experience collaborative work in essay writing, critical reading of peers' essays, and rigorous practice in written and oral criticism. They participate in supervised tutoring in the English Department's writing center. Prerequisite: ENG 101 or equivalent and at least one other writing course (ENG 212, ENG 205, ENG 206, ENG 301, ENG 310, ENG 317), a recommendation from a UM faculty member, and submission of a writing sample. Cr 3.

ENG 401 Topics in Writing

Special topics in expository writing for advanced undergraduate and graduate students. Prerequisite: A 300-level writing course or permission. Cr 3.

ENG 405 Directed Writing

Supervised practice in the writing of the novel, drama, short story, poetry, essay, literary criticism, technical or professional writing. Individual projects for students with demonstrated ability, usually seniors concentrating in writing. Admission by permission of instructor only. ENG 405 and/or ENG 406 may be taken for credit up to a total of 6 credit hours. Cr 3.

ENG 406 Advanced Creative Writing

A workshop course in fiction and poetry at the advanced level. Admission by permission of instructor only. ENG 406 and/or ENG 405 may be taken for up to a total of 6 credit hours. Cr 3.

ENG 417 Advanced Professional Writing

Advanced strategies for researching and analyzing communication problems in the workplace and for adapting documents to a multiple audience. Each student will undertake a major communication project resulting in a professional document. Prerequisite: 6 credits in writing, including ENG 317, and permission. Cr 3.

ENG 418 Topics in Professional Writing

Topics vary according to changes in the field, expertise of the faculty, and needs of the students. Possible topics include editing, document design and desktop publishing, and professional writing in intercultural contexts. Prerequisites: 6 credits in writing, including ENG 317, and permission of instructor. Cr 3.

ENG 429 Topics in Literature

Recent topics have included Contemporary American poetry, Representing the Holocaust, and Black Women Writers. Prerequisite: 6 hours of literature or permission. Cr 3.

ENG 430 Topics in European Literature

Varies in content from generic studies (the novel, the drama) to period studies (the Renaissance, Neo-Classicism). Prerequisite: 6 hours of literature or permission. (This course is identical with MLC 430.) Cr 3.

ENG 435 The Bible and Near Eastern Literature: A Multicultural Perspective

Focuses on the Bible as an anthology of fiction, myth, and polemic arising out of specific cultural and philosophical contexts; exploration of the relationship between Hebrew, Canaanite, Egyptian, Mesopotamian, Greek, Roman, and Christian literature. Prerequisite: 6 hours of literature or permission. Cr 3.

ENG 436 Topics in Canadian Literature

An intensive study of a major Canadian writer or a small group of Canadian writers, or an examination of a major theme in Canadian literature. Specific topic varies from semester to semester. Prerequisite: 6 hours of literature or permission. Cr 3.

ENG 440 Major American Writers

An in-depth study from one to three major American writers. Topics vary, depending on the professor. May be repeated for credit when writers differ. Prerequisite: 6 hours of literature or permission. Cr 3.

ENG 443 The American Romantics

Major works of such early and mid-19th century writers as Irving, Cooper, Emerson, Fuller, Thoreau, Whitman, Poe, Hawthorne, and Melville. Prerequisite: 6 hours of literature or permission. Cr 3.

ENG 444 Contemporary American Fiction

A survey of major trends in American fiction since 1945, such as the continuing tradition of realism, black humor, metafiction and post-modernism, magical realism, hyper-realism, and fiction from African-American, Asian-American, and Native American writers. Cr 3.

ENG 445 The American Novel

Readings from the major American novelists: Stowe, Melville, James, Twain, Dreiser, Wharton, Hemingway, Fitzgerald, Cather, and Faulkner, among others. Focus on thematic, technical, and narrative developments in the 19th and 20th century American novel. Prerequisite: 6 hours of literature or permission. Cr 3.

ENG 446 American Poetry

Readings from the major American poets. One third of the course is devoted to the 19th century and earlier. The last two thirds covers the 20th century: Robinson, Frost, Pound, Eliot, Williams, H.D., Moore, Stevens, H. Crane. Prerequisite: 6 hours of literature or permission. Cr 3.

ENG 447 American Drama

A study of 20th-Century American dramatists, including O'Neill, Hellman, Williams, Miller, Albee, Shepard, Mamet, and Henley. Prerequisite: 6 hours of literature or permission. Cr 3.

ENG 449 Contemporary American Poetry

American poetry written after World War II. Provides students of poetry with both an historical context for the present practice of poetry in the United States and an introduction to the diverse schools of contemporary poetry and poetics. Cr 3.

ENG 451 Chaucer and Medieval Literature

Readings from Chaucer and his English contemporaries. Focus on understanding the nature of the Medieval world and its expression in the literature of the time, and on developing reading skill in Middle English. Prerequisite: 6 hours of literature or permission. Cr 3.

ENG 453 The Works of Shakespeare

Readings in the plays of Shakespeare, with some additional attention to his sonnets and narrative poems. Prerequisite: 6 hours of literature or permission. Cr 3.

ENG 454 Elizabethan and Seventeenth Century Lyric and Narrative Poetry

Readings in the lyric and narrative poets, with particular emphasis on the Elizabethan sonnet, the erotic and religious verse of Donne, the narrative poetry of Spenser and Milton, and the metaphysical and Cavalier poetry of the 17th century. Prerequisite: 6 hours of literature or permission. Cr 3.

ENG 455 Eighteenth-Century Fiction, Satire, and Poetry

Readings from the major 18th-century prose writers, such as Defoe, Richardson, Fielding, Sterne, Smollett, Burney, Addison, Steele, Boswell, Johnson, and Goldsmith; the poets and satirists, Dryden, Swift, Pope and Gray, among others. Focus on the legitimization of emotion and of individualism in literature. Prerequisite: 6 hours of literature or permission. Cr 3.

ENG 456 The English Romantics

The works of the major Romantic poets including Blake, Coleridge, Wordsworth, Byron, Shelley, and Keats, with some attention to their critical writing. Focus on close reading of texts as well as on developing a sense of the historical and intellectual context of Romanticism. Prerequisite: 6 hours of literature or permission. Cr 3.

ENG 457 Victorian Literature and Culture

Readings from the major Victorian British poets, such as Tennyson, Browning, and Arnold; the major essayists, such as Carlyle, Mill, Newman, and Pater. Focus on the major literary and intellectual issues from Romanticism to the beginning of modernism. Prerequisite: 6 hours of literature or permission. Cr 3.

ENG 458 British Modernism

Readings from British fin de siècle and modernist writers such as Thomas Hardy, Oscar Wilde, George Bernard Shaw, W.B. Yeats, D.H. Lawrence, Wilfred Owen, Edith Sitwell, H.G. Wells, Rebecca West, Joseph Conrad, Ford Madox Ford, James Joyce, and Virginia Woolf. The course studies the evolution of British modernism from its roots in the late nineteenth-cen-

tury through and beyond its climax in the early 1920's. Prerequisite: 6 hours of literature or permission. Cr 3.

ENG 459 Contemporary British Literature

Readings from contemporary British writers such as Auden, Orwell, Beckett, Pinter, Spalding, Lesing, Stevie Smith, Murdoch, Dylan Thomas, Seamus Heaney, and Hugh MacDiarmid. Studies the various traditions that have emerged since the advent of modernism and their place in the English tradition. Examines the concepts of "modernism" and "postmodernism," in particular. Cr 3.

ENG 460 Major British Authors

An in-depth study of from one to three major British writers. Topics vary, depending on the professor. May be repeated for credit. Prerequisite: 6 hours of literature or permission. Cr 3.

ENG 465 The English Novel

Readings from the major English novelists: Defoe, Richardson, Fielding, Austen, The Brontës, Gaskell, Eliot, Dickens, and Hardy, among others. Focus on the development of the genre, its characteristic themes and methods, from "low entertainment" to respectable art form. Prerequisite: 6 hours of literature or permission. Cr 3.

ENG 467 British Drama

Readings in the major British dramatists, such as Marlowe, Jonson, Middleton, Webster, Congreve, Sheridan, Wilde, Shaw, Synge, Beckett, and Stoppard. Focus on Renaissance tragedy, Restoration comedy, and modern absurdist drama with some attention to the historical/generic shifts from tragedy to melodrama and from comedy to farce and tragic farce. Prerequisite: 6 hours of literature or permission. Cr 3.

ENG 470 Topics in Literary Theory and Criticism

Studies in the history of literary criticism, selected theoretic perspectives, or in the application of specific critical approaches. Specific topic varies from year to year. Prerequisite: 6 hours of literature or permission. (This course is identical with MLC 473.) Cr 3.

ENG 471 Feminist Literary Criticism

An examination of the major theoretical tendencies in contemporary feminist criticism, stressing connections with Marxist criticism, Freudianism, existentialism, and poststructuralism. Includes a section on feminist aesthetics. Prerequisite: 6 hours of literature. Cr 3.

ENG 472 The Teaching of English in the Secondary School

Principles and practices in the teaching of literature, language, and composition. Prerequisite: 15 hours of literature. INT 410 recommended. Cr 3.

ENG 476 History of the English Language

Main aspects of the development of Modern English from Old and Middle English; words and their backgrounds; changes in sound, form, and meaning. Prerequisite: INT 410 or equivalent. Cr 3.

ENG 477 Modern Grammar

Generative-transformational grammar of English, with emphasis on syntax and semantics. Attention is given to the relation of a transformational to structural grammar. Prerequisite: NT 410 or equivalent. Cr 3.

ENG 480 Topics in Film

A study of film topics at a more advanced level than ENG 280. Specific topics vary from year to year but might include study of a major director(s), of a national cinema, of certain film genres, of aspects of film theory, or of women in films. Prerequisite: 6 hours of literature. Cr 3.

ENG 481 Topics in Women's Literature

An advanced study of specific areas of women's literature: for example, African-American Women's Literature, Women and the Rise of the Novel, Emily Dickinson, etc. Prerequisite: Six hours of literature. Cr 3.

ENG 496 Field Experience in Professional Writing

Students work with businesses, professions, and other organizations approved by the department. The work in the course varies with each student enrolled and with the needs of the cooperating employer but normally involves either research, public relations, reporting, editing, interviewing, indexing, or other allied activity requiring skill in reading and writing. Prerequisite: 24 hours in English, including ENG 212 or ENG 317 and permission. In special cases, some of the prerequisites can be waived. May be repeated for credit up to 6 credit hours. Cr 1-6.

ENG 500 Introduction to Graduate Study of Literature

Required of but not limited to all first-year graduate students in English. Sustained practice in methods of inquiry, expression, and research essential in literary criticism. Cr 3.

ENG 505 Creative Writing Workshop

Discussion of work in progress by students working under faculty direction on extended literary projects. Limited to the creative writing. A concentration. Others by permission. Cr 3.

ENG 529 Studies in Literature

Intended to supplement and allow occasional experiments within the existing curriculum at the 500 level. Cr 3.

ENG 541 American Literature from Colonial to Romantic

Specific period or topic studied may vary from year to year, while recognizing that, overall, the period culminates in the poetry and prose of Emerson, Hawthorne, Poe, Melville, Thoreau, Fuller, and Whitman. Cr 3.

ENG 545 American Realism and Naturalism

Emphasis on fiction, and especially on the novels of Twain, Howells, James, Crane, Dreiser, and Wharton. Cr 3.

ENG 546 Modern American Literature

A study of significant themes, literary and cultural, and the esthetics of such authors as Frost, Williams, Pound, Eliot, Stein, Moore, Crane, Cather, Fitzgerald, Hemingway, Porter, Dos Passos, Faulkner. Cr 3.

ENG 549 Studies in Women's Literature

In depth study of works by and about women focusing on a particular period, group, movement, issue, or individual; e.g., the New England local color school, early women novelists, the Brontes, 20th century African-American literature, contemporary women dramatists. Cr 3.

ENG 551 Medieval English Literature

The major works of the Medieval period, including works by Chaucer, Langland, Malory and the Pearl Poet. Cr 3.

ENG 553 Shakespeare and His Contemporaries

Plays by Shakespeare, Jonson, Middleton, Webster, and Ford, among others. To test dramatic effects and critical principles, the course emphasizes revenge tragedy, city comedy, and tragic farce. Cr 3.

ENG 554 Renaissance and 17th-Century Literature

Readings in the lyric and narrative poetry and in the prose of the period from 1520 to 1660.

Special emphasis on Sidney, Spenser, Donne, and Milton. Cr 3.

ENG 555 Literature of the Enlightenment

Investigates unique features of 18th-century literature: e.g., prose satire, the gothic novel, domestic tragedy, the biography, periodical literature, etc. Cr 3.

ENG 556 English Romanticism

A survey of the six major romantic poets with attention to the critical writings of the period. Cr 3.

ENG 557 Victorian Literature

A study of Victorian poetry, prose, and fiction by the major authors: Carlyle, Tennyson, Browning, Dickens, Newman, Ruskin, Morris, Hardy and Yeats. Cr 3.

ENG 558 Modern British Literature

Readings in such major poets as Hardy, Yeats, Auden, and Dylan Thomas; and such novelists as Conrad, Ford, Forster, Woolf, Joyce, Lawrence and Beckett. Cr 3.

ENG 570 Critical Theory

Readings in the theoretical traditions that have determined the possibilities for scholarship and interpretation in literary criticism, and a consideration of significant contemporary experiments that have redefined these possibilities. Cr 3.

ENG 579 The Theory of Composition

A study in the forms and functions of written language, including recent developments in linguistic, psycholinguistic, and rhetorical theory. (This course is identical with SPC 579). Cr 3.

Interdisciplinary Course**INT 410 (ANT, ENG, MLC) Introduction to the Study of Linguistics**

A survey of language structure and its socio-cultural, psychological and historical aspects. Provides conceptual and technical tools for understanding the phenomenon of language. No previous training in languages or linguistics is required. Cr 3.

History

Professors Baker (Chairperson), Babcock, Blanke, Bregman, Bruchey, Doty, Nadelhaft, Petrik, Segal, Tebrake,
Associate Professors Battick, Ferland, Grab, Judd, Long, Weiner,
Assistant Professors McKillen, McNamara

The Department offers lower level baccalaureate courses (HTY 103-HTY 280), upper level baccalaureate courses (HTY 301-HTY 499), and graduate level courses (HTY 501-HTY 699). Senior history majors may take 500-level graduate courses. Other students may take graduate level courses by permission. Majors must complete at least 12 three-hour courses in history, including:

- A. At least 2 courses at any level from each of the following groups:
 1. United States history
 2. European history
 3. The history of areas outside Europe and the United States or history with either a world-wide or a topical focus.
- B. At least eight intermediate or advanced courses. At least four of these courses must be concentrated in a single geographical, chronological, or topical area. An additional two courses must be grouped into a minor concentration. These must be selected in consultation with the student's history advisor.
- C. At least one senior seminar, normally taken during the student's final undergraduate year. The minimum acceptable grade is C. Students must achieve a 2.0 G.P.A. in their major, pass an English proficiency test, and demonstrate proficiency in a foreign language at the intermediate level either through examination or course work, with a minimum grade of C.

The Department offers an emphasis in the international affairs program. See International Affairs in the index.

The Department offers the M.A. degree in history, with specialties in most areas of history. In cooperation with the Department of Anthropology, the Department also offers a master's program with an emphasis in historical archaeology. The Ph.D. degree is offered in United States History and Canadian-American history. Further details may be found in the Graduate School catalog.

Courses in History

HTY 103 United States History I

Examines the historical experience of the American people through the major ideas and forces that have shaped the Republic. Focus on the exploration of America through post-Civil War Reconstruction. Cr 3.

HTY 104 United States History II

Examines the historical experience of the American people through the major ideas and forces that have shaped the Republic. Focus on the urban-industrial age, liberal political reform, and American world leadership. Cr 3.

HTY 105 History of European Civilization I

Political, economic, social, and intellectual developments in Europe from antiquity to 1715, emphasizing those features which help to explain our present-day civilization. Cr 3.

HTY 106 History of European Civilization II

Political, economic, social, and intellectual developments in Europe from 1715 to the present, emphasizing those features which help to explain our present-day civilization. Cr 3.

HTY 107 East Asian Civilization I

A survey of China's and Japan's social, economic, cultural and political life from prehistoric times to the present. Whenever applicable, Korea and Vietnam will be discussed. Emphasis on key periods in each country, especially changes in the 19th and 20th centuries. Cr 3.

HTY 108 South and Southeast Asia Civilization

A survey of the social, economic, cultural and political life of India and some Southeast Asian countries from prehistoric times to the present. Emphasis on key periods, especially the 19th and 20th centuries. Cr 3.

HTY 109 Introduction to Latin America

The historical experience of the people of Latin America from prior to contact through conquest and colonization, cultural exchange, the social, economic, and political developments following independence in the nineteenth century, and the evolving crises of the twentieth century. Cr 3.

HTY 111 Canada: From Cartier to Trudeau

An overview of Canadian history from the age of the 16th century explorers to the contemporary political scene. Emphasis on the emergence of various regional identities and the evolution of the social formation from colonial times to the modern urban era. Cr 3.

HTY 197 Technology and Society I

A survey of the development of modern technology. The interaction of engineering with other facets of modern society examined in relation to issues of current or recent interest. (This course is identical with TSO 198). Cr 3.

HTY 198 Technology and Society II

A survey of the interaction of modern technology and contemporary societies with emphasis on particular cases and technologies of current interest. Concludes with discussion of possible scenarios for future technological and societal developments based on present trends. (This course is identical with TSO 199). Cr 3.

HTY 199 Problems in History

An analysis of a selected controversial or contemporary historical problem. In some cases the specific topic and methodology may be chosen jointly by interested students and an instructor. Cr 3.

HTY 201 Classical Civilization

A basic introduction to the history, culture, art, and thought of the ancient Greeks and Romans, emphasizing those aspects of the classical world which have had an impact on our civilization. Cr 3.

HTY 202 Medieval Civilization

Investigation of the cultural development of Europe during the Middle Ages, from late Roman times through the 15th century. Develops a broad overview of the distinctively European civilization that emerged during the period. Cr 3.

HTY 210 History of Maine

A survey of Maine's social, economic, and political life, from primitive times to the present. After a brief study of Native American life preceding white settlement, the periods of colonial provincial, and state history are covered. Not for first-year students. Cr 3.

HTY 215 The World in the Twentieth Century I

The response of leaders and ordinary men and women to the events of the first half of the 20th Century: two World Wars and the Great Depression, competitive ideologies of fascism, communism, and democracy, the first stirrings of Asian, African and Latin American self-determination, and popular culture, technology, and morality in the age of the flapper to the end of World War II. Cr 3.

HTY 216 The World in the Twentieth Century II

The response of leaders and ordinary men and women to the world events since World War I: a postwar revolution, a struggle between the USA and USSR, the rise of Asian, African, Latin

American, and Mideast self-determination, and changing popular culture, consumption, morality, and technology from the "baby boomers" to today. Cr 3.

HTY 217 Environmental History of Europe
Changes in the basic interrelationships between nature and human culture, emphasizing the gradual evolution of European society within its physical setting from small, isolated groups of primitive agriculturalists in prehistoric times, through the complex peasant society of the Middle Ages, to the emergence of a highly urbanized, industrialized society today. Cr 3.

HTY 250 History as People: The American Experience as Biography
Major facets of American life from the colonial period to the present explored through lectures on the lives and important actions of representative Americans. The premise of this course is that the past is sometimes best understood through its individual people. Cr 3.

HTY 276 Sports in the Western World
A survey of the origins and evolution of competitive sport from the ancient world to the present with emphasis on the relation of sport to changes in technology, political systems, and social values. Cr 3.

HTY 277 History of the Treatment of the American Environment
The attitude, policies, and behavior of Americans and their government toward the environment. Current issues evolving out of past attitudes and policies. Cr 3.

HTY 278 American Military History
America's experience with warfare, from the colonial period through the Vietnam era. How American wars have been fought, and the complex interrelationship between American society and the military, including economic, political and social factors. Cr 3.

HTY 280 Naval History
The history of navies in the modern period (c. 1700 to the present) including use of naval forces in the achievement of national goals, development of naval technology and tactics, effects of naval construction and manning upon society, sociology of navies, comparison of naval policies in various states, the current balance of navies. Cr 3.

HTY 332 Womanhood in America
Examines the changing experiences of American women from colonial times to the present. Emphasis on what women did and what they were told to do, the experiences of different groups of women, and the ways in which women worked to change their situation. First-year students require permission. Cr 3.

HTY 401 History of Greece
Ancient Greece from the "Heroic Age" to the classical and Hellenistic including discovery of rational thought, the development, crisis, and failure of democracy in classical Athens; unification of city-states and creation of a world

empire that launched a new era in world history. Prerequisite: HTY 201 or HTY 105 or permission. Cr 3.

HTY 402 Roman History
The rise of ancient Rome from a small Italian town to mistress of the Mediterranean. Problems of excessive greatness including failure of a city-state republic to rule a vast empire and triumph of Caesarism. Covers the establishment of the "Roman Peace" under the emperors. "Christianization" and problem of the "Decline of Rome." Prerequisite: HTY 201 or HTY 105 or permission. Cr 3.

HTY 403 Early Middle Ages
Europe from late antiquity to about 950, considering the social, economic, political, and intellectual developments during Merovingian and Carolingian times, emphasizing the early medieval agricultural revolution and reconstructing the factors affecting the lives of ordinary people. Prerequisite: HTY 105 or permission. Cr 3.

HTY 404 Late Middle Ages
Social, economic, political, and intellectual history of Europe from 950 to the Renaissance, focusing on the medieval frontier period and the late medieval era of environmental crisis and economic contraction. Prerequisite: HTY 105 or permission. Cr 3.

HTY 405 The Renaissance and Reformation
The social, intellectual, cultural and economic achievements of the period 1300-1600. The Protestant and Catholic reforms and their effects will be evaluated. (This Fall, the course will focus on the prelude to, and immediate aftermath of, the Columbus voyages, as well.) Prerequisite: HTY 105 or HTY 106 or permission. Cr 3.

HTY 406 The Age of Monarchs, 1600-1789
The socio-economic, political and cultural developments of Europe in the Early Modern period, emphasizing the history of several major countries including France, Prussia, the Austrian Empire and Russia. Prerequisite: HTY 105 or HTY 106 or permission. Cr 3.

HTY 407 The Age of Revolution, 1789-1860
Emphasis on the effects of the Industrial and French Revolutions on European politics, society, and thought, the transformation of a peasant, agrarian world to a middle-class, urban society. Considers the movement from oligarchical to liberal politics, from aristocratic to middle-class tastes, from enlightened thought and the romantic reaction to Marxist and Darwinian intellectual bombshells. Prerequisite: HTY 105 or HTY 106 or permission. Cr 3.

HTY 408 The Age of Liberalism, 1860-1919
Europe from the liberalism of Bismarck, Cavour, Napoleon III, Disraeli, and Gladstone to the rise of mass democracy and the welfare state including the impact of a Second Industrial Revolution, the rise of socialism, emergence of modern thought, World War I, and the Russian

Revolution. Prerequisite: HTY 106 or permission. Cr 3.

HTY 409 Twentieth Century Europe I (1914-1945)
Europe in the age of the two world wars, focusing on the causes and consequences of the wars themselves, concurrent political and economic problems, the challenge of totalitarianism, and the intellectual and cultural contexts. Prerequisite: HTY 105 or HTY 106 or permission. Cr 3.

HTY 410 20th Century Europe II (Since 1945)
Europe in the age of Cold War division, focusing on the contrasting development of prosperous democracies in western Europe and the Soviet imperium in eastern Europe, culminating in the overcoming of this division and this imperium in the revolutions of 1989/1991. Prerequisite: HTY 106 or permission. Cr 3.

HTY 411 The Holocaust
The Nazi persecution and extermination of European Jews (1933-1945) including the exploration of modern anti-Semitism, Nazi ideology, the persecution of German Jews after 1933 and the extermination of six million European Jews in Nazi occupied Europe during the Second World War. Prerequisites: HTY 105 or HTY 106 or permission. Cr 3.

HTY 413 The Evolution of the American Corporation
Intensive reading acquaints the student with the major themes in the historical development of corporate America and "big business" in general, specifically manufacturing. Prerequisite: 6 hours of history or permission. Cr 3.

HTY 414 Law and American Society
Examines our national tendency to attempt to settle our biggest problems—sex discrimination, the death penalty, desegregation—through law. Explains how laws were (and are) made, from federal and state constitutions and legislature to small-town zoning, and how law was (and is) administered by courts and agencies of every sort. Prerequisite: 6 hours of history or permission. Cr 3.

HTY 415 African-American History
Examines the African-American experience both thematically and chronologically, from slavery to emancipation, and the lives of African-Americans in the twentieth century. Includes African survivals and slave culture, the impact of racism, religion, and family on African-American lives, efforts by blacks to improve their lives, and the meaning of their history for contemporary African-Americans. Prerequisites: HTY 103 or HTY 104 or permission. Cr 3.

HTY 416 The American South
The American South is part of the United States, yet its history and traditions are very different from those of the rest of the country. Considers the separate history of the American South, addressing such issues as slavery, the South's failed war for independence, race relations, the

New South, and the civil rights movement. Examines images and stereotypes of the South in popular culture and the question of southern distinctiveness, in order to assess the place of the South in the nation. Prerequisites: HTY 103 or HTY 104 or permission. Cr 3.

HTY 417 The American West From Lewis and Clark to World War Two

Examines the social and political history of America West of the Mississippi River. It is organized around three main themes: land use; lives of inhabitants including Native Americans and Americans of European, African, or Asian origin; the West as an American myth. Covers topics ranging from the fur trade in Native American societies to industrialization during World War Two. Prerequisites: HTY 103 or HTY 104 or permission. Cr 3.

HTY 419 Science and Society Until 1800

Examines the development of science from antiquity to the European Scientific Revolution both 'internally'—as ideas and experiments—and 'externally'—as related to the societies which have produced them and upon which they in turn have had impact. Not open to first-year students. Cr 3.

HTY 420 Science and Society Since 1800

Examines the development of science, with emphasis on America, since the Scientific Revolution both 'internally'—as ideas and experiments—and 'externally'—as related to American and other societies which have produced them and upon which they in turn have had impact. Not open to first-year students. Cr 3.

HTY 422 Modern France

French history since the French Revolution. The internal political and social challenges from the Left and Right in the failure of three monarchies and three republics, the rise and decline of the French empire, economic growth and lag, Gaullism and the Fifth Republic, and French cultural leadership from Romanticism to Existentialism. Prerequisite: HTY 105 or HTY 106 or permission. Cr 3.

HTY 423 History of Russia I

Russian history from the earliest times to the 1870s, including political, economic, cultural and social developments during the Kievan, Tartar, Muscovite, and Imperial periods. Prerequisite: HTY 105 or HTY 106 or permission. Cr 3.

HTY 424 History of Russia II

The history of the Russian Empire and the Soviet Union during the last 125 years, including the problems and achievements of Imperial Russia, World War I and the Bolshevik seizure of power, the development of Communist totalitarianism, Russia as a world power and contemporary dilemmas. Prerequisite: HTY 106 or permission. Cr 3.

HTY 425 History of Germany I

A survey of German history from the earliest times to the mid-19th Century, treating selected political, cultural, economic and social themes

which help illuminate modern Germany. Prerequisite: HTY 105 or HTY 106 or permission. Cr 3.

HTY 426 History of Modern Germany

Includes major political, economic, cultural and social developments during the Imperial, Weimar, National Socialist and Federal Republic eras. Prerequisite: HTY 106 or permission. Cr 3.

HTY 427 Ideas in European Society I

Consideration of those ideas and values which have had the greatest influence on successive periods of European History and the development of Western Civilization to 1700, including various views of human nature, religion, the natural world, politics and economics. Prerequisite: HTY 105 or permission. Cr 3.

HTY 428 Ideas in European Society II

Consideration of those ideas and values which have had the greatest influence on successive periods of European History and on the development of Western Civilization since the 17th Century, including various views of human nature, the state, economics, religion and the natural world. Prerequisite: HTY 106 or permission. Cr 3.

HTY 429 History of Modern Italy

Covers the economic, social, political and cultural developments of the Italian people from 1796 to the present. Explores Italian unification, Fascism and the Italian migration to the U.S. Prerequisite: Six hours of history or permission. Cr 3.

HTY 431 Understanding European History Through Fiction

The discussion of British and European works of fiction as sources for understanding European political and social history from the French Revolution to the present. Prerequisite: HTY 105 or HTY 106 or permission. Cr 3.

HTY 433 Greek and Roman Mythology

The study of classical myths as the poetic expression of the Greek and Roman spirit, as the depiction of everything considered sacred, and as the embodiment of the basic patterns of the human psyche. Discusses the major theories of myth. Uses modern psychology and anthropology to show how the myths reveal secrets of our emotional and intellectual and spiritual lives. Prerequisite: HTY 201 or PHI 101 or LAT 101 or GRE 101 or permission. Cr 3.

HTY 434 Greek and Roman Heritage in America

The influence of Greek and Roman thought on North American culture from the colonial period to the 20th century. Prime examples: the idea of a Classical Republic, Greek architecture, pro and anti-slavery arguments based on Plato and Aristotle. Prerequisite: one of the following: HTY 106-201; PHI 101; LAT 101, LAT 102; GRE 101, GRE 102; ARH 251, ARH 253, POS 589 or permission. Cr 3.

HTY 435 History of China I

History and culture of the Chinese people from earliest times to the 19th century. Prerequisite: HTY 107 or HTY 108 or six hours of history or permission. Cr 3.

HTY 436 History of China II

History and culture of the Chinese people, emphasizing the Western penetration of China, coming of the missionaries and the gunboats, impact of Western ideas, and the resulting nationalist and revolutionary movements. Prerequisite: HTY 107 or HTY 108 or six hours of history, or permission. Cr 3.

HTY 437 History of Modern Japan

The history of Japan during the past century including western penetration, the influence of Western ideas on traditional Japanese culture, the emergence of the modern Japanese industrial state, and the rise and defeat of the Japanese empire. Prerequisite: HTY 107 or HTY 108 or six hours of history or permission. Cr 3.

HTY 441 History of Modern China

An examination of social structure, foreign contact, value change and popular movements from the late Qing (19th century) until present. Emphasis on the relationship between popular uprisings (White Lotus, Muslim Nian, Taiping Boxers, Red Spears, etc.) and the Communist Revolution. The Chinese revolution will be compared to those of other East Asian countries and to general theories of peasant revolt. Prerequisite: HTY 107 or HTY 435 or HTY 436. Cr 3.

HTY 442 The United States and Vietnam: A History

Traces the history of relations between the United States and Vietnam since the beginning of World War II. The economic, social, political ideological and cultural origins of the Vietnam conflict, the conduct of the war and the aftermath in Vietnam, East Asia and the United States will be examined. Prerequisite: HTY 103 or HTY 104 or permission. Cr 3.

HTY 446 History of Modern Middle East (1800-Present)

The economic, social and political transformations experienced by the Middle East in the nineteenth and twentieth centuries. Focus on the rise of Arab nationalism and the Israeli Arab conflict. Prerequisite: One survey course in history. Cr 3.

HTY 447 Latin America: Under the Conquerors

Changes brought by Iberian conquest and colonization in the lives of the native peoples of Latin America. Individual and group resistance and accommodation, contributing to cultural change and continuity. Considerable attention to agrarian and labor themes in the central areas. Prerequisite: HTY 109 or permission. Cr 3.

HTY 448 Latin America: Reform and Revolution

Nineteenth and twentieth-century reform movements and revolutionary struggles in Lat

merica, their local historical roots and their international ramifications. Mexico, Cuba, Central America, and other case studies. Prerequisite: HTY 109 or permission. Cr 3.

HTY 452 Topics in Latin American History
Analysis of varying political, economic, social, and/or cultural topics highlighted in the recent scholarship on Latin American history. Prerequisite: HTY 109 or permission. Cr 3.

HTY 455 History of England I
The political, socio-economic and constitutional aspects of British history from Roman Britain to 1800, emphasizing economic growth and the development of political institutions. Prerequisite: HTY 105 or HTY 106 or six hours of history. Cr 3.

HTY 456 History of England II
The political, socio-economic and constitutional aspects of British history from 1700 to the present, emphasizing economic growth and the development of democracy. Prerequisite: HTY 455 or HTY 106 or six hours of history. Cr 3.

HTY 458 History of French Canada and Franco-Americans
The common historical heritage of French Canadians and Franco-Americans from the establishment of New France and Acadia to the great migrations to the United States in the 19th century. The separate development of French Canadians and Franco-Americans from this point to the present. 6 hours of History. Cr 3.

HTY 459 Colonial Canada
Canada's history from New France to 1850, emphasizing political, social and economic developments and relations with the American people. Prerequisite: HTY 103 or HTY 111 or permission. Cr 3.

HTY 460 Modern Canada
Canada's history from Confederation to the present, emphasizing political, social, and economic developments and Canada's relations with the United States. Prerequisites: HTY 104 or HTY 111 or permission. Cr 3.

HTY 461 America Takes Shape: The Colonies to 1740
The founding and development of the American colonies. Emphasis on the expropriation of native American lands, enslavement of blacks, the role of women, the American family, and internal conflicts. Prerequisite: HTY 103 or permission. Cr 3.

HTY 462 Rebellion and Revolution in America, 1740-1789
The social tensions of a maturing society: rebellions, religious revivals, violence. The origins and consequences of the American Revolution, founding Fathers and the new Constitution. Prerequisite: HTY 103 or permission. Cr 3.

HTY 464 America at the Crossroads: The Era of Civil War Reconstruction, 1840-1876
Problems and processes involved in territorial expansion, economic growth, the slavery issue,

civil war, and the reconstruction of American society. Prerequisite: HTY 103 or permission. Cr 3.

HTY 467 Early 20th Century America, 1914-1945
Changes in American politics, economics, society and culture including the Wilson era of reform and intervention in World War I, the age of business, depression and the New Deal of FDR, World War II and American global power. Prerequisite: HTY 104 or permission. Cr 3.

HTY 468 America Since 1945
Changes in American politics, economics, society and culture including the Cold War and McCarthyism, protest movements of the 1960s, Watergate, the energy crisis and economic recession, affluence and poverty in the 1980s. Prerequisite: HTY 104 or permission. Cr 3.

HTY 473 American Diplomatic History I
American diplomatic history from the revolution to World War I, emphasizing the formation and application of America's major foreign policies. Prerequisite: HTY 103 or HTY 104 or permission. Cr 3.

HTY 474 American Diplomatic History II
American diplomatic history from World War I to the present, emphasizing the formation and application of America's major foreign policies. Prerequisite: HTY 103 or HTY 104 or permission. Cr 3.

HTY 477 The American Worker
Examines changes in the world of work during successive phases of capitalist development since the Revolutionary War. Focus on skilled and unskilled labor, the evolving factory system, public policies and effects of technological change, ethnicity, race and gender on worker responses. Assesses contemporary workplace issues from an historical perspective. Prerequisites: HTY 103, HTY 104 or permission. Cr 3.

HTY 481 Amerindians of the Northeast: A History
Considers Amerindian history from a regional perspective, with emphasis on intersocietal and interethnic relations between the 16th and 19th centuries. It encompasses the Algonquian and Iroquoian speaking peoples from the Atlantic seaboard to the upper Great Lakes and from the Ohio Valley to the Hudson Bay. Cr 3.

HTY 482 Canada and the American Economy
Examines the role and impact of American investment and technology on Canada, relations between American businessmen and Canadian elites, respective industrial relations systems, U.S. trade unions in Canada, trade legislation and other government policies affecting the North American economy. Prerequisite: HTY 459 or HTY 460 or ECO 338 or BUA 345 or permission. Cr 3.

HTY 484 History of Jazz
Origin and development of the American form of improvised music popularly known as

"Jazz." Study and analysis of the styles of Jazz as forms of musical art through exposure to the music, especially as played by major innovators. Prerequisite: HTY 103, HTY 104 or permission. Cr 3.

HTY 485 The Sea and Civilization: An Introduction to Maritime Studies I
A study of humankind in relation to the sea from prehistory to 1800 including demographic and social effects of the seas on human populations, marine technology, economics of the seas, national and international ramifications. Not open to first-year students. Cr 3.

HTY 486 The Sea and Civilization: An Introduction to Maritime Studies II
A study of humankind in relation to the sea from 1800 to the present including demographic and social effects of the seas on human populations, marine technology, economics of the seas, national and international ramifications, contemporary problems. Not open to first-year students. Cr 3.

HTY 491 Technology and Society Until 1800
Examines the development of technology from earliest times through the English Industrial Revolution both 'internally'—as tools and machines—and 'externally'—as related to the societies which have produced them and upon which they in turn have had impact. Not open to first-year students. Cr 3.

HTY 492 Technology and Society Since 1800
Examines the development of technology, with emphasis on America, since the English Industrial Revolution both 'internally'—as tools and machines—and 'externally'—as related to American and other societies which have produced them and upon which they in turn have had impact. Not open to first-year students. Cr 3.

HTY 494 Women, History and American Society: Selected Topics
Examines the changing experiences of American women via several intensive, topical interdisciplinary explorations. Emphasis on women's historical relationship with different institutions or bodies of knowledge. Possible topics include: history of women, family, and the law, women and technology, women and work, or women and racism. May be repeated once for credit. Prerequisite: 6 hours of history or permission. Cr 3.

HTY 495 Cities in Nineteenth-Century America
Considers the challenge of creating viable American cities, 1790-1917; changing urban forms; impact of urban life on culture, politics, and society; problems associated with rapid industrial and demographic growth, ethnic and class cleavage, and new urban technologies. Prerequisites: HTY 103 or HTY 104 or permission. Cr 3.

HTY 496 Protest and Reform in Nineteenth-Century America
Considers America's nineteenth-century political crusades: Jacksonian democracy, the anti-

slavery movement, populism, progressivism, and working-class radicalism. Covers the social tensions that gave rise to these reform movements, the leadership and organizational developments, the issues, the goals, and accomplishments. Prerequisites: HTY 103 or HTY 104 or permission. Cr 3.

HTY 497 The Rise of Industrial America, 1790-1929

Traces the transformation of America into a predominantly industrial society including foundations for the rise of industry, impact on cities and farms, trade and commerce, money and banking, changing forms of business organization, national and international politics. Prerequisites: HTY 103 or HTY 104 or permission. Cr 3.

HTY 498 Senior Seminar in History

Intensive reading, research, and writing under the close supervision of an instructor on a selected problem in American or European history. Required of History majors, offered each semester. Cr 3.

HTY 499 Contemporary Problems in History
In depth analysis of a selected controversial contemporary historical problem. The specific topic and methodology will be chosen jointly by interested students and an instructor. Prerequisite: permission. Cr 1-3.

HTY 501 American Diplomatic History

Advanced reading seminar. Deals with problems, interpretations, and issues in American diplomacy such as maritime neutral rights, expansion, role of military and naval powers. Content varies. Prerequisites: graduate students, senior history majors and others by permission. Cr 3.

HTY 502 American Intellectual History

Advanced reading seminar. Major intellectual currents in American history e.g. Transcendentalism, Pragmatism, progress, mission. Interrelationship between ideas and their social environment. Content varies. Prerequisites: graduate students, senior history majors and others by permission. Cr 3.

HTY 503 American Regional History

Advanced reading seminar. Emphasis on various historically discrete areas, such as the South, West, New England, their distinctive development and interrelationship to broader American history. Content varies. Prerequisites: graduate students, senior history majors and others by permission. Cr 3.

HTY 504 American Economic History

Advanced reading seminar. Study of American economics in its historical setting including major economic theories and their impacts and government-business relationships. Content varies. Prerequisites: graduate students, senior history majors and others by permission. Cr 3.

HTY 505 American Political History

Advanced reading seminar. Covers major political ideas, constitutional and legal develop-

ment, political issues and their impact on American society, political party evolution. Content varies. Prerequisite: graduate students, senior history majors and others by permission. Cr 3.

HTY 506 American Social History

Advanced reading seminar. Emphasis on the problems and issues of family, urban, ethnic, and labor history and historical utilization of social science methods. Content varies. Prerequisites: graduate students, senior history majors and others by permission. Cr 3.

HTY 517 Seminar in Premodern European History

Current research on premodern European history, especially as applied to graduate research and problems of teaching European or World Civilization at secondary school or college level. Cr 3.

HTY 518 Readings Seminar in Modern European History

Reading and discussion of important recent books and articles in modern European history. Emphasis on publications and historical problems which apply to teaching European and world history on the secondary school and college levels, and on preparation for graduate study in European history. Prerequisite: seniors and graduate students. Cr 3.

HTY 519 Modern England

Evaluation of selected problems in English history since 1815 including the gradual democratization of British government, continuing industrial revolution, and impact of two world wars on English social, cultural and political life. Prerequisites: graduate students, senior history majors, and others by permission. Cr 3.

HTY 520 Canadian Historiography

Critical analysis of works by selected historians of Canada from F.X. Garneau to the present. Cr 3.

HTY 521 Canada and the United States, 1783 to the Present

Wars, migration, boundaries, resources, and trade, emphasizing the historical background to contemporary political, strategic, economic, and cultural issues in Canadian-American relations. Prerequisite: HTY 459, HTY 460, or HTY 473, HTY 474 or POS 374 or permission. Cr 3.

HTY 522 Canadian Economic History

History and theory of Canadian staple development including political influences on land, resources, and industrialization policy as well as the social context shaping Canadian business elites and laboring classes and contemporary trends. Prerequisite: HTY 459, HTY 460 or ECO 338 or REP 471 or permission. Cr 3.

HTY 540 Seminar in Modern Asian History

Research-oriented study of major themes of Asian history in the 19th and 20th centuries, impact of Western colonialism, rise of nationalism, and emergence of contemporary leader-

ship in East, Southeast, and South Asia. Prerequisite: graduate students, senior history majors and others by permission. Cr 3.

HTY 550 Readings in Bibliography and Criticism in:

1. American History
2. European History
3. British and Commonwealth History
4. Canadian History
5. Latin American History
6. Asian History
7. Maine History
8. Maritime History

Cr An

HTY 551 Latin America and the United States

United States participation and intervention in Latin American affairs from the early 19th century to the present. Prerequisite: graduate students, senior history majors, and others by permission. Cr 3.

HTY 570 Government-Business Relations in American History

Studies in problems such as federal regulation of business, antitrust policy, the government as entrepreneur and as manager of the economy viewed in historical perspective. Prerequisite: Graduate students, senior history majors and others by permission. Cr 3.

HTY 583 The Maritime Frontier: Policies and Affairs

Examination of the relationship of maritime activity to national development from colonial times to the present, including technological developments, unionization, international competition, relationships to foreign policy, and special assistance to maritime industries. Governmental policies affecting use of the ocean as an economic resource, ranging from fisheries to oil drilling. Prerequisite: Graduate students, senior history majors, and others by permission. Cr 3.

HTY 597 Field Work in Historical Institutions

Field work in local museums, state agencies and other historic laboratories. Involves preparation and repair of exhibits, research and preparation of historic preservation documents and beginning archival and artifact handling. Prerequisite: graduate students, senior history majors and others by permission. Cr 3-12.

HTY 598 Editing and Producing a History Journal

Introduction to the various stages and procedures involved in editing and producing a scholarly journal in history, including editorial revisions, layout, graphics, proofreading, and printing. Practicum format in association with the Maine Historical Society Quarterly (MHSQ). Prerequisite: graduate standing. Cr 1-

HTY 599 Special Topics in History

Exploration and analysis of new trends in research and interpretation in history. Prerequisite: graduate students, senior history majors and others by permission. Cr

Interdisciplinary Course

HTY 537 (HTY) The Evolution and Development of Canadian Government and Politics

Examination of theoretical structure and historical development of government and politics in Canada. Prerequisite: POS 335, HTY 460 or permission. Cr 3.



International Affairs

A student may major in International Affairs in anthropology, economics, foreign languages, history, or political science.

During the first two years, the student of International Affairs should take courses which help to fulfill the distribution requirements for the B.A. degree. Among such courses are ANT 215 Social Anthropology, ECO 120 Principles of Microeconomics and ECO 121 Principles of Macroeconomics, HTY 106 History of European Civilization II, or HTY 107/108 Asian Civilization, POS 100 American Government, and courses in a modern foreign language. Students should consult also with International Affairs advisors in the participating departments regarding other courses they might take. To enter the junior year of the International Affairs program a student must have earned a minimum grade point average of 2.0 or have received permission from the Committee on International Affairs.

Basic Requirements

International Affairs in Anthropology

- A. At least thirty (30) hours in Anthropology, including ANT 215, ANT 217 and ANT 499.
Other courses which might be taken:
- ANT 441 People and Cultures of the Pacific Islands
 - ANT 453 People and Cultures of Mesoamerica
 - ANT 454 Cultures and Societies of the Middle East
 - ANT 464 Cultural Ecology
 - ANT 465 Political Anthropology
 - ANT 466 Economic Anthropology
 - ANT 467 Peasant Studies
 - ANT 468 Social Anthropology of Complex Societies
 - ANT 481 Language and Culture
 - ANT 491 Intercultural Understanding
 - INT 410 Introduction to the Study of Linguistics
 - INT 458 Culture and Economic Change
 - GEO 215 Cultural Geography
 - GEO 350 The Geography of Canada
- B. At least nine (9) hours each in economics, history, and political science from among the following courses:
1. Economics
 - ECO 120 Principles of Microeconomics
 - ECO 121 Principles of Macroeconomics
 - ECO 313 The Economies of Southeast Asia
 - ECO 435 History of Economic Thought
 - ECO 436 Mandaan Economics
 - ECO 437 Comparative Economic Systems
 - ECO 438 Economic Development
 - ECO 439 International Trade and Commercial Policy

2. History

- HTY 107/108 Asian Civilization
- HTY 215/216 The World in the Twentieth Century
- HTY 407 The Age of Revolution: 1789-1860
- HTY 408 The Age of Liberalism: 1860-1919
- HTY 409 Twentieth Century Europe: 1919-present
- HTY 422 Modern France
- HTY 424 History of Russia II
- HTY 426 History of Germany II
- HTY 429 History of Modern Italy
- HTY 437 History of Modern Japan
- HTY 441 History of Modern China
- HTY 446 History of Modern Middle East (1800-present)
- HTY 447 Latin America: Under the Conquerors
- HTY 448 Latin America: Reform and Revolution
- HTY 452 Topics in Latin American History
- HTY 456 History of England II
- HTY 460 Modern Canada
- HTY 473/374 American Diplomatic History

3. Political Science

- POS 121/122 Current World Problems
- POS 223/224 Political Geography
- POS 241 Politics in Contemporary Societies
- POS 243 Canadian Government and Politics
- POS 252 United States-Canadian Relations
- POS 335 Democratic Governments of Europe
- POS 336 The Communist Government of the Soviet Union
- POS 344 Public Policy in Canada
- POS 373 International Relations
- POS 374 United States Foreign Policy
- POS 387 International Law
- POS 388 World Order Through International Organization and Law
- POS 456 Canadian Political Parties
- POS 465 Governments of South Asia
- POS 466 Governments of East Asia
- POS 467 African Politics
- POS 468 Contemporary Politics of Latin America
- POS 475 National Security Analysis
- POS 477 Politics of the Middle East
- POS 478 Foreign Policy of the Soviet Union
- POS 531 Topics in Comparative Politics
- POS 573 Problems in International Politics
- POS 587 Problems in International Law

- C. At least one (1) year of a modern foreign language beyond the intermediate level.

International Affairs in Economics

- A. At least twenty-seven (27) hours in economics, one math course and one statistics course. The course requirements are:
1. Economics
 - ECO 120 Principles of Microeconomics*
 - ECO 121 Principles of Macroeconomics
 - ECO 420 Intermediate Microeconomics
 - ECO 421 Intermediate Macroeconomics
 - ECO 437 Comparative Economic Systems
 - ECO 438 Economic Development
 - ECO 439 International Trade and Commercial Policy and two additional 300-level economics courses.
 2. Math: one math course from the following: MAT 113, Mathematics for Business and Economics, MAT 122 Algebra and Trigonometry, MAT 126, Analytical Geometry and Calculus, MAT 151, Calculus for the Life Sciences I, MAT 241, Mathematical Logic. MAT 126 is recommended for students considering graduate work in economics.
 3. Statistics: one course from the following: MAT 215, Introduction to Statistics for Business and Economics, MAT 232, Principles of Statistical Inference, MAT 433, Introduction to Statistics.
- B. At least nine (9) hours each in anthropology, history, and political science from among the following courses or from among others with an international focus:
1. Anthropology. (See Anthropology listing under International Affairs in Anthropology, A., above.)
 2. History. (See History listing under International Affairs in Anthropology, B., above.)
 3. Political Science. (See Political Science listing under International Affairs in Anthropology, B.3., above.)
- C. At least one (1) year of a modern foreign language beyond the intermediate level.

International Affairs in Modern Languages

- A. Twenty-four (24) hours above the introductory level in one modern foreign language.
- B. At least nine (9) hours each in anthropology, economics, history, and political science from among the following courses or from among others with an international focus:
1. Anthropology. (see Anthropology listing under International Affairs in Anthropology, A., above.)
 2. Economics. (see Economics listing under International Affairs in Anthropology, B.1., above.)

*ECO 110 and either ECO 120 or ECO 121 may substituted with departmental permission. Students taking ECO 120 and ECO 121 may not receive credit for ECO 110.

3. History. (see History listing under International Affairs in Anthropology, B.2., above.)

4. Political Science. (See Political Science listing under International Affairs in Anthropology, B.3., above.)

Additional electives relating to international affairs arranged in consultation with major advisor. Highly recommended: a course in contemporary civilization and geography of the culture whose language is being studied.

International Affairs in History

At least twenty-seven (27) hours in history. Among such courses may be those listed under International Affairs in Anthropology, B.2., History.

At least nine (9) hours each in anthropology, economics, and political science from among the following courses or from among others with an international focus:

1. Anthropology. (see Anthropology listing under International Affairs in Anthropology, A., above.)

2. Economics. (see Economics listing under International Affairs in Anthropology, B.1., above.)

3. Political Science. (See Political Science listing under International Affairs in Anthropology, B.3., above.)

C. At least one (1) year of a modern foreign language beyond the intermediate level.

International Affairs in Political Science

A. At least twenty-four (24) hours in political science in addition to POS 100. Among such courses may be those listed under International Affairs in Anthropology, B.3., above.

B. At least nine (9) hours each in anthropology, economics, and history or among the following courses or from among others with an international focus:

1. Anthropology. (see Anthropology listing under International Affairs in Anthropology, A., above.)

2. Economics. (see Economics listing under International Affairs in Anthropology, B.1., above.)

3. History. (See History listing under International Affairs in Anthropology, B.2., above.)

C. At least one (1) year of a modern foreign language beyond the intermediate level.

Details of programs covering the last two years of study in each discipline may be obtained from the participating departments or from James F. Horan, Coordinator, Committee on International Affairs, 5754 North Stevens Hall, Room 33.



Modern Languages and Classics

Professor Troiano (Chairperson);

Professors Delphendahl, Flemming, March, Small;

Associate Professors Bauschatz, Del Vecchio, L. Riesco-Luszczynska, Passman, Pelleber, Sears, Slott, Zollitsch;

Assistant Professors Hall, Pyles;

Lecturer Herlan

Several departments at the University of Maine have special language requirements or recommendations for B.A. degree students. Some require successful completion of six credit hours of a modern language at the intermediate level. Listed below are the departments that require or recommend a modern language:

Anthropology: Intermediate language proficiency strongly recommended.

Art: Intermediate level French or German is required for students who major in art history.

Chemistry: One year of either French, German, or Russian.

Computer Science: The intermediate level of a modern language is strongly recommended.

English: Proficiency at the intermediate level.

Geology: Students contemplating graduate work are strongly encouraged to take either French, German, or Russian.

History: Students majoring in History are required to demonstrate intermediate level proficiency in a modern language through course work or examination.

Journalism and Mass Communication: Proficiency at the intermediate level.

Mathematics: The intermediate level of a modern language is strongly recommended.

Music: Music - One year of a modern language which can be either the continuation of a language taken in high school or a new language.

Philosophy: One year of a modern language is recommended for the B.A. degree; two years for those going on to graduate study.

Physics: One year of a modern language is recommended for the B.A. degree; two years for those contemplating graduate study.

Political Science: At least one year of a modern language beyond the intermediate level for students majoring in international affairs.

Sociology: Recommended if considering graduate study.

Social Work: Recommended if considering graduate study.

Speech Communication: A modern language may be elected by the student to meet one of the department's outside requirements.

Theater: Proficiency at the intermediate level.

Zoology: Proficiency at the intermediate level.

In addition, B.A. degree students may elect to fulfill one or more of their distribution requirements with a modern language chosen from an approved list.

Students in a B.A. degree program who have presented two years of a high school foreign language for admission will not receive credit for an elementary course in that particular language unless five years have passed between high school graduation and admission to a college or a university. The department recommends that these students take:

A. An intermediate or advanced course in the language studied in high school (credits earned in those courses count towards the advanced course credits in the humanities category)

OR

B. An elementary course in a new language (credits earned here count towards the introductory course credits in the humanities category).

Any language course (except for elementary courses in the student's high school foreign language) can be taken for credit as an elective.

Credits are awarded on a semester basis.

Finding the appropriate level at which to take a language course is essential for success.

During new student orientation, the Foreign Language Placement Examination will be given for purposes of both placement and credit. Only those incoming students who have completed at least three years of a high school foreign language or the equivalent will be tested.

Credit by Examination

1. If your score on the Placement Examination is sufficiently high (see following table), you will receive three hours of degree credit equivalent to the first semester of the intermediate course.
2. As an incentive to continue your language study you are eligible to receive an additional three credit hours, equivalent to the second semester of the intermediate course, by skipping the intermediate course and passing with a grade of "B" or better two semesters of language study beyond the intermediate level. For example, if you were to score 58 on the French examination, you would receive three credits equivalent to FRE 203. You then have the choice of taking FRE 204 or you may skip FRE 204 and take FRE 205 and FRE 209 or 210, or an advanced course. If you complete two courses with a "B" grade or better, then you will receive an additional three credit hours equivalent to FRE 204. If you take FRE 203 or FRE 204 for credit, you cannot receive credit for these courses by examination.

3. If you score extremely high (see table below) you will receive six hours of credit equivalent to the intermediate course. It is highly recommended that you continue to take advanced courses in the language for which you have demonstrated considerable proficiency.

Exam	Score Range	
	3 Hrs. Credit	6 Hrs. Credit
French	53-62	63 and above
German	48-60	61 and above
Spanish	50-59	60 and above

For students who score below the level for which credit is given, the examination results will be used to place such a student in the appropriate level course.

Alternatively, he or she may elect to start a new language for credit.

Certificate of Achievement

The Department of Modern Languages and Classics awards certificates to students who complete twelve hours of language study beyond the intermediate level with at least a C (=3.00 or better) in all four courses.

Majors

Students may major in the following fields: French, German, Spanish, Romance Languages, Modern Languages, Latin and International Affairs.

A. General Requirements for Majors in Modern Languages and Classics

1. Demonstration of listening comprehension, oral, reading, and writing proficiency (students who have not received at least "B" in FRE 205 or 206, or GER 205 or 206, or SPA 205 or 206 may be required to take a test in language skills), and
2. Demonstration of comprehensive coverage of literature and civilization through successful completion of appropriate course work, and
3. Beyond the intermediate level in French, German, and Spanish: 30 hours.

B. Special Requirements for Majors in:

French: 18 hours of 400 level French courses; three hours of French or French-Canadian Civilization. A three-credit course in the history of a Francophone country, and INT 410 are strongly recommended. HTY 105/106 (History of European Civilization), and/or HTY 422 (Modern France) are highly recommended.

German: Introduction to German Literature GER 211 or 212 (or equivalent), 15 hours of 400

el German courses, and HTY 105/106, (History of European Civilization). HTY 425/326 (History of Germany) is highly recommended. *Spanish*: SPA 307 or SPA 308 or equivalent, 18 hours of 400 level Spanish courses, HTY 425/106 (History of European Civilization) or HTY 447/348 (Latin America) are highly recommended.

Romance Languages: A minimum of 30 hours in French and Spanish beyond the intermediate level, at least 24 of which must be in 400 series; a minimum of 12 hours above the intermediate level in each of the two languages must be taken.

Modern Languages: A minimum of 30 hours beyond the intermediate level, representing a combination of either a Romance language and German, a Romance language and Russian, or German and Russian. A minimum of 12 hours above the intermediate level must be taken in each of the two languages and at least 18 hours must be in 400 series courses.

Latin: A minimum of 24 hours in Latin beyond the intermediate 200 level. LAT 247/248 could be taken in the junior year or earlier, if possible. In addition, majors are required to complete successfully 18 hours in two or more related disciplines in the arts and sciences, including other languages and courses in translation offered by the Department. Students intending to pursue Classical Studies on a graduate level also should take six hours in Greek and CLA 101/102.

Interdisciplinary Studies

B.A. in French (North American option) Students may combine a program of 24 hours in French beyond the intermediate level with 18 hours of related work in three of the following departments:

Anthropology: ANT 357, 380, GEO 350

History: HTY 458, 359, 360, 521

Sociology: SOC 431, 338

CAN 101, Introduction to Canadian Studies

In addition, students are required to take FRE 440 and FRE 256.

Linguistics (See interdisciplinary course concentrations in index). Students may combine a program of a minimum of 15 hours distributed as follows:

A. Core At least one course must be completed in each of the following categories for a minimum total of nine credit hours.

1. Introduction
INT 410 Introduction to Linguistics
2. Language Structure
MLC 453 Phonology
ENG 477 Modern Grammar
3. Language in Context
INT 380 Sociolinguistics
ANT 481 Language and Culture
SPC 380 Language and Speech Development

B. Electives Students may select courses from among the following which, when added to those in the core, will complete the total of 15 credit hours.

- ENG 476 History of English Language
ENG 579 Theory of Composition (dual listed as SPC 579)
GER 403 History of German Language
FRE 442 French Language of North America
FRE 499 Applied French Linguistics
FRE 500 History of French Language
FRE 420 French Phonetics
FRE 520 French Linguistics
CDS 483 Anatomy and Physiology of the Speech Mechanism
CDS 484 Introduction to Speech Science
CDS 585 Children's Language Disorders
COS 220 Introduction to Computer Science I
COS 221 Introduction to Computer Science II
COS 301 Programming Languages
COS 470 Introduction to Artificial Intelligence
MAT 241 Mathematical Logic
PHI 260 Philosophy of Language
PHI 450/451 Logic I and II
PHI 463 Theory of Knowledge
PSY 522 Social Development of Children
SPC 256 The Social Process of Interpretation
SPC 454 Communication Development in Children
SPC 405 Women and Communication

The enumeration here is not definitive; new courses, projects, special seminars, or pertinent readings in upper honors courses may be approved for the program.

Note that the three areas of the distribution requirements for the B.A. degree—Humanities and Fine and Performing Arts, Social Sciences, and Natural Sciences and Mathematics—are represented among the courses listed for this concentration. Working toward the latter is therefore compatible with satisfying B.A. distribution requirements.

Although one may fulfill the minimum requirements by taking five courses from Category I and none from Category II, it is expected that students will choose one or more of the elective courses.

Classical Studies

(Please see General Information pages).

International Affairs in Foreign Languages

Students may combine a program of twenty-four hours above the introductory level in French, German, Russian, or Spanish with nine hours in Social Anthropology, and with nine hours each in Economics, History, and Political Sciences from among courses with an international focus (see Index, International Affairs).

Highly recommended is a course in contemporary civilization and geography of the culture whose language is being studied.

Teacher Preparation

In addition to meeting the major requirements in Modern languages, students desiring certification must complete the following:

1. An advanced grammar course (FRE 400, GER 400, SPA 400, RUS 467)
2. A civilization course (FRE 457, GER 402, SPA 457/458)
3. MLC 466 The Teaching of Modern Languages
4. EDB 202, EDB 221, EDB 204, SED 400, one methods course, a practicum experience, one curriculum course, a pre-student teaching seminar, student teaching, and in the case of French majors only FRE 420 (French Phonetics). Students also should register with the College of Education as teacher candidates before the end of the sophomore year.

Study Away

Students majoring in a modern language are encouraged to spend a summer, a semester, or an academic year in a previously approved program of study at a foreign University as a part of their program. Consult the Chair of the department regarding these possibilities. The Modern Languages and Classics Department, in cooperation with the Canadian-American Center, sends students in the Canada Year Program from Orono to Canadian universities. In past years, UMaine students have attended McGill, l'Université Laval, l'Université du Québec and other schools in Canada. Interested candidates should apply to Canada Year, Canadian-American Center, 160 College Avenue.

The Department of Modern Languages and Classics offers a number of core courses in the Canadian Studies Program, which is an interdisciplinary concentration for undergraduates. These courses examine the literature, culture, and civilization of French Canada. The specific listings appear in the French section below.

The University is administering for the Land Grant Universities of New England a Junior Year Abroad Program in Salzburg, Austria; it is affiliated through CIEE (Council of International Education Exchange) with a year or semester abroad study program at Rennes, France, and Seville and Alicante, Spain.

A credit transfer arrangement exists with the Universities of Avignon, and Aix-en-Provence, France, and with the University of Kent in England and a direct exchange of qualified first year students (second semester) with advanced students is sponsored in several German Gymnasien. Arrangements for studies in Canada, e.g., at the Universities of New Brunswick, Nova Scotia, and Québec, can be made through the Canada Year Program.

Up to 36 credits may be earned through these programs, pending previous consent of the Dean, and the department chair involved.

Total immersion programs in French in Québec, in German and in Spanish are offered during the May Term (FRE, GER, SPA 297), three credits per program.

Graduate Study

The department also offers work leading to a Master's Degree in French and M.A.T. degrees in French, German, and Spanish. See the Graduate School catalog, as well as the Summer Session Catalog, for special aspects involved when the degree is on other than full-time basis.

Modern Languages and Classics Offerings in English

The following courses make available in English the literature and civilization of Continental Europe and South America. They are taught by the same faculty who would ordinarily teach them in the national language for majors, in the English format, most of the courses will satisfy humanities requirements for B.A. students and will serve as electives for any other students.

Courses in Modern Languages and Classics in English

CLA 101 Greek Literature in English Translation

A survey of Greek literature. No knowledge of Greek is necessary. Cr 3.

CLA 102 Latin Literature in English Translation

A survey of Latin literature. No knowledge of Latin is necessary. Cr 3.

Courses in French

FRE 101 Elementary French I

A systematic study of the basics of the French language. Equal emphasis is placed on developing reading, comprehension, speaking and writing skills. For students with no previous study of French or fewer than two years in high school. Cr 3-4.

FRE 102 Elementary French II

Continued study of the basics of the French language with equal emphasis on developing reading, comprehension, speaking and writing skills. For students with no previous study of French or fewer than two year in high school. Prerequisite: FRE 101 or equivalent. Cr 3-4.

FRE 199 Review French

For students who have taken 2 or more year of high school French, but do not feel ready to complete the FRE 203-204 sequence. Fast-paced review of basic grammar, pronunciation and vocabulary, with strong emphasis on oral communication. This is not the equivalent of FRE 203/204 level language courses. 2 class meet-

ings per week, with substantial listening and writing assignments. Prerequisite: 2 years of high school French or permission. Lec 2. Cr 2.

FRE 203 Intermediate French I

An integrated approach. Reading texts of a literary and/or cultural nature, and audio-visual materials will be employed to strengthen reading, writing and especially speaking and comprehension skills. Includes a systematic but gradual review of the essentials of French grammar. Prerequisite: FRE 102 or equivalent. Cr 3-4.

FRE 204 Intermediate French II

A continuation of FRE 203. Designed to strengthen reading, writing, speaking and comprehension skills. Prerequisite: FRE 203 or equivalent. Cr 3-4.

FRE 205 French Conversation and Composition I

Systematic training in the correct usage of spoken and written French through a broad range of conversational situations and writing topics. Prerequisite: FRE 204 or equivalent. Cr 3.

FRE 206 French Conversation and Composition II

Continued training in the correct usage of spoken and written French. Prerequisite: FRE 205 or equivalent. Cr 3.

FRE 207 French Diction

The pronunciation of French, with attention also to the rudiments of structure. Primarily a service course for the School of Performing Arts and Speech, e.g. vocalists, actors, radio and television announcers. Cr 1.

FRE 208 French Play Production

Participation in the acting and production of plays in the foreign language. Prerequisite: permission of the instructor. May be repeated for credit. Cr 3.

FRE 209 Readings in French Literature I

Practice in reading French. Also prepares students for literature and civilization courses at the 400 level. Discussion in French. Prerequisite: FRE 204 or the equivalent. Cr 3.

FRE 210 Readings in French Literature II

Continued practice in reading and discussion in French. Prerequisite: FRE 204 or the equivalent. Cr 3.

FRE 215 Advanced French Conversation

Oral practice for the advanced language student. Course work revolves around the discussion of cultural and intellectual issues, as well as current political and social events, with a view toward increasing idiomatic and abstract vocabulary. Prerequisite: FRE 204 or equivalent. Cr 3.

FRE 254 Popular Culture in French Canada

An examination of modern Quebec society through the study of written texts (fiction, magazines, newspapers, etc.) films, video tapes, and audio recordings that reflect "popular" culture as opposed to "high" culture. Prerequisite: FRE 205, FRE 206 or permission. Cr 3.

FRE 256 French Canadian Civilization

An introductory course which examines the literature and social history of French Canada and will attempt to explain the contemporary culture of Quebec. Prerequisite: FRE 204 or equivalent. Cr 3.

FRE 297 French May-Term

Total Immersion Program. Prerequisite: FRE 204 or permission of instructor. Cr 3.

FRE 400 Advanced French Grammar and Composition

Designed to enhance competence in the areas of French grammar, syntax and written expression. An exposition of grammatical and syntactical principles through composition practice. Prerequisite: FRE 205 or FRE 206 or permission of instructor. Cr 3.

FRE 401 Theme et Version

Translation from French into English and from English into French of texts exemplifying various modes of written expression. Prerequisite: FRE 400 or permission of instructor. Cr 3.

FRE 404 Medieval and Renaissance French Literature

Origin, formation and development of a national literature as seen through prose, poetry and theater through the 16th century. Prerequisite: FRE 209 or FRE 210 or permission of instructor. Cr 3.

FRE 405 Seventeenth Century French Literature

Literary trends in French classicism: Descartes, Pascal, Corneille, Racine, Moliere, La Fontaine, Lafayette. Prerequisite: FRE 209 or FRE 210 or permission. Cr 3.

FRE 406 Eighteenth Century French Literature

Readings from the works of Montesquieu, Voltaire, Rousseau, Diderot, etc., with special attention to Enlightenment thought and to the novel genre. Prerequisites: FRE 209 or FRE 210 or permission of instructor. Cr 3.

FRE 407 19th Century French Literature

Readings of major 19th century figures, including Chateaubriand, Hugo, Flaubert, Zola, Balzac, Stendhal, Sand, and Baudelaire, with particular attention to social and philosophical themes as well as concepts of language. Prerequisite: FRE 209 or FRE 210 or permission of instructor. Cr 3.

FRE 408 Twentieth Century French Literature

Readings in the novel, poetry or drama (contemporary). Prerequisite: FRE 209 or FRE 210 or permission of instructor. May be repeated for credit, with permission of instructor. Cr 3.

FRE 409 French Critical Methodology

Examination of European critical methods from 19th century to present. Special attention to concepts of history and structural method. Prerequisite: FRE 209 or FRE 210 or permission of instructor. Cr 3.

E 420 French Phonetics

Normal study of the French sound system with considerable practice in phonetic transcription. Practical and remedial work in pronunciation. Prerequisite: FRE 204 or the equivalent. Cr 3.

E 440 Franco-American Civilization

Interdisciplinary study of the French heritage in North America. Cr 3.

E 442 French Language of North America

Historical, linguistic and socio-linguistic approach to the study of the Franco-Quebecois and the Franco-American languages. Emphasis on the morphology, syntax, vocabulary and phonetic system in order to understand the present status of the languages. Research in the areas of the spoken and written language. Competency in reading and oral comprehension of French are recommended. Cr 3.

E 452 The Novel of Quebec

Examination of the evolution of the novel in Quebec from 1915 to the present: roman de la terre, the urban novel, the new novel. Authors studied will include Hemon, Grignon, Guevrent, Ringuet, Roy, Hebert and Aquin. Prerequisite: FRE 209 or FRE 210 or permission. Cr 3.

E 456 Seminar in Quebec Studies

Advanced study of the more complex issues which Quebec has had to confront. Students will be expected to conduct some research and report their findings. Prerequisite: FRE 256 or permission. Cr 3.

E 457 French Civilization

Readings, discussions, lectures, written and oral reports on varied aspects of French Civilization, its people, attitudes, institutions, and culture. Prerequisite: FRE 204 or the equivalent. Cr 3.

E 460 Black African Literature in French

Lectures, readings and discussion of representative novelists, dramatists and poets of Black French Africa from 1930 to the present. Prerequisite: A reading knowledge of French or permission of the instructor. Cr 3.

E 490 Topics in French

Topics in French and French-Canadian literature may include: contemporary cinema, surrealism, contemporary French thought, modern French critical theory, semiotics, symbolism, literature of commitment, images of women, modern writers. Topics vary. May be repeated for credit. Prerequisite: FRE 209 or FRE 210 or permission. Cr 1-3.

E 497 Independent Projects I (Undergraduate).

Cr 1-3.

E 498 Independent Projects II (Undergraduate).

Cr 1-3.

E 499 Applied French Linguistics

Study of the French sound system, spoken grammar, basic concepts of descriptive and general linguistics. Cr 3.

FRE 500 History of the French Language

Study of the evolution of standard and regional French from the earliest times to the present. Cr 3.

FRE 504 Seminar in Medieval and Renaissance Literature

History and development of literary ideas expressed through the epic, theater, romance and poetry of the Medieval period. Readings from the major writers of the French Renaissance: Rabelais, Montaigne, DuBellay, Ronsard. Cr 3.

FRE 505 Seminar in French Classicism

Aspects, groups, and genres in literature of the 17th century. Special emphasis on Corneille, Descartes, Pascal, Racine and Moliere. Cr 3.

FRE 506 Seminar in Literature of the Eighteenth Century

Individual writers, genres, or themes. Special emphasis on Montesquieu, Prevost, Voltaire, Rousseau and Diderot. Cr 3.

FRE 507 Seminar in Literature of the Nineteenth Century

Individual writers, genres, or themes. Special emphasis on Hugo, Stendhal, Balzac, Flaubert, Zola, and Baudelaire. Cr 3.

FRE 508 Seminar in the Novel

Trends and periods in development of the novel and narrative form in France. Content varies from year to year. May be repeated for credit. Cr 3.

FRE 509 Seminar in Poetry

Movements in French poetry. The periods, groups and trends studied vary year to year. Course may be repeated for credit. Cr 3.

FRE 510 Seminar in the Theatre

Content varies year to year. Course may be repeated for credit. Cr 3.

FRE 512 Contemporary French Political and Social Institutions

An investigation into political and social institutions which constitute the fabric of contemporary France. Cr 3.

FRE 513 English-French Translation

Intensive practice in the art of rendering English thought in French. Prerequisite: FRE 400 or FRE 401 or equivalent. Cr 3.

FRE 520 French Linguistics

French phonology and morphology studied from the generative transformational viewpoint. Analysis of selected areas of French grammar. Attention given to historical development of the language in relation to its present structure. Prerequisite: INT 410 or FRE 420 or permission. Cr 3.

FRE 550 Seminar in French-Canadian Literature and Language

Lectures, readings and analyses of representative literature of modern French Canada, with emphasis on the novel. Attention given to linguistic and cultural patterns, including those

affecting New England. Prerequisite: at least one course in French literature or permission. Cr 3.

FRE 552 Films, Video Drama and Literature in French Canada

Visual dramas will be compared with the literary works from which they evolved. The cultural impact of these dramas will be studied within the context of current Canadian issues. Cr 3.

FRE 591 Individual Authors I

Cr 3.

FRE 592 Individual Authors II

Cr 3.

FRE 597 Projects in French I

Cr 3.

FRE 598 Projects in French II

Cr 3.

Courses in German**GER 101 Elementary German I**

The basics of the German language. Emphasis on developing reading, comprehension, speaking and writing skills. For students with no previous study of German or fewer than two years in high school. Cr 3-4.

GER 102 Elementary German II

Continued study of the basics of the German Language. Emphasis on developing reading, comprehension, speaking and writing skills. For students with no previous study of German or fewer than two years in high school. Prerequisite: GER 101 or equivalent. Cr 3-4.

GER 121 Elementary German (Accelerated) I

A systematic study of the basics of the German language. For students with no previous study of German or fewer than two years in high school. This course must be taken in combination with GER 122 in one semester. A full year's work covered in one semester. Cr 6.

GER 122 Elementary German (Accelerated) II

Must be taken in combination with GER 121 in one semester. A full year's work covered in one semester. Cr 6.

GER 199 Review German

For students who have taken 2 or more year of high school German, but do not feel ready to complete the GER 203-204 sequence. Fast-paced review of basic grammar, pronunciation and vocabulary, with strong emphasis on oral communication. This is not the equivalent of GER 203/204 level language courses. 2 class meetings per week, with substantial listening and writing assignments. Prerequisite: 2 years of high school German or permission. Lec 2. Cr 2.

GER 203 Intermediate German I

An integrated approach. Reading texts as well as various audiovisual materials will be employed to strengthen reading, writing and especially speaking and comprehension skills. Includes a systematic but gradual review of the essentials of German grammar. Prerequisite: GER 102 or equivalent. Cr 3-4.

GER 204 Intermediate German II

A continuation of GER 203. Designed to strengthen reading, writing, speaking and comprehension skills. Prerequisite: GER 203 or equivalent. Cr 3-4.

GER 205 Practical German I

Conversational and composition language course designed to further develop students' comprehension, speaking and writing skills for everyday use. All classes are conducted in German. Prerequisite: GER 204 or equivalent. Cr 3.

GER 206 Practical German II

Continued conversation and composition. Prerequisite: GER 204, GER 205 or equivalent. Cr 3.

GER 207 Readings in Scientific German

For students who have completed GER 203 or equivalent and wish to be able to read scientific articles in German. The second half of the semester will be devoted to individualized readings in the student's special field of interest. Prerequisite: GER 203 or equivalent. Can be taken as an alternate to GER 204; also serves as preparation for meeting graduate school language requirements. Cr 3.

GER 208 German Play Production

Participation in the acting and production of plays in the German language. May be repeated for credit. Prerequisite: Permission. Cr 1-3.

GER 209 German Diction

The pronunciation of German, with some attention also to the rudiments of structure. Primarily a service course for the School of Performing Arts and Speech, e.g., vocalists, actors, and television announcers. Cr 1.

GER 210 Business German

Develops skills in a specialized branch of the German language through reading, some writing of business correspondence, and practical conversation. Provides enrichment for those working toward degrees in fields (e.g., International Affairs) where a knowledge of the present social and economic climate of Germany is important. Prerequisite: GER 203 or equivalent. Can be taken instead of GER 204. Offered in alternate years with GER 207. Cr 3.

GER 223 Intermediate German (Accelerated) I

For students who have completed GER 102 or GER 121, GER 122 or the equivalent in high school as determined by a placement test. Corequisite: must be taken in combination with GER 224 in one semester. A full year's work covered in one semester. Cr 6.

GER 224 Intermediate German (Accelerated) II

Must be taken in combination with GER 223 in one semester. A full year's work covered in one semester. Cr 3.

GER 297 German May-Term

A fifteen-day, off-campus, total immersion program on Lake Megunticook near Camden, Maine. Prerequisite: Permission of instructor. Cr 3.

GER 311 Readings in German Literature I

An introduction to German literature and culture. Reading selections from contemporary literary texts and current events. Prepares students for literature and civilization courses at the 400 level. Prerequisite: GER 204 or equivalent. Cr 3.

GER 312 Introduction to German Literature II

Introduces students to German literature and culture. Reading selections are based on contemporary literary texts. Prepare students for literature and civilization courses at the 400 level. Prerequisite: GER 204 or equivalent. Cr 3.

GER 400 Advanced German Grammar and Stylistics

Advanced study of German grammar, syntax, and composition, especially for prospective teachers. An exposition of grammatical and syntactical principles through exercises and composition practice. Prerequisites: GER 205, GER 206 or equivalent, or permission of instructor. Cr 3.

GER 401 German Civilization

Readings, discussions, lectures, oral and written reports on Germany, its people, institutions, and culture provide background essential to an understanding of German literature, thought, and artistic expression. Prerequisite: GER 204 or the equivalent. Cr 3.

GER 402 Contemporary Germany

A study of modern German civilization and *Landeskunde*; the political, social and intellectual development of Germany from 1945 to present. Prerequisite: GER 204 or the equivalent. Cr 3.

GER 403 History of the German Language

Studies the development of the German language from Indoeuropean times to the present. Places present day German in its linguistic perspective, and examines the reasons and origins of specific forms, patterns and usages. Provides the prospective teacher with a linguistic background in German. Prerequisite: GER 204 or the equivalent. Cr 3.

GER 405 Enlightenment and "Storm and Stress"

Masterpieces of prose, drama, poetry, and essays in critical thought from the 18th century. Special emphasis will be given to Lessing, young Goethe, and Schiller. Prerequisite: GER 204. Cr 3.

GER 406 Goethe

Readings from selected works of prose, poetry and drama from Goethe's classical period, with lectures on historical background and influence on later German literature. Cr 3.

GER 407 Schiller

Selected works of poetry, drama, and critical writings from Schiller's classical period, including historical background and influence on later German literature. Prerequisite: GER 204. Cr 3.

GER 408 The Romantic School

Readings from works of major authors of the Romantic School, including Novalis, Schlegel, Tieck, Wackenroder, Brentano, E.T.A. Hoffmann, and Eichendorff. Prerequisite: GER 204. Cr 3.

GER 410 German Literature from 1832 to the Turn of the Century

Readings from representative works of the 19th century realists, with special emphasis on the *Novelle*. Prerequisite: GER 204. Cr 3.

GER 411 German Literature of the 20th Century I

Readings and discussions of representative authors of the 20th century. Emphasis on literature before 1945. Prerequisite: GER 204. Cr 3.

GER 412 German Literature of the 20th Century II

Readings and discussions of representative authors of the 20th century. Focus on the development of new techniques in the novel, *Novelle*, and drama in the Germanys, Austria and Switzerland of the post-war era. Prerequisite: GER 204 or the equivalent. Cr 3.

GER 490 Topics in German

Specific topics vary from semester to semester. May be repeated for credit. Cr 1-3.

GER 497 Projects in German I (undergraduate)

Cr 1-1

GER 498 Projects in German II (undergraduate)

Cr 1-1

GER 597 Projects in German I

Specific projects vary from semester to semester depending on the needs of the graduate student and the skills of the faculty member. May be repeated for credit. Cr 1-1.

GER 598 Projects in German II

Specific projects vary from semester to semester depending on the needs of the graduate student and the skills of the faculty member. May be repeated for credit. Cr 1-3.

Courses in Greek**GRE 101 Elementary Greek I**

Fundamentals of the Greek language for students who have had little or no preparation in ancient Greek. Prerequisite: intermediate language skill in another language or permission of the instructor. Cr 4.

GRE 102 Elementary Greek II

Fundamentals of the Greek language for students who have had little or no preparation in ancient Greek. Prerequisite: intermediate language skill in another language or permission of instructor and GRE 101 or equivalent. Cr 4.

GRE 203 Readings in Greek Literature I

Selections from the work of one prose author and one playwright, including Xenophon, Plato, and the Tragedians. Cr 3.

E 204 Readings in Greek Literature II
Selected readings from the works of Homer and
Hesiod. Cr 3.

Courses in Italian

I 215 Italian Diction
Pronunciation of Italian, with some atten-
tion to the rudiments of structure. Designed
primarily for singers but may also be elected by
others. Cr 1.

Courses in Latin

L 101 Elementary Latin I
Fundamentals of the Latin language. Cr 4.

L 102 Elementary Latin II
Fundamentals of the Latin language. Prereq-
uisite: LAT 101 or equivalent. Cr 4.

L 199 Review Latin
A fast-paced review of elementary Latin gram-
mar for those who have taken two or more year
high school Latin but do not feel qualified to
advance on to LAT 203/204; substantial written as-
sessment. The course is also appropriate for
students at all levels who have been away from
Latin for sometime and wish to review their
Latin skills. This class is not the equivalent of
LAT 203/204 level language courses. Prereq-
uisite: 2 years of high school Latin or permission
of instructor. Lec 2. Cr 3.

L 203 Readings in Latin Literature I
Selected readings from Latin prose authors: Cicero,
Caesar, the letters of Pliny. Facility in reading
and enough grammatical analysis will be empha-
sized. Cr 3.

L 204 Readings in Latin Literature II
Selected readings from Latin poetry. Meter, scansion
and the interpretation of poetry will be empha-
sized. Prerequisite: LAT 203 or equivalent or per-
mission of instructor. Cr 3.

**L 247 Latin Prose Composition and
Stylistics I**
Review of grammar and syntax, with particular
attention to Cicero and Tacitus. The writing of
prose, especially in the style of Cicero. Required
for majors; should be taken in the junior year or
earlier, if possible. Prerequisite: LAT 204 or the
equivalent or permission of instructor. Cr 3.

**L 248 Latin Prose Composition and
Stylistics II**
Continued study of grammar and syntax. Re-
quired for majors; should be taken in the junior
year or earlier, if possible. Prerequisite: LAT 247
or permission of instructor. Cr 3.

**L 451 Roman Comedy: Plautus and
Terence**
A study of the source of Roman comedy, its
primary features, and influence upon later litera-
ture. One play by each dramatist will be read.
Offered every three years. Prerequisite: LAT 204
or permission. Cr 3.

LAT 452 Roman Philosophical Thought
Examines the three major philosophical
schools: Academic, Stoic, Epicurean, and their
influence on Roman thought with selection
from: Lucretius, *De Rerum Natura*, and Cicero's
philosophical essays. Offered every three years.
Cr 3.

**LAT 453 Poetry of the Republic and Early
Empire**
Considers the lyric poetry of Catullus, the Odes
of Horace and the origin and development of
satire, with selections from the satires of Horace
and Juvenal. Offered every three years. Cr 3.

**LAT 454 Prose of the Republic and of Early
Empire**
Includes selections from Cicero's letters, Pliny's
letters, and Tacitus' Annals. Offered every three
years. Cr 3.

**LAT 481 Virgil: The Eclogues, Georgics,
Aeneid**
The poet's background achievements, and in-
fluence upon later literature. Offered every
three years. Cr 3.

LAT 482 Medieval Latin
Introduction to a variety of Latin prose and texts
from the Middle Ages. Emphasis on stylistic
and thematic continuities with and differences
from classical Latin prose and poetry. Offered
upon sufficient demand. Cr 3.

LAT 497 Projects in Latin I
Individual work on a project selected by the
student. Prerequisite: LAT 204 or equivalent or
permission of instructor. (maximum: 3 hrs).
Cr Ar.

LAT 498 Projects in Latin II
Individual work on a project selected by the
student. Prerequisite: LAT 204 or equivalent or
permission of instructor. (maximum: 3 hrs).
Cr Ar.

Courses in Modern Languages and Classics

MLC 190 Topics in Modern Languages
Cr Ar.

**MLC 231 Western Tradition in Literature:
Homer Through the Renaissance**
Survey of the major writers in the Western liter-
ary tradition. The development of our cultural
heritage and the evolution of major literary
forms. Recommended for English majors. (This
course is identical with ENG 231). Cr 3.

**MLC 232 Western Tradition in Literature:
Enlightenment to 20th Century**
Survey of the major writers in the Western liter-
ary tradition. The development of our cultural
heritage and the evolution of major literary
forms. Recommended for English majors. (This
course is identical with ENG 232). Cr 3.

MLC 293 Study Abroad
This course designation permits the granting
of foreign language credit for courses taken

abroad with no exact University of Maine cata-
log equivalent. May be repeated for credit.
Cr 1-6.

MLC 410 Contemporary French Novel
A study of selected works of Existentialism and
the New Novel in English translation. (Does not
count for the French major). Cr 3.

MLC 415 Twentieth Century French Theatre
Selected works of leading French playwrights
of the 20th century in English translation. (Does
not count for the French major). Cr 3.

MLC 417 The Age of Enlightenment
Readings of the political, social, and philosophi-
cal writings of Montesquieu, Voltaire, Diderot,
Rousseau, and other French writers of the 18th
century, in English translation. Juniors, seniors,
and sophomores with permission. May not be
used to meet the requirements of a major or the
M.A. degree in French. Cr 3.

**MLC 420 Twentieth Century German
Literature in English**
An introduction to recent German writings in
the drama, novel, and poetry, with special atten-
tion to such authors as Kafka, Mann, Brecht, and
Grass. (Does not count for the German major).
Cr 3.

**MLC 425 Modern German Theatre in
English**
A study of German drama from 19th Century
Realism to the present. Reading and discussion
of works by Hauptmann, Schnitzler, Kaiser,
Brecht, Durrenmatt, Fisch, Grass, Weiss and
others. (Does not count for the German major).
Cr 3.

MLC 430 Topics in European Literature
Varies in content from generic studies (the
novel, the drama) to period studies (the Renais-
sance, Neo-Classicism). Prerequisite: 6 hours of
literature or permission. (This course is identi-
cal with ENG 430). Cr 3.

**MLC 440 The Contemporary Spanish
American Novel in English**
The major works of Julio Cortazar, Carlos Fuen-
tes, Mario Vargas Llosa, Gabriel Garcia Mar-
quez and Jose Lezama Lima, and other repre-
sentatives of the contemporary experimental
Spanish American novel. (Does not count for
the Spanish major). Cr 3.

MLC 445 Cervantes in English
Don Quixote and other major works of Cervan-
tes in English. Lectures on his life and times.
(Does not count for the Spanish major). Cr 3.

MLC 453 Phonology
The sound systems and morphophonemics
manifested by natural languages are studied
within the theoretical framework of transforma-
tional grammar. Prerequisite: INT 410 or
equivalent. Cr 3.

**MLC 466 The Teaching of Modern
Languages**
Includes analysis of current trends and meth-
ods, application of language learning principles

to classroom procedures, theory and practice of language methodologies at different learning levels, use of technologies such as video and computers in the instructional process. For students seeking certification in foreign language teaching. Cr 3.

MLC 473 Topics in Literary Theory and Criticism

Studies in the history of literary criticism, selected theoretic perspectives, or the application of specific critical approaches. Specific topic from year to year. Prerequisite: 6 hours of literature or permission. (This course is identical with ENG 470). Cr 3.

MLC 475 Contributions of European Linguistic Groups to the American Cultural Heritage

A study of the cultural contributions of European language groups to the development of America. Examines the roots of many American traditions, traces origins of characteristic (place) names and words to early immigrants and investigating ways in which groups or individuals dealt with the new environment in accordance with their own heritage. A reading knowledge of a foreign language is recommended. Cr 3.

MLC 480 Introduction to Dante's Divine Comedy

Examines the literary structure, theology, cosmology, and philosophy of the work. Cr 3.

MLC 490 Topics in Modern Languages

May be repeated for credit if a different topic is treated. Cr 1-3.

MLC 493 Study Abroad

This course designation permits the granting of foreign language credit for courses taken abroad with no exact University of Maine catalog equivalent. May be repeated for credit. Cr 1-6.

MLC 496 Field Work in Modern Languages

Supervised work in either the public or the private sector which is relevant to the study and use of a modern language. Requirements include an initial proposal which shows the relevance of the work experience to the student's program in modern languages and a final report or paper. Prerequisite: an appropriate level of fluency as determined by the department. Cr 1-12.

MLC 520 Methodology of Teaching English as a Second Language

Prepares the student to teach English to speakers of other languages. Emphasis on linguistic theory and language pedagogy, cognitive strategies of language teaching and techniques and procedures of teaching specific skills. Prerequisite: permission. Cr 3.

MLC 521 Seminar in Literary Research Methods

Literary topics transcending national boundaries will be chosen to provide training in the methods and techniques of literary research for

students of French, German, and Spanish literature. Cr 3.

MLC 598 Topics in Modern Languages Cr 3.

Courses in Russian

RUS 101 Elementary Russian I

A systematic study of the basics of the Russian language. Equal emphasis is placed on developing reading, comprehension, speaking and writing skills. For students with no previous study of Russian or fewer than two years in high school. Cr 4.

RUS 102 Elementary Russian II

A continued study of the basics of the Russian language. Equal emphasis is placed on developing reading, comprehension, speaking and writing skills. For students with no previous study of Russian or fewer than two years in high school. Prerequisite: RUS 101 or equivalent. Cr 4.

RUS 121 Elementary Russian-(Accelerated) I

For students with no previous study of Russian or fewer than two years in high school. Must be taken in combination with RUS 122 in one semester. A full year's work covered in one semester. Cr 6.

RUS 122 Elementary Russian (Accelerated) II

For students with no previous study of Russian or fewer than two years in high school. Must be taken in combination with RUS 121 in one semester. A full year's work covered in one semester. Cr 6.

RUS 199 Review Russian

For students who have taken 2 or more year of high school Russian, but do not feel ready to complete the RUS 203-204 sequence. Fast-paced review of basic grammar, pronunciation and vocabulary, with strong emphasis on oral communication. This is not the equivalent of RUS 203/204 level language courses. 2 class meetings per week, with substantial listening and writing assignments. Prerequisite: 2 years of high school Russian or permission. Lec 2. Cr 2.

RUS 203 Intermediate Russian I

An integrated approach. Reading texts as well as various audiovisual materials will be employed to strengthen reading, writing and especially speaking and comprehension skills. The course also includes a systematic but gradual review of the essentials of Russian grammar. Cr 4.

RUS 204 Intermediate Russian II

A continuation of RUS 203 designed to strengthen reading, writing, speaking and comprehension skills. Prerequisite: RUS 203 or equivalent. Cr 4.

RUS 205 Practical Russian I

Systematic training in correct pronunciation, intonation and usage, as well as vocabulary building, with written and oral practice. Prerequisite: RUS 204 (or the equivalent) and permission. Conducted entirely in Russian. Cr 3.

RUS 206 Practical Russian II

Continued training in practical Russian. Prerequisite: RUS 204 (or the equivalent) and permission. Conducted entirely in Russian. Cr 3.

RUS 223 Intermediate Russian (Accelerated) I

For students who have completed RUS 102 or RUS 121, RUS 122 or equivalent in high school. Must be taken in combination with RUS 224 in one semester. A full year's work covered in one semester. Cr 6.

RUS 224 Intermediate Russian (Accelerated) II

Must be taken in combination with RUS 223 in one semester. A full year's work covered in one semester. Cr 6.

Courses in Spanish

SPA 101 Elementary Spanish I

A systematic study of the basics of the Spanish language. Equal emphasis on developing reading, comprehension, speaking and writing skills. For students with no previous study of Spanish or fewer than two years in high school. Cr 3-4.

SPA 102 Elementary Spanish II

A continued study of the basics of the Spanish language. Equal emphasis is placed on developing reading, comprehension, speaking and writing skills. For students with no previous study of Spanish or fewer than two year in high school. Prerequisite: SPA 101 or equivalent. Cr 3-4.

SPA 199 Review Spanish

For students who have taken 2 or more year of high school Spanish, but do not feel ready to complete the SPA 203-204 sequence. Fast-paced review of basic grammar, pronunciation and vocabulary, with strong emphasis on oral communication. This is not the equivalent of SPA 203/204 level language courses. 2 class meetings per week, with substantial listening and writing assignments. Prerequisite: 2 years of high school Spanish or permission. Lec 2. Cr 2.

SPA 203 Intermediate Spanish I

An integrated approach. Reading texts as well as other materials will be employed to strengthen reading, writing and especially speaking and comprehension skills. Includes systematic but gradual review of the essentials of Spanish grammar. Prerequisite: SPA 102 or equivalent. Cr 3-4.

SPA 204 Intermediate Spanish II

A continuation of SPA 203 designed to strengthen reading, writing, speaking and comprehension skills. Prerequisite: SPA 203 or equivalent. Cr 3-4.

SPA 205 Spanish Conversation and Composition I

Develops proficiency in spoken and written Spanish through selected vocabulary and grammar exercises, discussions, skits, speeches

d compositions. Conducted in Spanish. Prerequisite: SPA 204 or equivalent. Cr 3.

SPA 206 Spanish Conversation and Composition II

Develops proficiency in spoken and written Spanish through selected vocabulary and grammar exercises, discussion, skits, speeches, and compositions. Conducted in Spanish. Prerequisite: SPA 204, SPA 205 or equivalent. Cr 3.

SPA 218 Spanish Play Production

Participation in the acting and production of plays in Spanish. May be repeated for credit with permission. Cr 3.

SPA 297 Spanish (May Term)

Total Immersion Program. Prerequisite: Permission. Cr 3.

SPA 307 Readings in Peninsular Literature

An overview of Peninsular Spanish literature. Provides practice in reading and analyzing culturally important texts. Includes a selection of genres and periods will be included. May be taken either before or after SPA 308. Prerequisite: SPA 206 or permission. Cr 3.

SPA 308 Readings in Spanish American Literature

Emphasis on changes in the cultural phenomena, styles, themes and ideological position of texts from the beginnings of Hispanic American literature through romanticism, naturalism, the novel of the land, the "Boom" and avant-garde movements. May be taken before or after SPA 307. Prerequisite: SPA 206 or permission. Cr 3.

SPA 400 Advanced Spanish Grammar, Composition, and Stylistics

Designed to provide an adequate foundation in Spanish grammar, syntax, and composition for prospective teachers. Applied stylistics for students with proficiency of expression interested in creative writing. Prerequisite: SPA 205 or SPA 206, SPA 307 or SPA 308 or permission. Cr 3.

SPA 401 Golden Age

A study of masterpieces of poetry and prose from the 16th and 17th centuries. Provides an overview of the period and critical abilities. Poetry by Garcilaso, Fray Luis, San Juan, Gongora, and Quevedo, etc. Prose readings include *Cazurillo de Tormes*, *Diana*, *Suenos y discursos*, and *Novelas ejemplares* etc. Prerequisite: SPA 307 or SPA 308 or permission of the instructor. Cr 3.

SPA 402 Comedia

Theater of the 16th and 17th centuries, including Lope de Vega, Tirso de Molina, and Calderon de la Barca. Prerequisite: SPA 307 or SPA 308 or permission. Cr 3.

SPA 403 Cervantes

A careful reading of the Spanish masterpiece, *Don Quixote*, including its historical background and continuing influence. Prerequisite: SPA 307 or SPA 308 or permission. Cr 3.

SPA 405 Spanish Literature of the Nineteenth Century

Discussion of the novel from "costumbrismo" to "realismo," the compromise of Spanish naturalism, and the Romantic movements between tradition and revolt. Prerequisite: SPA 307 or SPA 308 or permission of the instructor. Cr 3.

SPA 406 Spanish Literature of the Twentieth Century

Selections from the poetry, essays, and novels of the pre and Civil War period contextualized through readings in the history and thought of the times. Prerequisite: SPA 307 or SPA 308 or permission of the instructor. Cr 3.

SPA 407 Contemporary Spanish Novel

Experimental Novel of the Twentieth Century. Prerequisite: SPA 307 or SPA 308 or permission of the instructor. Cr 3.

SPA 408 Latin-American Masterpieces

A selection of key essays, poems, short stories, and novels from the colonial period to the 20th century. Prerequisite: SPA 307 or SPA 308 or permission. Cr 3.

SPA 409 Contemporary Latin-American Short Story

A study of Latin-American short story writers including discussion of such significant contemporary concerns as poverty, politics and religion, and such themes as the interplay of fantasy and reality and the relativity of madness. Prerequisite: SPA 307 or SPA 308 or permission. Cr 3.

SPA 410 Latin American Novel

The contemporary novel in Spanish America, with special attention on some of the novelists of the "Boom". Prerequisite: SPA 307 or SPA 308 or permission. Cr 3.

SPA 411 Contemporary Latin American Theater

A study of the major Latin-American playwrights of the 20th century. Reading and analysis of plays, class discussion. Prerequisite: SPA 307 or SPA 308 or permission. Cr 3.

SPA 412 Contemporary Peninsular Theater

A study of major Spanish playwrights of the 20th Century. Reading and analysis of plays, class discussion. Prerequisite: SPA 307 or SPA 308 or permission. Cr 3.

SPA 413 Hispanic Women Writers

A critical study of poetry and prose produced by Spanish and Spanish-American women writers from the 17th century to the present. Focus on the discourse of these women as it confronts a male oriented and a male controlled field. Specific topics vary from year to year. Prerequisites: SPA 307 or SPA 308, or permission. Cr 3.

SPA 425 Medieval Spanish Literature

Introduction to the literary masterpieces of the Spanish Middle Ages (12th through 15th centuries). Refines critical skills (both written and

spoken), and provides a basis for an historical understanding of the development of genres. Prerequisites: SPA 307 or SPA 308 or permission. Cr 3.

SPA 457 Spanish Civilization

A study of Spain, its people, institutions and culture providing the background essential to an understanding of Spanish literature, thought and artistic expression. Prerequisite: SPA 307 or SPA 308 or permission. Cr 3.

SPA 458 Spanish American Civilization

A study of Latin America, its people, institutions, and culture providing the background essential to an understanding of Latin America literature, thought and artistic expression. Prerequisite: SPA 307 or SPA 308 or permission. Cr 3.

SPA 490 Topics and Individual Authors in Spanish

Specific topic varies semester to semester. Prerequisite: SPA 307 or SPA 308. May be repeated for credit. Cr 1-3.

SPA 497 Projects in Spanish I

Independent study on topics selected by student and instructor. Cr 1-3.

SPA 498 Projects in Spanish II

Independent study on topics selected by student and instructor. Cr 1-3.

SPA 597 Projects in Spanish I

Specific projects vary from semester to semester depending on the needs of the graduate student and the skills of the faculty member. May be repeated for credit. Cr 3.

SPA 598 Projects in Spanish II

Specific projects vary from semester to semester depending on the needs of the graduate student and the skills of the faculty member. May be repeated for credit. Cr 3.

Interdisciplinary Courses

INT 301 (FSN, MLC, PHY, POS, WLE) Soviet Cultural/Educational Exchange

To develop interaction between American undergraduate students and their Soviet counterparts at Kharkov State University, to experience local culture, and to observe first-hand a society undergoing economic and social changes. The Maine delegation travels in Spring to Kharkov in Ukraine and in the Fall the Soviet delegation is hosted at the University of Maine. Cr 2.

INT 410 (ANT, ENG, MLC) Introduction to the Study of Linguistics

A survey of language structure and its socio-cultural, psychological and historical aspects. Provides conceptual and technical tools for understanding the phenomenon of language. No previous training in languages or linguistics is required. Cr 3.

School of Performing Arts

Music

Associate Professor Hallman (Chairperson);

Professors Cox, Jacobs;

Associate Professors Farnham, Foley, Hall, F. Heath, Marrs, Nesbit, Ogle, Roscetti, Voronietzky, Wieck;

Assistant Professor Lidral;

Instructors Crook, Garwood, S. Heath, Mummé

General outline of the curricula of the Department of Music leading to baccalaureate degrees follows. Details are available from the Department of Music, 5743 Lord Hall, Room 123, (207) 581-1240.

Bachelor of Arts Degree with a Major in Music

This program is designed for the study of music within a strong liberal arts curriculum. The general requirements for the Bachelor of Arts degree described earlier in this catalogue apply to this program. It offers a broad coverage of the field of music with emphasis on the study of the history and theory of music. It furnishes an appropriate background for prospective candidates for advanced degrees who are preparing for such careers as musicologists, composers, and music librarians. It does not qualify the graduate for certification as a public school music teacher. Candidates for the degree are expected to attain a level of performing ability equivalent to that required at the completion of the sophomore year in the Bachelor of Music programs. A senior project is required in lieu of a recital. The total number of required semester hours for graduation is 120. One year of a foreign language, which can be either the continuation of the language taken in high school or a new language, is required.

Bachelor of Music in Music Education

This is a four-year professional degree for students who intend to make music a career either as a public school teacher or supervisor of music. The degree provides for many professional opportunities and serves also as preparation for graduate study in music. Upon satisfactory completion of the music education course of study, the student is certified to teach music at both the elementary and secondary levels. A half-hour recital is required in the junior year. The total number of required semester hours for graduation is 134.

Bachelor of Music in Performance

This degree is designed to assist the gifted music student to prepare for a career in music performance. It serves also as preparation for

graduate study in music and teaching at the college level. Emphasis is placed on performance, music theory, music history, and studies in the liberal arts. The degree is granted in the following applied music areas: Strings, woodwinds, brass, piano, harpsichord, voice, guitar, and pipe organ. Graduation requirements include appropriate proficiency in playing or singing, excellent memory, substantial repertoire, and musicianship of a high order. A half-hour recital is required in the junior year and a full recital in the senior year. The total number of required semester hours for graduation is 120-127.

Entrance Requirements for all Degree Programs

In addition to meeting the University's admission standards, applicants must demonstrate musical ability in performance on their major instrument or voice before a jury of the music faculty. Each applicant is also required to have an interview with a faculty advisor in the student's chosen program. Auditions and interviews are arranged through the music department office, where a listing of audition requirements for the various disciplines may be obtained.

All entering students are required to take placement examinations in music theory.

Graduation Requirements

In addition to successful completion of all required course work, all music degree students must, in order to graduate:

1. Pass a basic proficiency examination in piano. Note: Piano proficiency may be accomplished through successful completion of MUP 205, 206, 215 and 216. Piano majors are required to pass the proficiency exam for these courses. No music student other than piano majors will be allowed to study private piano until completion of MUP 216, successful completion of the equivalent piano proficiency exam or permission.

Candidates for the B.A. degree in Music must successfully pass the sophomore level jury examination on their applied major instrument or voice.

Candidates for the B.M.Ed. degree must present an approved half-hour public recital in their junior year.

Candidates for the B.M.Perf. degree must present an approved half-hour public recital in their junior year and an approved one-hour public recital in their senior year.

Applied Music Fees

For Music Majors a fee of \$30 per credit hour will be charged for private instruction.

For the non-music major a fee of \$180 per semester will be charged for one one-half hour lesson per week, a fee of \$360 per semester will be charged for one one-hour lesson per week. Private instruction for the non-music major is contingent on the student's level of performance as determined by audition, and on the availability of studio time of the instructor. Arrangements for such instruction and assignment of a teacher must be made through the office of the Music Department.

Practice facilities are provided in the music building. The University provides, so far as possible, practice opportunities for students who take applied music for credit.

Courses in Applied Music

The Department of Music provides private instruction in instruments and voice. MUS 20 through MUS 308 designates semester of study for one credit hour, section number (see below) designates instrument/voice.

MUS 210 through MUS 380 designates semester of study for two credit hours, section number (see below) designates instrument/voice.

MUS 450-480 designates study for 4 credit hours, section number designates instrument/voice. These courses are open only to students who have been accepted in the B.M. in Performance Degree Program, and who have successfully completed the junior standing jury examination. An applied music fee of \$60 applies to these courses. The student receives one hour of studio instruction weekly. The additional credit awarded reflects the time the student will require to meet the higher expectations of advanced performance degree candidates.

Candidates for B.Mus. in Performance degree enroll for 2 hours of credit for the first two

years of study on the major instrument of voice, and 4 hours of credit for the 3rd and 4th years of study. Candidates for the B. Mus. in Mus. Ed. enroll for two hours of credit for the major instrument or voice for a total of 12 credit hours. Students in both programs enroll for one hour of credit in secondary instrument or voice. B.A. candidates majoring in music and all other students normally enroll for one hour of credit.

B. Mus. in Performance

First level	MUS 210-220
Second level	MUS 230-240
Third level	MUS 450-460
Fourth level	MUS 470-480

B.M. in Mus. Ed.

First level	MUS 210-220
Second level	MUS 230-240
Third level	MUS 350-360

B.A.

First level	MUS 201-202
Second level	MUS 203-204
Third level	MUS 305-306
Fourth level	MUS 307-308

The student who does not meet the requirements for the level at the end of each semester as determined by the jury examination will continue on the previous level until the requirements are met. Upon completion of 8 credit hours of work in Applied Music, music majors will be reviewed by a jury composed of the faculty of the Department of Music to determine whether they should be advanced to upper level standing in applied music.

Section	Instructor
01 baritone horn	Heath
02 bass	Wieck
03 bassoon	Staff
04 cello	Roscetti
05 clarinet	Jacobs
06 flute	S. Heath
07 french horn	Nesbit
08 classical guitar	Crook
09 harpsichord	Mummé
10 oboe	Hall
11 organ	Mummé
12 percussion	Marrs
13 piano	Foley, Voronietsky
14 saxophone	Staff
15 trombone	F. Heath
16 trumpet	Nashan
17 tuba	F. Heath
18 violin	Wieck
19 viola	Wieck
20 voice	Hallman/Ogle

Courses in applied music may be repeated for credit.

Each student taking instruction in an applied area must take an examination before a jury of the faculty of music at the end of each semester. All music majors enrolled in applied music are required to enroll in MUS 100 (Recital Lab) each semester of study.

Courses in Music Education

MUE 101 Music Methods for the Elementary Teacher

Methods and materials for relating music to the elementary school child. No previous experience in music required. Cr 3.

MUE 207 Voice Class

The systematic development of the principles of good singing through class method approach. Prerequisite: MUY 101 or permission. Lab 2. Cr 1.

MUE 209 String Class

Basic performance and pedagogical skills pertaining to each of the four string instruments. Prerequisite: MUY 101 or permission. Lab 4. Cr 2.

MUE 210 Introduction to Music Education

Provides exposure to music classrooms, primary and secondary. Covers philosophies of music education, programming and evaluation. Open to all music majors. Cr 2.

MUE 213 Woodwinds I

First semester of a required two-semester course dealing with woodwind pedagogy. Covers oboe, bassoon and saxophone. Lab 2. Cr 1.

MUE 214 Woodwinds II

Second semester of a required two-semester course dealing with woodwind instrument pedagogy. Covers flute and clarinet. Prerequisite: MUE 213. Lab 2. Cr 1.

MUE 215 Early Music Teaching Field Experience

Provides observation and teaching experience through field work in public school classrooms. Observation time will be spent in each of three areas: elementary, junior high and high school. Open to first-year or sophomore music education majors. Cr 2.

MUE 217 Brass Class

Basic performance and pedagogical skills pertaining to the brass instruments. Prerequisites: MUY 101 or permission. Lab 4. Cr 2.

MUE 222 Percussion Class

Basic performance and pedagogical skills pertaining to the percussion instruments. Prerequisite: MUY 101 or permission. Lab 4. Cr 2.

MUE 320 Teaching of General Music: Elementary

First semester of a required two-semester course. Methods, materials, organization and administration of the K-6 classroom music curriculum. Includes classroom instruments, field experiences, materials and methods for gifted and talented and the special learner. Prerequisite: MUY 212 and MUL 202. Cr 3.

MUE 321 Teaching of General Music: Secondary

Second semester of a required two-semester course. Methods, materials, organization and

administration of the 6-12 classroom music curriculum. Includes classroom instruments, field experiences, materials and methods for gifted and talented and the special learner. Prerequisites: MUY 212, MUL 202, MUE 320. Cr 3.

MUE 400 Choral Music Education

The organization and development of techniques requisite to a successful choral program. Open to all music majors. Cr 3.

MUE 401 Organization and Development of the Instrumental Music Program

Covers instrumental organizations, review and application of instrumental pedagogy skills in laboratory settings. Prerequisites: MUP 345, MUE 209, MUE 213, MUE 217, MUE 222. Cr 3.

MUE 403 Instrumental Laboratory

Performance on secondary instruments in a heterogeneous setting. Required for those enrolled in MUE 401 but may be taken separately. Instrumental majors must attend Instrumental Laboratory for two of the three fall semesters following their first-year student year. Open to sophomore, junior and senior music education majors. Offered every fall. Lab 1. Cr 1.

MUH 201 History of Western Music I

The history of music from antiquity to approximately 1750 with a technical study of the significant musical trends. Prerequisite: MUL 200 and MUL 202 or permission. Cr 3.

MUH 202 History of Western Music II

The history of music from 1750 to the present day with a technical study of the significant musical trends. Prerequisite: MUL 200 and MUL 202 or permission. Cr 3.

MUH 517 Music of the Baroque Period

A study of music in the 17th and first half of the 18th centuries from Monteverdi and Schutz to Bach and Handel. Prerequisite: MUH 202 or permission. Cr 3.

MUH 519 Music of the Classical Period

The changing style in form and content as evolved by Haydn, Mozart and Beethoven viewed in historical content. Prerequisite: MUH 202, or permission of the instructor. Cr 3.

MUH 521 Music of the Romantic Period

Study of musical expression during the 19th century with emphasis on the intellectual foundations of the romantic movement. Detailed analysis of representative works from Beethoven through Debussy. Prerequisite: MUH 202 or permission. Cr 3.

MUH 523 Music of the Twentieth Century

Trends in contemporary music and their relationship to the cultural and political life of our time. Prerequisite: MUH 202 or permission. Cr 3.

MUL 101 The Art of Listening to Music: Elements

Designed for the student with no previous experience in music. Provides a working vocabulary of terms and listening experiences intended to expand the basic understanding of the art

form. Music listening assignments to be completed in Fogler Library. Open to all university students. Cr 3.

MUL 120 World Music

Survey of the music cultures of the non-Western world considered as an integral part of their respective cultures, as reflected in history, religion, philosophy, theater and dance. No previous training in music is required. Cr 3.

MUL 200 The Art of Listening to Music: Historical Survey-Laboratory

Taken primarily by music majors concurrently with MUL 202. Application of musical terminology to the study of music history and literature. Introduction to music research and academic writing in music. Corequisite: MUL 202. Cr 1.

MUL 202 The Art of Listening to Music: Historical Survey

Designed for the student with some previous experience in music. Primarily an historical survey of music from 1600 to the present, with some attention to musical terms and listening experiences. Music listening assignments to be completed in Fogler Library. Prerequisites: MUL 101 or permission. Cr 3.

MUL 531 Choral Literature and Performance Practice

Survey of choral literature from the Renaissance to the present. Cr 3.

MUL 541 Instrumental Ensemble Literature and Performance Practice

Survey of selected instrumental ensemble literature from the standard repertory. Prerequisite: Permission. Cr 3.

MUO 101 University Singers

Rehearsal and performance of choral concert repertoire. Extended concert tours. Five hours of rehearsal a week. Attendance at all rehearsals and public performances required. May be repeated for credit. Prerequisite: audition (requires sight reading ability). Lab 5. Cr 1.

MUO 103 Oratorio Society

Rehearsal and performance of major choral works. Attendance at all rehearsals and public performances required. May be repeated for credit. Prerequisite: audition. Lab 2. Cr 1.

MUO 109 Collegiate Chorale

Rehearsal and performance of choral music appropriate for choral singers with limited background and training. No audition required; open to all students. Attendance at all rehearsals and public performances required. May be repeated for credit. Lab 2. Cr 1.

MUO 111 Marching Band

Performs at home and occasional off-campus football games. Course begins four days prior to opening of classes. Rehearsal of concert music on limited schedule during final weeks of semester. Attendance required at rehearsals and performances. May be repeated for credit. (Fall semester only). Prerequisite: permission. Lab 4. Cr 1.

MUO 112 Concert Band

Rehearsal and performance (on and off campus) of a variety of concert band literature appropriate for the general University instrumentalist. Attendance required at rehearsals and performances. May be repeated for credit. (Spring semester only). Prerequisite: permission. Lab 3. Cr 1.

MUO 113 Pep Band

Rehearsal and performance of band music appropriate for athletic events including current marching band selections. Attendance required at rehearsals and performances. May be repeated for credit. Prerequisite: permission. Lab 2. Cr 1.

MUO 114 Symphonic Band

Rehearsal and performance of the most challenging and significant band literature. Attendance required at rehearsals and performances. Occasional touring on class days. May be repeated for credit. Prerequisite: audition. Lab 3. Cr 1.

MUO 121 University Orchestra

Rehearsal and performance of standard orchestral repertoire. Attendance at all rehearsals and public performances required. May be repeated for credit. Prerequisite: audition. Lab 4. Cr 1.

MUO 131 Chamber Singers

The study and performance of chamber music for the voice. May be repeated for credit. Lab 2. Cr 1.

MUO 132 Opera Workshop

Rehearsal and performance of standard opera repertory. May be repeated for credit. Prerequisite: audition. Lab 3. Cr 1.

MUO 141 Brass Ensemble

The study and performance of chamber music for brass instruments. May be repeated for credit. Lab 2. Cr 1.

MUO 142 Trombone Ensemble

The study and performance of music for trombones. May be repeated for credit. Lab 2. Cr 1.

MUO 143 UM Jazz Ensemble

Rehearsal and performance of music for the large (16-24) jazz ensemble. Membership through audition. Attendance at all rehearsals and performances required. May be repeated for credit. Lab 3. Cr 1.

MUO 145 Woodwind Ensemble

The study and performance of chamber music for woodwind instruments. May be repeated for credit. Lab 2. Cr 1.

MUO 147 Horn Ensemble

Rehearsal and performance of music written for french horns. May be repeated for credit. Prerequisite: permission. Lab 2. Cr 1.

MUO 149 Chamber Music

The study and performance of chamber music. May be repeated for credit. Prerequisite: permission of instructor. Lab 2. Cr 1.

MUO 170 Karl Mellon Clarinet Choir

Rehearsal and performance of music written for clarinet choir. May be repeated for credit. Prerequisite: permission. Lab 2. Cr 1.

MUO 502 University Singers

Performance of choral concert repertoire. Public performance and extended concert tours. Five rehearsals per week. May be repeated for credit. Prerequisite: audition. Cr 1-2.

MUO 503 Oratorio Society

Participation and a leadership role in the rehearsal and performance of choral concert repertoire. Attendance at all rehearsals and public performances required. May be repeated for credit. Prerequisite: audition. Lab 2. Cr 1-2.

MUO 504 Collegiate Chorale

Participation and a leadership role in the rehearsal and performance of choral music appropriate for choral singers with limited background and training. No audition required open to all students. Attendance at all rehearsals and public performances required. May be repeated for credit. Lab 2. Cr 1-2.

MUO 505 Marching Band

Participation and a leadership role in the rehearsal and performance of marching band repertoire beginning four days prior to opening of classes. Rehearsal of concert music on limited schedule during final weeks of semester. Attendance at all rehearsals and public performances required. May be repeated for credit. Prerequisite: permission. Lab 4. Cr 1-2.

MUO 506 Concert Band

Participation and a leadership role in the rehearsal and performance (on and off campus) of a variety of concert band literature appropriate for the general University instrumentalist. Attendance at rehearsals and public performances required. May be repeated for credit. Prerequisite: permission. Lab 3. Cr 1-2.

MUO 507 Pep Band

Participation and a leadership role in the rehearsal and performance of band music appropriate for athletic events including current marching band selections. Attendance at all rehearsals and public performances required. May be repeated for credit. Prerequisite: permission. Lab 2. Cr 1-2.

MUO 508 Symphonic Band

Participation and a leadership role in the rehearsal and performance of the most challenging and significant band literature. Attendance at all rehearsals and public performances required. Occasional touring on class days. May be repeated for credit. Prerequisite: audition. Lab 3. Cr 1-2.

MUO 509 University Orchestra

Participation and a leadership role in the rehearsal and performance of standard orchestral repertoire. Attendance at all rehearsals and public performances required. May be repeated for credit. Prerequisite: audition. Lab 4. Cr 1-2.

IUO 510 Chamber Singers

Participation and a leadership role in the study and performance of chamber music for the voice. May be repeated for credit. Lab 2. Cr 1-2.

IUO 511 Opera Workshop

Participation and a leadership role in the study and performance of standard opera repertory. May be repeated for credit. Prerequisite: audition. Lab 3. Cr 1-2.

IUO 512 Brass Ensemble

Participation and a leadership role in the study and performance of chamber music for brass instruments. May be repeated for credit. Lab 2. Cr 1-2.

IUO 513 Trombone Ensemble

Participation and a leadership role in the study and performance of music for trombones. May be repeated for credit. Lab 2. Cr 1-2.

IUO 514 UM Jazz Ensemble

Participation and a leadership role in the rehearsal and performance of music for the large (16-24 member) jazz ensemble. Attendance at all rehearsals and public performances required. May be repeated for credit. Prerequisite: audition. Lab 5. Cr 1-2.

IUO 515 Woodwind Ensemble

Participation and a leadership role in the study and performance of chamber music for woodwind instruments. May be repeated for credit. Lab 2. Cr 1-2.

IUO 516 String Ensemble

Participation and a leadership role in the study and performance of chamber music for string instruments. May be repeated for credit. Lab 2. Cr 1-2.

IUO 517 Karl Mellon Clarinet Choir

Participation and a leadership role in the rehearsal and performance of music written for clarinet choir. May be repeated for credit. Lab 2. Cr 1-2.

IUO 518 Percussion Ensemble

Participation and a leadership role in the rehearsal and performance of percussion ensemble repertoire. Attendance at all rehearsals required. May be repeated for credit. Lab 2. Cr 1-2.

IUO 519 Horn Ensemble

Participation and a leadership role in the study and performance of music for french horn. May be repeated for credit. Lab 2. Cr 1.

MUP 205 Piano Class I

Designed to provide a basic command of the keyboard. Recommended especially for students preparing to take the proficiency examination in secondary piano. May be taken as an introduction to piano performance for the beginning student. Prerequisite: Music majors only. Lab 2. Cr 1.

MUP 206 Piano Class II

A continuation of MUP 205, designed to provide basic command of the keyboard. Prerequisite: Music majors only. Lab 2. Cr 1.

MUP 215 Piano Class I

A continuation of MUP 205, MUP 206 designed to complete the proficiency examination in secondary piano. Prerequisite: MUP 205, MUP 206 or permission. Music majors only. Lab 2. Cr 1.

MUP 216 Piano Class II

A continuation of MUP 205, MUP 206 designed to complete the proficiency examination in secondary piano. Prerequisite: MUP 205, MUP 206 or permission. Music majors only. Lab 2. Cr 1.

MUP 220 Masterclass

Supplements private lessons. Emphasizes proper preparation for performance and provides frequent opportunities for students to perform before others in the same studio. Open to all students studying voice or a particular instrument with a music department faculty member for credit. Offered at the discretion of the studio teacher. Prerequisite: permission. Cr 1.

MUP 251 Accompanying I

The study of Piano accompanying techniques and literature with a master accompanist. Includes lab work with soloists. Required of piano majors, and open to other advanced pianists. Lab 2. Cr 1.

MUP 252 Accompanying II

A continuation of MUP 251. Required of all piano majors. Lab 2. Cr 1.

MUP 340 Basic Conducting

Introduction to conducting techniques with emphasis on practical application to vocal and instrumental groups. Prerequisite: MUY 212. Lab 3. Cr 2.

MUP 341 Choral Conducting and Literature

Introduces basic choral conducting and studies of problems in the organization and training of choral groups. Prerequisite: MUP 340. Cr 3.

MUP 345 Instrumental Conducting and Literature

Introduces basic instrumental conducting, and study of problems in the organization and training of bands and orchestras. Prerequisite: MUP 340. Cr 3.

MUP 401 Performance-Secondary Instrument I

Applied study in voice, keyboard, strings, winds and percussion instruments as a secondary applied area for the graduate student. May be repeated for credit. Prerequisite: Consent of advisor and instructor. (Lab fee of \$60.00). Cr 2.

MUP 402 Performance-Secondary Instrument II

A continuation of MUP 401. May be repeated for credit. Prerequisite: consent of advisor. (Lab fee of \$60.00). Cr 2.

MUP 405 Keyboard Musicianship I

A comprehensive application of the study of harmony to the keyboard, directed towards the development of sight-reading and accompanying skills, keyboard score-reading, transposition, harmonization at sight, improvisation and

the realization of figured bass or other chording schemes. Prerequisite: MUY 212, MUY 214, MUP 216 or equivalent level, including completion of Piano Proficiency requirements. Cr 2.

MUP 406 Keyboard Musicianship II

A continuation of MUP 405. Prerequisite: MUY 212, MUY 214, MUP 216 or equivalent level, including completion of Piano Proficiency requirements. Cr 2.

MUP 511 Advanced Chamber Music I

The study and performance of the standard ensemble literature for string instruments, wind instruments, and piano. Prerequisite: permission. Cr 2.

MUP 512 Advanced Chamber Music II

A continuation of MUP 511. Prerequisite: permission. Cr 2.

MUP 530 Advanced Choral Conducting

Application of choral conducting in laboratory setting including works from the Renaissance through the present. Prerequisite: MUP 341 or permission. Cr 3.

MUP 540 Advanced Instrumental Conducting

Survey of literature for symphonic, concert, and marching bands. A study of performance problems and conducting techniques as related to these ensembles. Prerequisite: MUP 345 or permission. Cr 3.

MUS 100 Recital Lab

Experience in recital performance and in listening to performances of one's peers. May be repeated. Required of music majors enrolled in applied music. Lab 1. Cr 0.

MUS 121 Principles of Singing I

Emphasizes diction in the standard languages (French, German, Italian and English). Introduces the international phonetic alphabet and classical vocal literature, technique and performance practice. Weekly private instruction arranged through the class. Required for first-year voice majors in B. M.Ed. and B.M. programs; open to others by permission. Cr 3.

MUS 122 Principles of Singing II

Continuation of MUS 121. Weekly private instruction arranged through the class. Required for first-year voice majors in B.M. Ed. and B.M. programs; open to others by permission. Cr 3.

MUS 298 Special Subjects in Music

Specific topics and approaches will be chosen jointly by interested students and the staff. This offering is designed to address advanced issues not covered in regular offerings. 01-Italian Diction; 02-French Diction; 03-German Diction; 04-Harpsichord; 05-Percussion Ensemble; 14-Field Practicum in Music Education; 20-Studies in European Culture; 25-Independent Study in Music History. Prerequisite: permission. Cr 1-3.

MUS 310 Studio Pedagogy/Literature

A presentation of literature and/or pedagogical materials for musical instruments or voice. In-

tended to prepare the professional performer who maintains adjunct activities as a studio teacher. (01-baritone horn; 02-bass; 03-bassoon; 04-violoncello; 05-claninet; 06-flute; 07-french horn; 08-classical guitar; 09-harpsichord; 10-oboe; 11-organ; 12-percussion; 13-piano; 14-saxophone; 15-trombone; 16-trumpet; 17-tuba; 18-violin; 19-violin; 20-voice). Cr 1-2.

MUS 498 Senior Project

A research paper, original composition, or by special permission a lecture-recital presented in lieu of a recital. Required of all music majors in the Bachelor of Arts degree program. Accomplished under the guidance of an assigned faculty member during the senior year. Cr 1.

MUS 510 Special Subjects in Music

Specific topics and approaches will be chosen jointly by interested students and the staff. This offering is designed to address the undergraduate course issues not covered in regular offerings. 01-Piano Pedagogy and Literature; 06-Seminar in Contemporary Music; 11-Harpsichord; Prerequisite: Permission. Cr 1-3.

MUY 101 Fundamentals of Music

An elemental study of the dimensions and basic characteristics of musical sounds, with primary emphasis upon the development of skills and concepts through creating, performing and analysis. For the general student. Cr 3.

MUY 102 Fundamentals of Music (Advanced)

A continuation of MUY 101 with emphasis on more advanced aspects of rhythm, melody and harmony in music. For the general student. Prerequisite: MUY 101 or permission. Cr 3.

MUY 111 Elementary Harmony I

Diatonic chordal relationships through written work, analysis, and keyboard application. Primarily for music majors. Prerequisites: MUY 101 or permission. Cr 2.

MUY 112 Elementary Harmony II

A continued study of chordal relationships. Primarily for music majors. Prerequisite: MUY 111. Cr 2.

MUY 113 Elementary Sight Singing and Ear Training I

Sight singing, ear training and dictation. To be taken concurrently with MUY 111. Prerequisite: MUY 101 or permission. Lab 3. Cr 2.

MUY 114 Elementary Sight Singing and Ear Training II

Sight singing, ear training and dictation. Prerequisite: MUY 113. Lab 3. Cr 2.

MUY 211 Advanced Harmony I

A continuation of MUY 112. Chromatic chordal relationships and 20th century harmonic practice. Prerequisite: MUY 112. Cr 2.

MUY 212 Advanced Harmony II

A continuation of MUY 112. Chromatic chordal relationships and 20th century harmonic practice. Prerequisite: MUY 211. Cr 2.

MUY 213 Advanced Sight Singing and Ear Training I

A continuation of MUY 114. Prerequisite: MUY 114. Cr 2.

MUY 214 Advanced Sight Singing and Ear Training II

A continuation of MUY 114. Prerequisite: MUY 213. Cr 2.

MUY 315 Twentieth Century Musical Techniques

Techniques for structural analysis of post-impressionist through contemporary music. Prerequisite: MUY 212 or permission. Cr 2.

MUY 422 Tonal Counterpoint

A study of contrapuntal techniques as practiced by composers of the 18th and 19th centuries. Prerequisite: MUY 112 or permission. Cr 2.

MUY 451 Analytical Orchestration I

The practical application of harmonic and structural analysis of musical forms as concerned with orchestral and band instrumentation and reductions. Prerequisite: MUY 212. Cr 2.

MUY 452 Analytical Orchestration II

The practical application of harmonic and structural analysis of musical forms as concerned with orchestral and band instrumentation and reductions. Prerequisite: MUY 212. Cr 2.

MUY 461 Composition I (Small Forms)

Composition in the Variation Forms, including ostinato, ground motive, passacaglia, chaconne and theme with variations. Prerequisite: MUY 451, MUY 452 or permission. Cr 2.

MUY 462 Composition II (Large Forms)

Composition in the Song Forms, including AB, ABA, song form with trio, the rondo forms and a setting for voice. Prerequisite: MUY 461. Cr 2.

Theatre/Dance

Theatre

Associate Professor Snider (Chairperson);
Professor Wilkinson;
Associate Professors Hardy, Merritt, Mikotowicz

Requirements for the B.A. in Theatre consist of the general requirements for the College of Arts and Humanities, 48 credit hours in the major, and intermediate proficiency in a foreign language. In addition to the general B.A. degree in Theatre, concentrations are offered in Directing; Design and Technical Production; Acting; and Literature, History and Criticism. Specific requirements for the major and the concentration are available from the Theatre/Dance Department, 5703 Alumni Hall, Room 229.

All majors are expected to participate in the mainstage and studio theatre and dance production, which provide the lab adjunct to classroom learning. The Maine Masque Theatre produces four to five mainstage theatre and dance productions per year in the Hauck Theatre, a proscenium facility with 600 seats; and several student-directed studio productions in the Pavilion, a 150-seat, 3/4 round theatre. All University of Maine students are eligible to audition for the plays and to participate in all aspects of the production program.

The Department of Theatre/Dance also offers a Master of Arts degree, with a creative thesis option. Further details may be found in the Graduate School Catalog.

Dance

Instructors Kelly Holyoke, Ann Ross

The Dance Program offers dance technique in a variety of styles and produces formal and informal productions both on and off campus.

Courses in Theatre

THE 111 Introduction to Theatre

Introduces basic theatrical elements and techniques. Emphasis on the principles that underlie theatre practice and the process by which plays are translated into theatrical expression. For the general student as well as prospective theatre majors. **Cr 3.**

THE 112 Masterpieces of World Drama I

Greek and Roman drama as literature and as theatre. Stress on dramatic form and content, and on the capacity of the play form to reflect the philosophical, social, and political environment. **Cr 3.**

THE 113 Masterpieces of World Drama II

European drama from the 15th century to the present, and modern American drama, studied as literature and as theatre. Stress on dramatic form and content, and on the uniqueness of the drama to reflect the philosophical, social, economic and political environment. **Cr 3.**

THE 116 Play Production

Covers the basic principles of stage directing including choosing and analyzing plays, scheduling rehearsals, blocking action, and determining stage business. Backstage work on major and laboratory theatre production is recommended. **Cr 3.**

THE 117 Fundamentals of Acting

Focus on the basic skills of acting, including internal preparation for playing a role and development of external techniques for projecting to an audience. **Cr 3.**

THE 118 Stage Makeup

Study of principles and techniques of stage makeup including practical application in class and production experience opportunities. **Cr 3.**

THE 119 Fundamentals of Theatre Practice

An examination of the world backstage. Team taught by design and production faculty and staff, this course provides the student with the knowledge and experience to perform comfortably backstage. Students explore the development of scenery, properties, costumes, lighting and sound and their relationship to the final product, the performance. **Cr 3.**

THE 201 Fundamentals of Characterization

Designed to help student actors develop a methodology and technique for analyzing and performing scenes from the modern theatre repertoire. Prerequisite: THE 117 or permission. **Cr 3.**

THE 224 Stage Properties and Scene Painting

Two-part stagecraft module explores the intricacies of stage properties; script analysis, acquisition, construction and performance management. Classroom studio activities, assignments, and practical experience with the productions of the department and the Maine Masque Theatre. Part two offers experience in the planning and execution of scene painting. The practical application of color theory and painting technique is explored through the creation of drops and scenic units dependent upon paint for their effectiveness. Additional experience may be gained in the course's companion laboratory, THE 224L. Theatre majors are required to enroll in the lab and it is highly recommended to all others. Prerequisite: THE 119 or permission. **Cr 3.**

THE 224L Stage Properties and Scene Painting Laboratory

Conducted in connection with the department's stage productions and offers the student a prac-

tical application of the course material. Prerequisite: THE 119. Corequisite: THE 224. **Cr 1.**

THE 225 Stage Lighting and Theatre Sound

Examines the aesthetics and mechanics of two rapidly growing design and technical areas. The development of designs in each component are explored through studio and assignment work in script analysis, conceptual development, and communication. Craft mechanics and their relationship to the design are taught through studios in drafting, equipment identification and handling, and through a companion laboratory providing practical experience in the productions of the department and the Maine Masque Theatre. Theatre majors are required to enroll in the laboratory, THE 225L, and it is highly recommended for all participants. Prerequisite: THE 119 or permission. **Cr 3.**

THE 225L Stage Lighting and Theatre Sound Laboratory

Conducted in connection with the department's staged productions and offers the student a practical application of the course material. Prerequisite: THE 119. Corequisite: THE 225. **Cr 1.**

THE 226 Introduction to Scenic Construction and Design

The evolution of the designs from script interpretation through its execution in the shops and installation on the stage will be explored. Class and studios will provide experience in the drafting and graphic presentation of designs and the analysis and application of contemporary construction techniques. Practical experience may be gained through the companion laboratory, THE 226L. This lab is a requirement for theatre majors and highly recommended to all participants. Prerequisite: THE 119 or permission. **Cr 3.**

THE 226L Introduction to Scenic Construction and Design Laboratory

Conducted in connection with the department's staged productions and offers the student a practical application of the course material. Prerequisite: THE 119. Corequisite: THE 226. **Cr 1.**

THE 227 Introduction to Costume Construction and Design

Basic processes of theatre costume construction and design. Includes measuring, building and fitting techniques developed through participation in the construction of a costume. Design portion includes introduction to script analysis, elements of design, and fabric and color selection. A lab in related production work, THE 227L, is required for majors, optional for others. Prerequisite: THE 119 or permission. **Cr 3.**

THE 227L Introduction to Costume Construction and Design Laboratory
Laboratory in costume production work. Required for theatre majors. Prerequisite: THE 119. Corequisite: THE 227. Cr 1.

THE 268 Theatre Practicum, Technical
Supervised experience in Theatre and Dance Division productions in the areas of stage managing, publicity, scenery, lighting, costumes and makeup. Prerequisite: 6 hours of theatre courses and permission. May be repeated for a maximum of six hours. Cr 1-3.

THE 269 Theatre Practicum in Acting
Laboratory work in acting. Credit assigned by agreement of advisor and show director, based on learning opportunities of role. Prerequisite: 6 hrs of Theatre courses and permission. May be repeated for a maximum of three hours. Cr 1-3.

THE 400 Voice and Speech for the Actor
A studio course in the principles and development of the actor's voice and speech. Cr 3.

THE 401 Script Analysis
Examines modern literature written for the theatre. Because the literature will be presented from a production perspective, this course is oriented for use by actors, directors and designers. The objective is to stimulate greater clarity, logic, depth and imagination of interpretation, and to achieve more effective preparatory techniques to use in preparation for performance. Prerequisites: THE 112, THE 113, THE 116, THE 117 or THE 119 or any English course beyond 101. Cr 3.

THE 402 Movement Training for Actors
Methods of acting based on non-naturalistic approaches, which may include mime, puppetry, mask work, circus and clown techniques, guerrilla, environmental or street theatre, and choral and sound expression. Prerequisite: THE 117, DAN 101. Cr 3.

THE 403 Styles and Techniques of Acting
Concentrates on technical problems in acting, such as verse, non-modern language, historical styles and theatre conventions. Prerequisite: THE 117, THE 201. Juniors and Seniors. Cr 3.

THE 418 Advanced Costume Techniques
Examination of the major aspects of the costumer's craft, including drafting and pattern modification, mask and accessory construction, and dyeing and other fabric modification techniques. Emphasis may vary, depending upon the production requirements of the plays offered each semester. Prerequisite: THE 227 or permission. Cr 3.

THE 419 Advanced Theatre Technology
Detailed examination of techniques, materials and methodology for scenery and lighting. Preparation for professional work. Prerequisite: THE 214, THE 215. Cr 3.

THE 430 Children's Theatre Production
Production and performance of plays for young children. Includes hands-on experience with set and costume design and construction, acting,

directing, writing, and stage management. Prerequisite: THE 116 or permission. Cr 3.

THE 440 Playwriting, Directing and Performing Lab
Providing a matrix for playwriting, directing, and performing, this lab class affords the student an opportunity to work on a wide variety of original projects. Each student will create a traditional script or a non-traditional performance piece that will be written, analyzed and rewritten. There will be regular "Readers Theatre" style presentations of the material by members of the class. Prerequisite: THE 116 or permission. Cr 3.

THE 461 Theatre History I
The development of the drama, the physical theatre, and its modes of production. Ancient Egyptian and Greek theatre into the Renaissance. Limited to juniors and seniors or by permission. Cr 3.

THE 462 Theatre History II
The development of the drama and the physical theatre, with its modes of production via the actors, writers and designers. Renaissance to the present day. Limited to juniors and seniors or by permission. Cr 3.

THE 466 Stage Directing
Studies the task of all aspects of the theatre production into an artistic unity with emphasis on theatre aesthetics. Provides practice in the directing of short plays, with particular attention to working with actors. Prerequisite: THE 116. Limited to juniors and seniors. Lec 2, Lab 2. Cr 3.

THE 467 Drama Colloquium
In-depth study of a play being presented by the Maine Masque Theatre and examination of selected works by the same author. Participation in the production required. Prerequisite: permission. May be repeated for credit. Cr 3.

THE 468 Theatre Management
Covers the principles and practices involved in selecting and selling a season, running the box office, budgeting, graphic arts production, advertising and publicity in the media, audience development and public relations. Prerequisite: THE 111 and permission. Cr 3.

THE 470 Women Playwrights
Reading and analysis of plays written by women throughout history. Development of a critical approach with which to examine the works, both within the context of their times, and within the larger context of women's perspectives, styles, ideas, and symbols as expressed in dramatic literature. Prerequisite: 3 credit hours of dramatic literature (THE 112, THE 113, ENG 447, ENG 467) or permission. Cr 3.

THE 473 Scene Design
Study of principles, methods, and materials used in scene designing. Laboratory projects includes preparation of a complete design for a

particular production, including drawing and plans. Prerequisite: THE 224 and THE 226. Cr 3.

THE 474 Stage Lighting
Study of principles, methods, and materials used in stage lighting, including artistic and technical applications. Projects include problems in lighting particular productions. Shop work required. Prerequisite: THE 225. Cr 3.

THE 475 Costume Design Theory and Practice
Principles of theatrical costume design, including script interpretation, methods of research, illustration techniques and fabric selection. Techniques learned are applied in design projects with selected scripts. Prerequisite: THE 225 or permission. Cr 3.

THE 497 Independent Study in Theatre I
Cr 1-3

THE 498 Independent Study in Theatre II
Cr 1-3

THE 563 American Theatre
A study of the development of the American Theatre from its beginning to the present day. Prerequisite: permission. Cr 3.

THE 564 Asian Theatre
A study of the traditional theatres of India, Japan and China; classical and folk theatres of India, Noh, Kabuki and Bunraku of Japan; Beijing Opera and 20th century forms in China. Prerequisite: permission. Cr 3.

THE 574 Aesthetics of Modern Scene Design
Studies approaches, techniques and theories of modern scenic designers. Includes intensive practice in rendering and visual design techniques. Prerequisite: THE 473 or acceptable portfolio. Cr 3.

THE 596 Field Services in Theatre Production
Provides experience in producing theatre in the field, through stage directing, designing scenery, costumes, and/or lighting, building scenery, stage managing, costuming, handling publicity, etc. at a local elementary or secondary school, community or professional theatre. Prerequisite: Senior theatre majors and Graduate students with permission of the Chairperson. Credit depends on length and complexity of assignment. Cr 1-3.

Courses in Dance

DAN 101 Beginner Modern Dance
Fundamental concepts and practice of modern dance technique: body alignment, stretch/strengthening, movement vocabulary, body coordination, musicality and spatial awareness. For the general student at the beginning dance level. May be repeated for credit.

Cr 2

DAN 102 Beginner Ballet

Introduction to classical ballet dance training. Traditional exercises at the barre and on center floor emphasize body placement, flow of energy, and the creation of expressive movement in space. For the performing artist or general student. May be repeated for credit. Cr 2.

DAN 103 Beginner Jazz

Fundamentals of jazz dance technique with emphasis on body alignment, coordination and movement vocabulary. Preparation for expressive movement in relation to modern jazz music. May be repeated for credit. Cr 2.

DAN 112 Production/Rehearsal

Dance production and performance with emphasis on repertory, costuming, lighting in relation to choreography, staging, publicity and rehearsal. May be repeated with permission. Prerequisite: audition or permission. (Pass/Fail grade only). Cr 1.

DAN 201 Intermediate Modern Dance

Continuation of DAN 101. Emphasis on solving more complex movement problems. Provides enhanced movement vocabulary and further principles of body alignment, stretch/strengthening and musicality and expressiveness. May be repeated for credit. Prerequisite: DAN 101 or permission. Cr 2-3.

DAN 202 Intermediate Ballet

A detailed study of ballet form for the student with some previous training. Students master the execution of exercises and steps with speed, clarity and grace in order to achieve a fuller kinesthetic awareness. Can be used as a base for professional training or general artistic enrichment. May be repeated for credit. Prerequisite: DAN 102 or permission. Cr 2-3.

DAN 203 Intermediate Jazz

A continuation of DAN 103. Further development of principles of movement within the jazz idiom: body alignment, musicality, phrasing, stylistic form and performance awareness. May be repeated for credit. Prerequisite: DAN 103 or permission. Cr 2.

DAN 250 Dance Composition I

Study of the principles and elements of choreography. Provides guided practice in the construction of movement phrases, and studies for solo and group dances. Includes an informal studio presentation of student pieces. Prerequisite: Prior dance experience or permission. Cr 3.

DAN 266 Dance History

Religious, social and cultural aspects of dance from lineage-based ritual to the present century. Cr 3.

DAN 268 Elementary Dance Notation (Labanotation)

Analysis of directions, levels, timing and dynamics of movement. Covers notation fundamentals (Labanotation), elementary notation of dance technique, reading of folk dances, and simple modern dance and ballet studies. Prerequisite: DAN 101, DAN 104, DAN 102 or DAN 103, DAN 201, or DAN 301 or previous dance experience. Cr 3.

DAN 301 Advanced Modern Dance

A continuation of DAN 201. Emphasis on performance quality, phrasing, and musicality. The advanced dancer may develop and expand his/her style and vocabulary. May be repeated for credit. Prerequisite: DAN 201 or permission. Cr 2-3.

DAN 302 Advanced Ballet

A continuation of DAN 202. Emphasis on performance quality, an expansion of balletic and choreographic vocabulary. May be repeated for credit. Prerequisite: DAN 202 or permission. Cr 2-3.

DAN 303 Advanced Jazz

A continuation of DAN 203. Further emphasis on musicality, movement vocabulary and phrasing of advanced floor combinations. May be repeated for credit. Prerequisite: DAN 203 or permission. Cr 2.

DAN 375 Dance in the Twentieth Century

Special focus on ballet and American Modern Dance. Also covers popular dance (social, stage and cinema). Dance developments related to concurrent achievements in 20th century art, music, psychology, literature, architecture, education and the theatre. Prerequisite: DAN 266 or permission. Cr 3.

DAN 398 Dance Project

For the Intermediate level student who wishes to work on a special project in jazz, ballet or modern dance. The special project may be teaching, choreography, repertory, research, and/or technique. Prerequisite: Intermediate level technique or permission. Cr 2.

DAN 498 Dance Project/Thesis

(1) A supervised practicum in choreographic process and/or performance accompanied by a written analysis of this practicum, (2) an advanced level research topic, designed jointly by the student and the instructor. Prerequisite: Advanced level technique or permission. Cr 3.

Philosophy

Associate Professor Howard (Chairperson);
Professors Allen, Skorpen, White;
Assistant Professors King, Stark

Philosophy is rigorous reflection on human nature, culture, and the world. It is analytic in clarifying the concepts and methods particular to the humanities and to the sciences. It is synthetic in interpreting the descriptive and evaluative findings of all branches of human inquiry, including its own. It is also essential to the development of professional, occupational, environmental, and applied ethics elsewhere.

The Humanities Requirement

All courses taken in Philosophy may be used toward fulfilling the Arts and Humanities distribution requirement for the B.A. degree. Philosophy courses open without prerequisite are: PHI 101, The History and Problems of Self-Knowledge; PHI 102, Philosophy and Modern Life; PHI 103, Methods of Reasoning; PHI 105, Introduction to Religious Studies; PHI 106, Social Issues in Recent Religious and Philosophical Thought; PHI 107, Existentialism; PHI 108, Ways of Understanding the Bible. Other courses in the department carry prerequisites, usually three or six hours in philosophy.

Philosophy Major

Requirements for the Philosophy major are:

1. A minimum of 27 hours in philosophy;
2. At least 21 hours (seven courses) in philosophy must be upper level courses, i.e., courses above the 100 level;
3. PHI 200;
4. Six hours in the History of Philosophy sequence (PHI 210 (which is required), plus one of the following PHI 312, PHI 320, or PHI 322.
5. PHI 475 Junior/Senior Philosophy Seminar.

The department encourages double majors. We recognize that requirements of other departments may make it difficult or impossible for a student to complete a double major and the above requirements - especially when the decision for a double major comes late in a student's undergraduate career. Accordingly, the department will accept petitions for waiver of one or more of the requirements. Petitions are assessed on a case by case basis.

Concentration in Religious Studies

The concentration in religious studies is designed to provide students with the intellectual tools and scholarly background required for a critical understanding of the influential traditions of religion contributing to human culture.

A typical four-year program in Philosophy:

First Year	
Major	Minor
Two 100-level philosophy courses	One or two 100-level philosophy courses
Second Year	
Major	Minor
PHI 200 Problems in Recent Philosophy PHI 210 History of Ancient Philosophy PHI 312 History of Modern Philosophy	PHI 200 Problems in Recent Philosophy PHI 210 History of Ancient Philosophy OR PHI 312 History of Modern Philosophy
Junior Year	
Major	Minor
Two upper level philosophy courses, possibly including PHI 475	One upper level philosophy course
Senior Year	
Major	Minor
Two upper level philosophy courses, including PHI 475 (if not taken in Junior Year)	One of two upper level philosophy courses

Students graduating with a Concentration in Religious Studies will fulfill the departmental requirements as well as: 1) PHI 105, PHI 108; 2) either PHI 286 or PHI 287; 3) one of the following upper-level courses: 381, 385, or 490; 4) a minimum of 18 hours in Religious Studies, 9 hours of which must be above the 200 level.

The concentration in Religious Studies is being phased out. No student may declare a concentration after Spring 1994. Students interested in religious Studies are encouraged to consider the Interdisciplinary Course Concentration in Religious Studies.

Courses in Philosophy

PHI 101 The History and Problems of Self-Knowledge

An introductory historical analysis of major theories of self-understanding from pre-history to the present. Readings include Lorenz, Plato, Kant and others. Lectures are supplemented by film presentations such as Clark's "Civilization."
Cr 3

PHI 102 Philosophy and Modern Life

An introduction to philosophy through a reading of works by such thinkers as Plato, Nietzsche or Marx, as well as more recent philosophers on problems of existence, knowledge, and conduct. Discussion may include such topics as economic justice, affirmative action, abortion, animals and the environment.
Cr 3

PHI 103 Methods of Reasoning

A study of principles used to distinguish correct from incorrect reasoning including the nature of thought, uses of language, recognition of arguments, informal fallacies, purposes and types of definition, deduction and induction. Emphasis on understanding and mastering through practice some fundamental techniques for testing the soundness of many different kinds of reasoning.
Cr 3

PHI 105 Introduction to Religious Studies

An analysis of religion as an expression of human culture past and present. Considers institutional and non-institutional manifestations of religion as conveyed through myth and symbol.

religious experience, struggle for societal change, mysticism, and quests for the articulation of human values. Inquiry by various disciplines will be considered, e.g., anthropology, psychology, sociology, history, philosophy, and theology. Cr 3.

PHI 106 Social Issues in Recent Religious and Philosophical Thought

An examination of various philosophical and religious treatments of the most relevant social issues of our time. Considers analyses of such issues as sexism, racism, imperialism, violence and nonviolence, integration and separatism, capitalism and socialism. Cr 3.

PHI 107 Existentialism

A critical study of the philosophical significance of individual choices and actions, involving questions of personal identity, responsibility and authenticity, and the possibility or desirability of "disinterested objectivity." Authors read include Kierkegaard, Heidegger and Sartre. Cr 3.

PHI 108 Ways of Understanding the Bible

An introduction to the Bible as a literary work and as a sacred text, (i.e. as an imaginative product of ancient cultures that expresses ideas and experiences that were and continue to be deeply valued). Historical, literary, comparative, feminist and psychological methods of interpreting the Bible will be discussed. Cr 3.

PHI 200 Problems in Recent Philosophy

A study of recent philosophical work in ethics, social philosophy, philosophy of mind, philosophy of religion with an emphasis on epistemological and metaphysical issues that are raised in this work. Prerequisite: One course in philosophy or permission. Cr 3.

PHI 201 Religion and Psychology I: Freud and Jung

An exploration of the relationship between religion and mythology and the psychologies of Sigmund Freud and C.G. Jung. Focus on both similarities and differences in the thought of these psychoanalysts and their perspectives on religion. The implications of their thought for contemporary religious thinking will be discussed. Prerequisites: One course in philosophy; sophomore, junior or senior standing or permission. Cr 3.

PHI 203 Ancient Greek Religion

An exploration of the myths and rituals of ancient Greek religion through historical, literary, feminist and psychological perspectives. Attention given to the place and meaning of religion in ancient Greek culture. Prerequisites: One course in philosophy; sophomore, junior or senior standing or permission. Cr 3.

PHI 210 History of Ancient Philosophy

An analysis of Hellenic philosophy with emphasis on Plato and Aristotle, including Presocratic philosophy, Platonism, Aristotelianism, Stoicism and Epicureanism. Prerequisite: One course in philosophy, excluding PHI 103, or permission. Cr 3.

PHI 230 Ethics

Readings and discussions of works by Mill, Kant, Nietzsche, Tillich, Dewey, and some other systematic moral philosophy. In each case, the nature of the system, its summum bonum and defense is examined, criticized, and tested for its applicability to personal and public ethical predicaments. Prerequisite: Sophomore, junior, or senior standing. Cr 3.

PHI 231 Topics in Applied Ethics

Deals with the ethical issues in various professions and practices as business, law, agriculture, government, science, teaching and journalism. Different sections may focus on specific professions or problem areas (eg., Business Ethics, Environmental Ethics, etc.). Prerequisite: Sophomore, Junior or Senior standing. Cr 3.

PHI 235 Biomedical Ethics

This course investigates physician, nursing, and hospital codes of conduct, the physician/patient relationship, concepts of health/disease, procreation/abortion decisions, genetics/reproductive technologies, health resources/social justice allocations, and other ethical dimensions of medical practice. Prerequisite: Sophomore, junior, or senior standing. Cr 3.

PHI 240 History of Western Social and Political Philosophy

A critical study of the development of social and political philosophy from Plato through Marx in light of their ethical and metaphysical systems. Topics include the problem of justice, the nature of the state and its relationship to other social institutions, and the individual. The primary focus will be on normative rather than descriptive theory. Prerequisite: one course in philosophy excluding PHI 103 or permission. Cr 3.

PHI 244 Philosophy of Law

Topics include the nature of law, the limits of law, and legal responsibility. Special emphasis on selected cases in American legal history, the law of contracts and torts, positivism, goal-based, rights-based and feminist jurisprudence. Prerequisites: PHI 240 or POS 212 or any POS 389-393 or permission. Cr 3.

PHI 250 Formal Logic

An introductory course in modern symbolic logic. Techniques of deductive inference, including decision procedures and axiomatization, are studied in developing the propositional and predicative logics. Some attention is given to metalogic and the philosophy of logic. Prerequisite: Sophomore, junior, or senior standing. Cr 3.

PHI 260 Philosophy of Language

A study of major contemporary theories of language. Topics include the nature of meaning, uses of language, conventions in language, the nature of grammar, syntax, and semantics. Philosophers studied include Searle, Quine and Chomsky, among others. Prerequisite: PHI 200 or permission. Cr 3.

PHI 261 Existentialism and Literature

A critical study of philosophical significance of individual choices and actions involving questions of personal identity, responsibility and authenticity as these themes are developed in existentialist literature. Special attention will be given to existentialist literary techniques. Prerequisite: sophomore standing. Cr 3.

PHI 262 Philosophy of Art

An investigation of the nature and importance of aesthetic experience and its objects, the possibility of standards of art and taste, and the relation of art to other areas of experience. Topics include art and morality, art and science, art and the environment. Readings from Tolstoy, Hume, Dewey, Langer, Bell, Danto, Dickie and Beardsley, among others. Prerequisites: PHI 101, PHI 102, PHI 107 or PHI 200 or permission. Cr 3.

PHI 265 Topics in Philosophy

A seminar relying on careful use of major philosophical resources, as well as attempts at fresh exploration of fundamental topics. Designed for students who have previously taken at least one course in philosophy. May be repeated for credit when different philosophers or problems are studied. Prerequisite: One course in Philosophy. Cr 3.

PHI 286 Religions and Philosophies of the East: Hinduism

The religious and philosophical foundations of Hinduism. Readings include the Vedas, the Bhagavad-Gita, the Upanishads, Yoga, and Vedanta. Prerequisite: Sophomore, junior, or senior standing. Cr 3.

PHI 287 Religions and Philosophies of the East: Buddhism

The religious and philosophical foundations of Buddhism including the basic teachings of the Buddha (Four Noble Truths, Noble Eightfold Path, Dependent Origination, etc.), Buddhist ethics, Buddhist meditation, and some later religious and philosophical developments. Prerequisite: Sophomore, junior, or senior standing. Cr 3.

PHI 312 History of Modern Philosophy

An interpretation of modern philosophy from Bacon and Descartes in the 17th century, developing through 18th century rationalism and empiricism and culminating in the system of Kant. Prerequisite: two courses in philosophy or permission. Cr 3.

PHI 320 Topics in Recent Continental Philosophy

A critical study of topics addressed by major movements and thinkers in continental philosophy since the turn of the century. Readings include works by Husserl, Heidegger, Sartre, de Beauvoir, Merleau-Ponty, Levi-Strauss, Derrida, Lacan, Foucault, Habermas, and Gadamer. Prerequisite: PHI 312 or permission. Cr 3.

PHI 322 Philosophical Classics

A seminar dealing with an intensive study of the works of a major philosopher or school.

Topics vary. May be repeated for credit. Prerequisite: Two courses in philosophy. Cr 3.

PHI 335 Contemporary Ethics

An analysis of current moral theories bearing on issues of gender equity, equality and ethical development. Included will be the contrasting ethics of care versus the ethics of right, virtue ethics versus principled ethics, pursuing moral relationships versus achieving moral autonomy, and other issues as they arise. Prerequisite: PHI 230 or permission. Cr 3.

PHI 342 Marxist Philosophy I: The Philosophy of Karl Marx

Special attention is given to the Marxist theory of knowledge, ethics, political and social philosophy as formulated by Karl Marx in his theory of knowledge, ethics, economics and political philosophy. Additional readings from Friedrich Engels and Mao Zedong. Prerequisite: two courses in philosophy; sophomore, junior, or senior standing or permission. Cr 3.

PHI 343 Marxist Philosophy II: Twentieth Century Marxist Philosophy

An examination of major works in twentieth century Marxist philosophy. Emphasized are the writings of Lenin, Luxemburg, Lukacs, Trotsky, Mao, Gramsci, Sartre, Habermas, and socialist feminists. Prerequisite: Two courses in philosophy; sophomore, junior, or senior or permission. Cr 3.

PHI 344 Theories of Justice

A critical study of recent theories of social justice including utilitarian, social contract, entitlement, communitarian, feminist and postmodern approaches, and spanning the political spectrum from libertarianism to socialism. Topics include distribution of wealth and power, affirmative action, censorship and pornography and international justice. Prerequisite: two courses in philosophy, preferably including PHI 240 or permission. Cr 3.

PHI 352 Philosophy of Natural Science

A critical study of scientific knowledge and how it is developed, with emphasis on relations between theory and experiment, the scientist and the scientific community, and contemporary science and its historical background. Prerequisite: 6 hours of philosophy or 6 hours of natural science. Cr 3.

PHI 353 Philosophy of Behavioral Science

New developments in behavioral science such as Cognitive Science and Mind-Brain Identity Theory bring this science and philosophy even closer together than earlier developments such as S-R, Operant Conditioning or Cognitive Dissonance theories. The rise of Cognitive Science in philosophy, psychology, computer science, linguistics. Prerequisite: 6 hours of philosophy, behavioral science, or permission. Cr 3.

PHI 363 Theory of Knowledge

An examination of recent philosophical studies in epistemology including the application of modern philosophical analysis to some theory outside philosophy (e.g., a theory in psychology, literature, biology or history), with emphasis on the usefulness of philosophies of sensation, belief, truth, meaning, memory and imagination for theory construction. Prerequisite: two courses in philosophy including PHI 200 or permission. Cr 3.

PHI 364 Views of Self: East and West

An examination of major concepts of self: traditional views, both East and West; recent research from anthropology, sociology, psychology and other disciplines; Marxist, socialist, feminist and other critiques of dominant Western philosophical views; and comparative cultural studies. Prerequisite: two courses in philosophy; sophomore, junior or senior standing or permission. Cr 3.

PHI 381 The Nature of Religious Experience

A study of different methodological approaches to religious experience, with primary emphasis on the phenomenology of religion. Describes and interprets religious phenomena through analysis of the nature of religious symbolism. Prerequisite: Two courses in philosophy including one religious studies or permission. Cr 3.

PHI 382 Theories of Myth

Examines theories of such interpreters of myth as Casanovi, Malinowski, Levi-Strauss, Jung and Eliade. Explores the renewed interest in myth in philosophy, religious studies, anthropology and other disciplines, as well as in the general culture. Prerequisite: two courses in philosophy; sophomore, junior or senior standing and permission. Cr 3.

PHI 385 Recent Religious Thought

Examines different systems of religious thought arising since World War II including Post-Holocaust, Black, Native American, Feminist and Liberation theologies, among others. Prerequisite: two courses in philosophy, one must be in religious studies. Sophomore, junior or senior standing or permission. Cr 3.

PHI 439 Feminist Social and Political Theory

A survey of the major feminist theoretical frameworks with emphasis on their respective practical implications in the areas of work, family life, and sexuality. Prerequisite: junior, senior standing. Cr 3.

PHI 465 Advanced Topics in Philosophy

Individual and small group study of problems or systems of philosophical concern, relying on careful use of major philosophical resources, as well as attempts at fresh exploration of fundamental topics. Topics vary. May be repeated for credit when different philosophers or problems are studied. Prerequisite: Two courses in philosophy including PHI 200 or permission. Junior or senior standing. Cr 3.

PHI 466 Readings in Philosophy

Individual study of a selected topic, agreed upon by the student and the instructor. Designed to address advanced issues not covered in normal offerings. Prerequisite: 9 hours philosophy and permission of department and instructor. Cr 1-3.

PHI 475 Junior/Senior Philosophy Seminar

One semester of study is required for all philosophy majors. Normally offered each semester with topics of study varied depending upon the instructor and student interest. Provides upper-level philosophical study shared by philosophy majors and other students with an interest in advanced philosophical learning. Prerequisite: 2 courses in philosophy including PHI 200; junior/senior standing. Cr 3.

PHI 490 Topics in Religious Studies

Small class study of a theme, thinker or fundamental problem in religious thought. Topics vary. May be repeated for credit. Prerequisite: Two courses in philosophy 200 level or above. One must be in religious studies; junior or senior standing or permission. Cr 3.

College of Business Administration

J. Stanley Devino, *Dean*

Professors Alpander, Devino, Ford, Forsgren, Gilmore, Givens, Naor, Strong;
Associate Professor Gibson;
Assistant Professors Colburn, Lawson, McConnell, Oakley, Vollmers;
Lecturer Ingalls;
Instructors Pechinski, Sosnaud

Both the undergraduate program and the MBA program in the College are accredited by the American Assembly of Collegiate Schools of Business. AACSB is recognized by the U.S. Department of Education as a specialized accrediting organization in business and management education.

The College of Business Administration offers a four-year program in the major area of business administration. Upon successful completion of the prescribed curriculum the student is awarded the Bachelor of Science degree.

The College also provides a graduate program leading to the degree of Master of Business Administration. The graduate offerings of the College of Business Administration are described in the Graduate School Catalog.

Undergraduate Program

The primary objective of the undergraduate program in business administration is to develop the student's abilities to assume the responsibilities of business management. The program is aimed at providing the broad training necessary for successful business management in a rapidly changing economy. No attempt is made to provide detailed specialized training in particular business tasks. The program aims, rather, at developing skills and attitudes that will enable the student to cope successfully with the changing problems of business management in the years ahead. Implementation of this program takes place in three general phases. First, students acquire broad training in the liberal arts and sciences for the necessary foundation upon which their future education will build; second, students pursue a program of study designed to provide them with an understanding of the major functional areas common to most business operations and with a knowledge of certain fields which are particularly relevant to the study of business management (this is referred to as the "core" program and includes basic courses in accounting, management information systems, economics, finance, International business, the legal environment of business, marketing, and general management); third, students undertake to acquire a deeper knowledge of the field of concentration which they have selected. This is done largely during the senior year and is accomplished by taking 15 credit hours of work

beyond the introductory course in the chosen field. The five fields of concentration in which advanced work may be done are accounting, finance, management information systems, marketing, and management.

General Information

Admission

Students are usually admitted to the College of Business Administration as first-year students in the University. For the specific requirements for admission see the "Admission" section. All deficiencies in entrance requirements must be removed before registering for the junior year. Students who transfer from other colleges with advanced standing must satisfy all basic entrance requirements within one year.

Transfer Credit

Under the accreditation standards of the American Assembly of Collegiate Schools of Business, no transfer credit is granted for business courses taken during the first-year and sophomore year, with the exception of six semester hours for Principles of Accounting and three semester hours for the Legal Environment of Business. However, a transfer student from an institution designated as regionally accredited who has taken a business course at the lower division level which is offered at the upper division level at the University of Maine may request validation of said course. The method of validation consists of an examination procedure to demonstrate acceptable proficiency consonant with the overall educational experience required of all students in the College of Business Administration. Also, no transfer credit is granted for any course completed at another accredited institution in which grades below "C" have been received. Responsibility for evaluating course work for which transfer credit is requested rests with the Director of Admissions and the Dean of the College of Business Administration.

Students from other campuses of the University of Maine System who wish to transfer to the College of Business Administration must present an academic record that meets at least the minimum standards of quality established by the University. Also, they are required to complete at least one full year of academic work as students in the College of Business Administration.

Change of College Policy at UM

1. For students in baccalaureate programs transferring from other colleges at UM, the minimum grade point requirement is 2.0.
2. For students in two-year programs, the minimum grade point requirement is 2.5.
3. Students in University College programs should refer to the UC transfer policy.

Senior Year in Residence

To receive a B.S. in Business Administration degree at the University of Maine, a student must fulfill the senior year residency requirement. This means the last 30 degree hours in the academic program must be completed at the University of Maine.

Foreign Language Placement and Credit

During the first week of classes, the Foreign Language Placement Examination will be given for purposes of both placement and credit. Only those incoming Business Administration students who have completed at least three years of a high school Foreign Language may take the Language Placement Examination. If the student's score is very high, up to six hours of degree credit may be awarded. If a student does poorly on the examination and wishes to continue in the same language, he or she may take the elementary course for no credit, followed by the intermediate course for credit. Typically, a student who has had two years of the foreign language in high school will qualify for admission to the intermediate course which would then be taken for credit.

Study Away

Students who are in good academic standing may take advantage of various opportunities available for spending one or two semesters studying business administration and other subjects in a foreign country. Such study is usually limited to students who are in the junior year of study. One example is the spring semester at the University of Grenoble in France. The Universities of Maine, Connecticut, New Hampshire, Rhode Island and Vermont cooperate in the sending of business students and a faculty coordinator to this program. Students have an opportunity to further their knowledge of international business in an English-speaking program while gaining exposure to France's history, language, and culture.

Specimen Curriculum

First Year

Fall Semester

Intermediate Foreign Language I
(FRE 203, GER 203, RUS 203 or
SPA 203)
ENG 101 College Composition
PSY 100 General Psychology
Humanities or Social Science
Elective
Science and Technology Elective

Spring Semester

Intermediate Foreign Language II
(FRE 204, GER 204, RUS 204 or
SPA 204)
MAT 115 Applied Mathematics
for Business and Economics
SPC 103 Fundamentals of Public
Communication
Humanities or Social Science
Elective
Science and Technology Elective

Sophomore Year

Fall Semester

BUA 201 Principles of
Accounting I
ECO 120 Principles of
Microeconomics
MAT 215 Introduction to
Statistics for Business and
Economics
English, Elective OR BUA 220
The Legal Environment of
Business
General Foundation Elective

Spring Semester

BUA 202 Principles of
Accounting II
BUA 220 The Legal Environment
of Business OR English Elective
ECO 121 Principles of
Macroeconomics
COS xxx (any COS course other
than COS 100, COS 110 or COS
198)
General Foundation Elective

Junior Year

Fall Semester*

BUA 325 Principles of
Management and Organization
BUA 335 Principles of
Management Information
Systems
BUA 350 Business Finance
BUA 370 Marketing
ENG 317 Technical Writing

Spring Semester**

BUA 337 Production and
Operations Management
BUA 343 Introduction to
International Business
BUA course in field of
concentration OR Free Elective
Humanities or Social Science
Elective

*Students concentrating in Accounting must take BUA 301 - Intermediate Accounting I and BUA 305 - Cost Accounting. These students should postpone two of the BUA courses listed above until the Spring Semester.

**Students concentrating in Accounting must take BUA 302 Intermediate Accounting II and should also take BUA 306 Advanced Managerial Accounting.

Honors Program

Jeffrey Pinto, Honors Secretary

First year students and sophomores of marked academic ability are encouraged to consider participation in the University Honors Program. Qualified students may be admitted to the Honors Program at any time up to the beginning of the junior year. HON 101, HON 102, HON 201, HON 202, HON 301, and HON 302 are taken in common with students from other colleges within the University. These courses all satisfy College of Business Administration requirements in the area of humanities/fine arts or free electives. HON 397, HON 498, and HON 499 are taken during the junior and senior years, and involve individual research and the writing of the senior honors thesis. Additional information about the Honors Program will be found in the "Honors" section of this catalog.

Graduation Requirements

Completion of the required work of the College of Business Administration leads to the degree of Bachelor of Science. All students are required to complete 120 degree hours.

Students must have a 2.0 accumulative average to graduate. The accumulative average is computed as follows: Total hours taken divided into total quality points received.

All course work taken in business and economics must be completed with a 2.0 ("C") accumulative average for a student to be eligible for a degree.

The required course work for the B.S. in Business Administration is given below.

B.S. in Business Administration Program

A. General Foundation Subjects (62 credits)
Note: No more than six (6) hours of mathematics and nine (9) hours of economics may be taken as part of these 62 credit hours.

1. Humanities and Fine Arts (26 credits)

ENG 101 College Composition
ENG 317 Technical Writing
SPC 103 Fundamentals of Public Communication

Intermediate Level Foreign Language
FRE 203-204, GER 203-204, RUS 203-204, or SPA 203-204

At least three (3) of the remaining nine (9) credit hours must have an ENG designation. The remainder may be selected in such fields as: art, the classics, English composition, foreign language, history, journalism, literature, music, philosophy, speech, and theatre.

2. Social and Behavioral Sciences (15 credits)

PSY 100 General Psychology
ECO 120 Principles of Microeconomics
ECO 121 Principles of Macroeconomics

Only one additional three (3) credit economics course may be taken in partial fulfillment of this requirement. The remaining credits must be taken in such fields as: anthropology, Canadian studies, modern society, political science, psychology, and sociology.

3. Mathematics and Science (15 credits)

MAT 115 Applied Mathematics for Business and Economics
MAT 215 Introduction to Statistics for Business and Economics*

COS xxx (Any COS course other than COS 100, COS 110 and COS 198)**

The remaining 6 credits must be taken in science and technology. Courses may be selected from such fields as: animal science, aquaculture, astronomy, biology, botany, chemistry, ecology, entomology, environmental sciences, food sciences, geology, horticulture, physics, plant science, soil science and zoology.

4. General Foundation Electives (6 credits)

With the exception of mathematics courses in any fields listed under areas 1, 2 or 3 above may be taken to fulfill this requirement. However, economics credits in areas 2 and 4 cannot exceed nine (9) hours.

B. Core Requirements in Business (30 credits)

BUA 201 Principles of Accounting I
BUA 202 Principles of Accounting II
BUA 220 The Legal Environment of Business
BUA 325 Principles of Management and Organization

*MAT 434 - Introduction to Statistics may be substituted for MAT 215.

**COS 220 - Introduction to Computer Science is required for students concentrating in Management Information Systems.

BUA 335 Principles of Management Information Systems

BUA 337 Production and Operations Management

BUA 343 Introduction to International Business

BUA 349 Administrative Policy and Business Environment (Seniors only)

BUA 350 Business Finance

BUA 370 Marketing

Field of Concentration (15 credits) All students must complete a field of concentration in one of the functional areas of Business Administration: Accounting, Finance, Management Information Systems, Management and Marketing.

1. Accounting (15 credits)

Required:

BUA 301 Intermediate Accounting I

BUA 302 Intermediate Accounting II

BUA 305 Cost Accounting

BUA 307 Advanced Accounting

BUA 310 Auditing

Students concentrating in accounting are strongly encouraged to take the following courses as free electives:

BUA 306 Advanced Managerial Accounting

BUA 308 Emerging Issues and International Accounting

BUA 312 Federal Taxation of Individuals

BUA 314 Accounting Control Systems

BUA 315 Taxation of Corporations, Partnerships and Estates

2. Finance (15 credits)

Required:

BUA 351 Corporate Treasury Dynamics

BUA 352 Financial Institutions

BUA 353 Investment Strategy

BUA 366 Decision Support Systems for Management

Any one of the following:

BUA 301 Intermediate Accounting I

BUA 305 Cost Accounting

BUA 354 Speculative Markets

ECO 420 Intermediate Microeconomics

ECO 471 Public Finance and Fiscal Policy

ECO 472 State and Local Government Finance

ECO 475 Industrial Organization

3. Management (15 credits)

Required:

BUA 326 Dynamics of Organization and Behavior

BUA 327 Seminar in Contemporary Management Problems

BUA 330 Personnel Management and Industrial Relations

BUA 345 International Management

And any one of the following:

BUA 328 Canadian/U.S. Business: A Comparison

BUA 331 Labor-Management Relations

BUA 340 Problems of Small Business

BUA 364 Database Management Systems

BUA 366 Decision Support Systems for Management

Senior Year - Accounting Field

Fall Semester

BUA 307 Advanced Accounting

BUA 310 Auditing

BUA 312 Federal Taxation of Individuals

Humanities OR Social Science

Elective

Free Elective

Spring Semester

BUA 308 Emerging Issues and International Accounting

BUA 315 Taxation of Corporations, Partnerships and Estates

BUA 349 Administrative Policy and Business Environment

Humanities OR Social Science

Elective

Free Elective

Senior Year - Finance Field

Fall Semester

BUA 351 Corporate Treasury Dynamics

BUA 352 Financial Institutions

BUA 353 Investment Strategy

Humanities OR Social Science

Elective

Free Elective

Spring Semester

BUA 349 Administrative Policy and Business Environment

BUA 366 Decision Support Systems for Management

Finance Elective

Free Elective

Free Elective

Senior Year - Management Field

Fall Semester

BUA 326 Dynamics of Organization and Behavior

BUA 330 Personnel Management and Industrial Relations

BUA 345 International Management

Humanities OR Social Science

Elective

Free Elective

Spring Semester

BUA 327 Seminar in Contemporary Management Problems

BUA 349 Administrative Policy and Business Environment

Management Elective

Free Elective

Free Elective

Senior Year - Management Information Systems Field (not available 1993-95)

Fall Semester

BUA 361 Data and File Structures for Business Applications

BUA 364 Database Management Systems

BUA 366 Decision Support Systems for Management

Humanities OR Social Science

Elective

Free Elective

Spring Semester

BUA 349 Administrative Policy and Business Environment

BUA 363 Distributed Information Systems for Business

Applications

BUA 365 Business Systems

Development

Free Elective

Free Elective

Senior Year - Marketing Field

Fall Semester

BUA 376 International Marketing

BUA 378 Marketing Research

BUA 382 Consumer Behavior

Marketing Elective

Humanities OR Social Science

Elective

Spring Semester

BUA 349 Administrative Policy and Business Environment

BUA 380 Managerial Marketing

Marketing Elective

Free Elective

Free Elective

BUA 384 Business Logistics

4. Management Information Systems (15 credits) (not available 1993-95)

Required:

BUA 361 Data and File Structures for Business Applications

BUA 364 Database Management Systems

BUA 365 Business Systems Development

And any two of the following:

BUA 305 Cost Accounting

BUA 330 Personnel Management and Industrial Relations

BUA 351 Corporate Treasury Dynamics

BUA 363 Distributed Information Systems for Management

BUA 335 Principles of Management Information Systems

Studies the role of information systems and data processing in business planning and control including technology of information systems, economics of information, planning, decision-making and control in business organizations. Prerequisites: MAT 215 and any 200 level COS course, junior standing. Cr 3.

BUA 337 Production and Operations Management

The place of production planning and control in an industrial organization and its relation to the actual production procedure. Problems in design, marketing, forecasting, capacity evaluation and quality control are interwoven with those of production and inventory management. Prerequisite: BUA 325, junior standing. Cr 3.

BUA 340 Problems of Small Business

Develops understanding of the economic and social environment in which the small concern functions. Provides practice in solving problems relevant to small businesses, particularly those operating in Maine. For students who anticipate operating a small business, or dealing with small businesses as customers or suppliers. Prerequisites: BUA 325, BUA 350, BUA 370 and senior standing with permission. Cr 3.

BUA 343 Introduction to International Business

Examines the role of U.S. businesses in the global economy with focus on key concepts and topics in world trade and investments, economic relationships among nations, as well as an understanding of cultural diversities. Provides analyses of problems and opportunities related to establishing, conducting, and maintaining business activities in foreign markets. Prerequisites: ECO 120, ECO 121. Cr 3.

BUA 345 International Management

Examines management problems of organizations with international interests, including the significance of cultural traditions and social structures for business conduct. Covers various international styles of managerial functions, structure, and processes. Prerequisite: BUA 325. Cr 3.

BUA 349 Administrative Policy and Business Environment

A study of administrative decision making and policy setting, with consideration of social and political forces, and ethical values. Prerequisites: BUA 325, BUA 335, BUA 337, BUA 350, and BUA 370, senior standing. Cr 3.

BUA 350 Business Finance

Examines the promotion, organization, and financing of the single proprietorship, partnership, and corporation, through advanced case studies and problems. Prerequisites: ECO 120, ECO 121, and BUA 201, junior standing. Cr 3.

BUA 351 Corporate Treasury Dynamics

Traces counterflows of cash between the corporate unit and the money market due to seasonal,

cyclical, and secular demands. Includes numerous approaches to debt limit determination, and explores the problem of making optimal financing decisions in specific corporate and bank management settings. Prerequisite: BUA 350. Cr 3.

BUA 352 Financial Institutions

The operations and economic roles of financial institutions: commercial banks, investment houses, and investment markets; savings and insurance institutions; governmental agencies. An institutional introduction to the fields of private and public finance. Prerequisites: ECO 120, ECO 121, BUA 350. Cr 3.

BUA 353 Investment Strategy

Examines the construction and management of investment portfolios. Prerequisites: ECO 120, ECO 121, BUA 350. Cr 3.

BUA 354 Speculative Markets

Examines the futures and options markets, concentrating on the use of derivative assets in risk management. Special emphasis on the ways in which a hedger may transfer unwanted risk to a speculator who is willing to bear it. Prerequisite: BUA 350. Cr 3.

BUA 361 Data and File Structures for Business Applications

Covers program, data, and file structures through advanced applications development and maintenance projects. Provides an in-depth understanding of a business-oriented programming language and introduces theories of efficient structuring of large data files. Principles of software engineering are integrated throughout the course. Prerequisite: COS 220. Cr 3.

BUA 363 Distributed Information Systems for Management

Introduces the design and management of information systems in distributed environments. Covers telecommunications, networks, advanced office systems, and strategic considerations in distributing databases, processing, and support. Prerequisite: BUA 335. Cr 3.

BUA 364 Database Management Systems

Introduction to technical, managerial, and ethical issues associated with computer-based data management. Covers issues in business database design and development, effective use of database management systems to support management decision making, database management, and database management systems acquisition. Prerequisite: BUA 335 or equivalent and permission. Cr 3.

BUA 365 Business Systems Development

Integrates computer technology, systems analysis, systems design, and organizational behavior to assist the student in developing management information and decision support systems. Explores state-of-the-art structured systems analysis and design methodologies and presents a rigorous approach to information systems development. Prerequisites: Senior standing, BUA 364 and COS 220 or equivalent. Cr 3.

BUA 366 Decision Support Systems for Management

Covers the managerial use of computer-based modelling to aid decision making with special emphasis on modelling complex systems under conditions of uncertainty. Principles of decision making, business modelling methods, decision analysis, decision support systems, and expert systems are covered. Prerequisite: BUA 335. Cr 3.

BUA 370 Marketing

Examines problems of distribution for representative industrial and consumer goods, including merchandising policies, selection of distribution channels, price policies, and advertising and sales promotion methods. Prerequisites: BUA 201, ECO 120 and ECO 121, junior standing. Cr 3.

BUA 372 Advertising

Considers the place of advertising in the marketing program. Business cases are analyzed to determine those situations in which advertising may be profitably employed to stimulate primary and selective demand for industrial and consumer goods and services. Prerequisite: BUA 370. Cr 3.

BUA 374 Sales Management

An analysis of the problems facing marketing management in formulating sales policy and managing the sales organization. Prerequisite: BUA 370. Cr 3.

BUA 376 International Marketing

Focuses on marketing principles and strategies valuable to the successful conduct of international business operations. Differing business environments will be examined in order to sensitize students to necessary adjustments in marketing strategies. Prerequisites: BUA 370 and BUA 343. Cr 3.

BUA 378 Marketing Research

Considers marketing research as a tool in solving problems of production and distribution with emphasis on problem formulation, exploratory research, research design, basic observational and sampling requirements, data analysis, interpretation, and sampling. Prerequisites: BUA 370 and MAT 215. Cr 3.

BUA 380 Managerial Marketing

Emphasizes the integration of marketing, as an organization activity, with other activities of the business firm. Explores problems encountered by top marketing executives in modern business. Prerequisites: BUA 378 and BUA 382. Cr 3.

BUA 382 Consumer Behavior

An exploration of consumer purchase decision processes. Analyzes existing consumer behavior models and their role in the formulation and implementation of marketing strategies. Covers the psychological, sociological and cultural dimensions of buyer behavior, and the current state-of-the-art in consumer research, including the findings from empirical tests of buyer behavior models. Prerequisite: BUA 370. Cr 3.

BUA 384 Business Logistics

An introduction to the logistical system including consideration of transportation modes, plant and warehouse location, inventory size determination, etc. Cases and problems are utilized to sharpen analytical techniques. Culminates in a consideration of the total cost approach to logistical system analysis and decision-making. Prerequisites: BUA 325 and BUA 370. Cr 3.

BUA 396 Field Experience-Cooperative Education

From one to six semester hours of degree credit will be granted for field experience in business and managerial fields relevant to the student's educational development and career goals. Prior approval of the project and of the precise number of credits is required, and will be based on a detailed written plan presented by the student. Students will not be granted credit

either retroactively or for field experience courses taken at another university or another campus of this university. Prerequisite: junior or senior in the College of Business Administration and permission. Cr 1-6.

BUA 400 Introduction to Accounting

Provides pre-MBA students with an introduction to the basic principles underlying the preparation of financial statements and the analysis of financial information. Prerequisite: Pre-MBA students only, permission of the Director of the MBA Program. Cr 3.

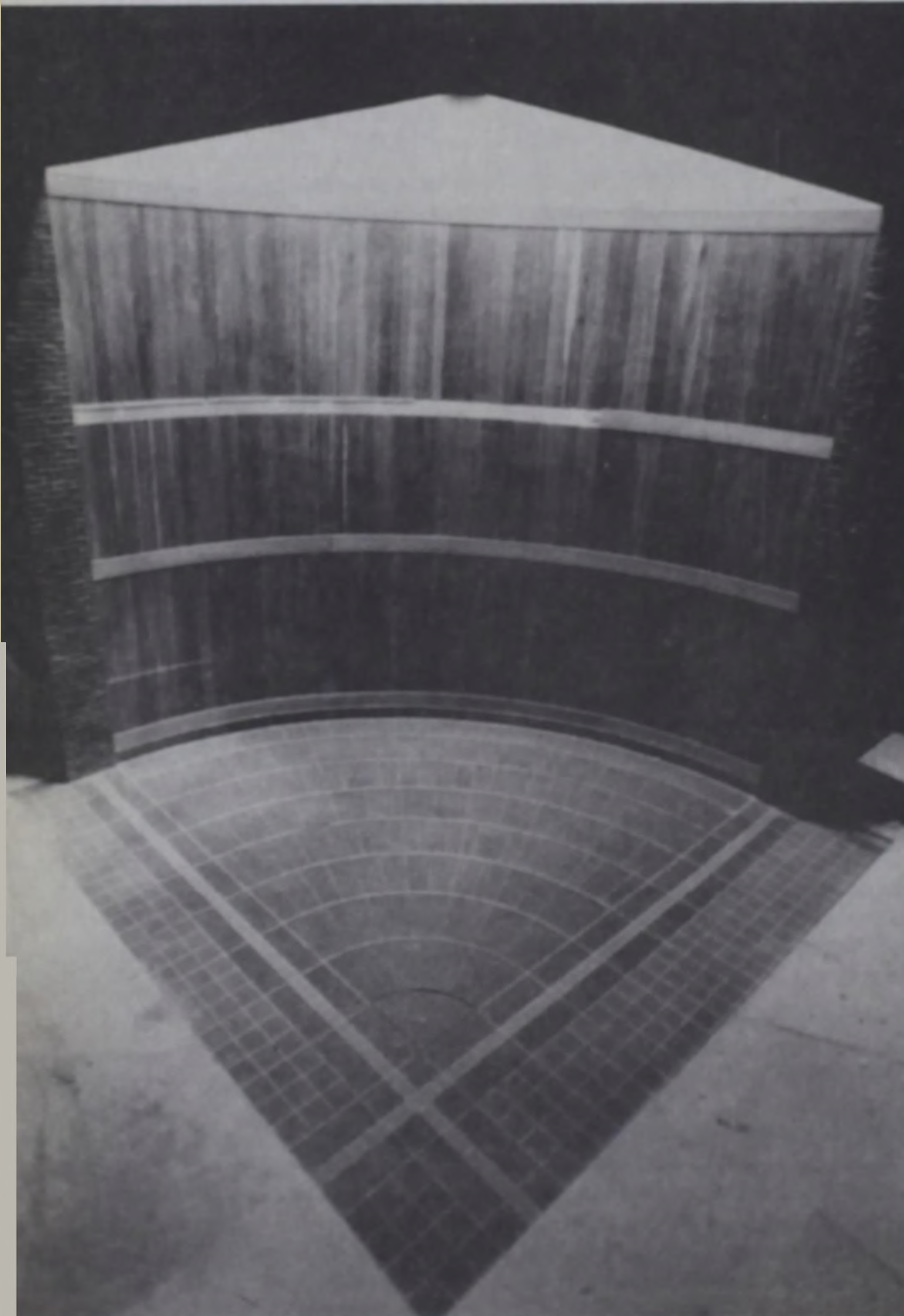
BUA 430 Quantitative Methods for Business

Provides pre-MBA students with an applied introduction to the elementary mathematical functions, systems of equations and inequalities, elements of analytical geometry, linear programming for business applications, matrix algebra, selected topics from calculus, and basic

statistics for business. Major topics of normal probability distributions, sampling, estimation, hypothesis testing, regression and correlation analysis and Bayes' Theorem as related to business applications are covered in the statistics segment. Prerequisite: Permission of the Director of the MBA Program. Cr 3.

BUA 440 Computer-Based Information Systems

An intensive and accelerated introduction to computerized information systems, designed to provide pre-MBA students with a foundation for understanding and analyzing information systems for business planning and control. Prerequisite: Permission of the Director of the MBA Program. Cr 3.



College of Education

Robert A. Cobb, *Dean*

Professors Chiappone, Cobb, Davis, Donaldson, Harris, McIntire, Pechinski, Salesi, Work, Yvon;
Associate Professors W. Abbott, E. Brazee, P. Brazee, Breen, Butterfield, Coladarci, Estler, Hulse-
Killacky, Kristo, H. Lehnhard, R. Lehnhard, Maddaus, Perry, Pooler, Power, Quaglia, Rog, Schutz,
Skehan, Zeph;
Assistant Professors Artesani, Brown D., Goessling, Magnus-Brown, King, Nelson, Reif, Spector,
Weller;
Lecturers Bird, Fox;
Cooperating Professor Lewis;
Cooperating Associate Professor White;
Cooperating Assistant Professors Anderson, Hicks, Jordan;
Cooperating Lecturers Ames, Ballinger, Dwyer, Dyer, Keeling, Linder, Roberts, Wren, Young

The College of Education offers four-year programs designed to prepare elementary, and secondary school teachers and teachers of physical education. The College also provides, to undergraduates from other divisions of the University and to graduate students, instruction in the professional subjects essential for certification as a teacher by the state of Maine.

General Information

The College of Education serves those students who are planning a career in the field of education. Undergraduate programs are designed to include a substantial amount of general education and a concentration in an academic area reflecting special teaching interests.

Additional information about programs may be obtained by writing the Director of Admissions or the Dean of the College of Education.

Admission

Students ordinarily are admitted to the College of Education as first-year students in the four-year program. The specific admission requirements are given in the "Admission" section of this catalog. A student admitted with advanced standing must satisfy all basic entrance requirements in the College of Education and have maintained at least a 2.5 GPA in their College Courses prior to admission.

Program Options

Elementary Education

Students admitted to the College of Education seeking a B.S. degree in elementary Education will participate in the Professional Preparation Team program. Their program includes: (1) 60 or more credits in disciplines related to the arts and humanities, social sciences and natural sciences, including a 24-hour concentration in one of several; (2) Professional coursework, including EDB 202, 204, 221, CHF 201, SED 402, EDF 201, six methods courses and EDG 399; (3) Field experiences in participating school districts, culminating in two internships (student teach-

ing) totaling 12 credits and lasting one entire semester in the senior year.

Secondary Education

Student admitted to the College of Education seeking a B.S. degree in secondary education will participate in the Professional Preparation Team program. Their program includes: (1) 71-83 (depending on specialization) or more credits in disciplines related to the arts and humanities, social sciences and natural sciences including a 50-52 hour specialization in either mathematics, science (several subspecialties) English, social studies or foreign language and culture; (2) Professional coursework, including EDB 202, 204, 221, CHF 201, SED 402, a methods course in teaching their field of specialization, and EDG 399; and (3) 16 credits of field experience in participating school districts culminating in two internships (student teaching) totaling 12 credits and lasting one entire semester in the senior year.

Art Education

The Bachelor of Science degree in Art Education has been transferred to the Department of Art, College of Arts and Humanities.

Health, Physical Education and Recreation Programs

The professional curriculum of the health, physical education, and recreation programs prepares qualified students for service to schools and communities in the areas of teaching, administration, and leadership with a focus on physical education, health-fitness, leisure, and sport. A bachelor of science degree in education is awarded to graduates of this program.

Certification

Individuals who have completed a degree or are enrolled in a college other than the College of Education and who wish to be certified through transcript analysis by the State of Maine may seek certification through coursework offered in the College. Application and acceptance into Teacher Certification option is required.

Transfer Students: Admission with Advanced Standing

Students from other institutions who already have completed a portion of college work, or who desire to change their professional plans and enter education, are invited to apply for admission by transfer. Students who are accepted will be given advanced standing in the College of Education for work already completed if that work meets the established standards and the specific course requirements of the program to which they are seeking admission.

Residence Requirements

A minimum of 30 semester hours of credit must be earned as a student at the University of Maine to qualify a candidate for a degree. This requirement may be met by one academic year of residence or by attending Summer Sessions; however, regularly enrolled students in the University who wish to transfer to the college may find it necessary to complete additional semesters to meet degree and program requirements. For students enrolled in Continuing Education Division and Summer Session courses, the 30 hours of residence credit may be obtained over an extended period of time and need not be continuous. Work taken in C.E.D. is considered resident credit for undergraduate students in the College of Education.

Summer Session and Continuing Education Students

Students whose only work in the College of Education has been or will be in the Summer Session or Continuing Education Division program are strongly urged to apply for admission to the University as part-time degree candidates. This recommendation applies both to students who expect to work for degrees in the various colleges of the University and to those who have not yet decided on a major. **At least 30 credit hours of Orono courses must be completed to receive a degree from the University of Maine.**

Specimen Curriculum for Elementary Education Majors

First Year

Fall Semester		Spring Semester	
ENG 101 College Composition	3	MAT 108 The Structure of Arithmetic II	3
MAT 107 The Structure of Arithmetic I	3	EDB 202 The American School English Requirement	3
PSY 100 General Psychology	3	Natural Science Requirement	3
CHF 201 Introduction to Child Development	3	Social Studies Requirement	3
Social Studies	3	EDG 298 Professional Preparation Team Field Experience	1.5
TOTAL	15	TOTAL	16.5

Second Year

Fall Semester		Spring Semester	
CDS 130 Introduction to Communication Disorder	3	AED 171 The Teaching of Art	3
EDB 221 Educational Psychology	3	EDB 204 The Teaching Process	3
Social Studies Requirement	3	EDG 298 Professional Preparation team Field Experience	1.5
English Requirement	3	Natural Science Requirement	3
Concentration Course*	3	Social Studies Requirement	3
TOTAL	15	Concentration Course*	3
		TOTAL	16.5

Third Year

Fall Semester		Spring Semester	
ERL 313 Teaching of Reading in the Elementary School	3	EDG 400 Field Observation (Activity)	1
ERL 318 Teaching Language Arts in the Elementary School	3	EMA 314 Teaching Mathematics in Elementary School	3
ERL 317 Children's Literature	3	ESC 316 Teaching Science in the Elementary School (K-8)	3
EDF 201 Great Ideas, Critical Issues	3	ESS 315 Teaching Social Studies in Elementary School	3
Concentration Course*	3	Concentration Courses*	6
TOTAL	15	TOTAL	16

Fourth Year

Fall Semester		Spring Semester	
EDG 399 Professional Preparation Team Senior Seminar	1	STT 490 Full-Day Student Teaching (Elementary)	12
HPR 380 HPR Programs in the Elementary School	3	TOTAL	12
SED 402 Mainstreaming Exceptional Students	3		
Concentration Courses*	6-9		
TOTAL	13-16		

TOTAL CURRICULUM HOURS: 120+

Total depends upon concentration coursework

* Concentrations: Canadian Studies, French, Mathematics, English, Human Development, Natural Science, Psychology, Spanish, Social Studies, Speech, Philosophy.

Among the advantages of being admitted to the University are immediate assignment of a major advisor to counsel on registration, requirements, etc., and eligibility for guidance and counseling services. Students who expect their work to be in the Summer Session should apply before their first registration; students whose first work is to be by Continuing Education classes should apply during their first course.

Application for admission should be made directly to the Director of Admissions, University of Maine.

Off-campus students, before enrolling for a course, should ascertain from the Associate Dean for Academic Services of the College of Education the amount of such work allowed toward fulfilling the requirements for the degree.

Exceptions to these rules will be permitted only by a vote of the faculty.

Graduation Requirements

Completion of the required work of the College of Education leads to the degree of Bachelor of Science in Education (B.S. in Ed.).

A minimum of 120 degree hours of required college work is necessary for graduation. Some programs require more than 120 hours such as the specialized program of Health, Physical Education and Recreation which requires a minimum of 130 degree hours. In addition, each student must meet the grade point averages of the University and his/her respective program in order to graduate.

General Education Subjects Required. Information concerning the specific courses required in general education is available from the Office of the Dean. These subjects are: English, speech, social studies, science and mathematics, psychology, fine arts, and humanities.

Recent state legislation and national accreditation requirements may result in program changes. Students are responsible for monitoring current requirements.

Professional Subjects Required. The professional subjects required for a degree from the College of Education meet and exceed the current state requirements for a teaching certificate. Additionally, the state has mandated that individuals take the National Teacher Education exam before being certified.

The required professional subjects are designed to acquaint the student with the general aims of education and the techniques and principles of teaching. These courses and related field experiences are arranged so they culminate in the supervised student teaching experience.

Education Courses in the Summer Session and in the Continuing Education Program

Numerous education courses are offered during the Summer Session and by class extension through the Continuing Education Division. Detailed information regarding the Summer Session and the Continuing Education Division course offerings may be obtained from the program's director at 5713 Chadbourne Hall, University of Maine, Orono, Maine 04469-5713.

Double Degrees

A student wishing to pursue double degrees across college lines normally must make a declaration of intent in the sophomore or junior year. The double degree must be in two distinct and separate areas. All requirements of both colleges and both majors must be fulfilled, including major requirements for work required outside the department. Students intending to become candidates for such double degrees must declare their intent to the deans of both

colleges no later than the beginning of their junior years, and familiarize themselves with the requirements of both colleges.

The Honors Program

The University of Maine offers its Honors Program to above-average students who are interested in interdisciplinary courses. The faculty of the College of Education encourages able students to participate. Students may initiate candidacy by requesting written endorsement of their academic advisors.

Honors courses meet general education and major requirements on an individualized basis, determined upon consultation with the faculty advisor and the college's Honors secretary. (See index under "Honors Program.")

Certificates for Teachers

It should be clearly understood that the Maine Department of Education, (MDE) Augusta, Maine, has sole authority to issue certificates for teaching. The office of the Dean of the College of Education, however, is in a position to advise prospective teachers concerning certification.

To provide for the many types of school positions, MDE issues several types of certificates. Upon successful completion of his or her program and the National Teacher Examination the undergraduate student in the College of Education generally will be eligible for the provisional teaching certificate at either the elementary or secondary school level.

In addition to furnishing courses for its own students, the College of Education acts as a service agency to provide professional training for students from other teaching units of the University who wish to qualify for a teaching certificate. Such students are enrolled in the same classes with students from the College of Education. It is the responsibility of these students to secure current certification information and the actual certification directly from MDE. It is required that individuals who wish to take coursework for certification through the College of Education, contact the certification office to obtain an application for the certification sequence.

Placement for Teachers

The University of Maine Career Center includes, among its services, assistance to prospective teachers in finding teaching positions, a credentials service, on-campus interviewing, weekly job listings and resume critiques. Information regarding this service may be obtained from the University of Maine Career Center, 5713 Chadbourne Hall, University of Maine, Orono, Maine 04469-5713.

Courses in Education

Courses numbered 100-299 are associate and/or lower level baccalaureate degree. Courses numbered 300-399 are upper level (junior/senior) baccalaureate degree courses. Courses numbered 400-499 are upper-level baccalaureate degree courses; with appropriate qualifications and permission, may be taken for graduate credit. Courses numbered 500-599 are graduate level courses; with appropriate qualifications and permission, they may be taken for undergraduate credit. Courses numbered 600-699 are graduate level courses.

Counseling

CEC 450 Guidance and the Teacher

Examines the role of the classroom teacher in a comprehensive guidance program including resources available from school counselors and the community, methods of studying individual pupils, teacher-parent communication. For classroom teachers at all grade levels. Cr 3.

CEC 453 Career Education: The Elementary/Middle School

General overview, conceptual model, and rationale for career education through classroom and curriculum practices including methods for infusion of career information within regular school subjects. Cr 3.

CEC 454 Career Education: Secondary School/Adult Education

General overview, conceptual model, and rationale for career education through classroom and curriculum practices in secondary schools, adult education, and human resource development settings, including methods for infusion of career information within academic and vocational courses. Cr 3.

CEC 510 Effective Communication in Personal Development

Training in communication skills for non-counseling majors. Cr 3.

CEC 523 The Use of Standardized Tests and Inventories

Considers the selection, use and interpretation of commonly-used standardized group achievement and ability tests, interest inventories and non-clinical assessment of personality and other affective attributes. Prerequisite: Basic knowledge of measurement and statistics. Cr 3.

CEC 524 Individual Intelligence Testing

Intensive training in administration, scoring, and interpretation of the Revised Stanford-Binet Scale, the Wechsler Adult Intelligence Scale and Wechsler Intelligence Scale Children-Revised. Historical background and current problems in theory and practice of testing. Prerequisite: CEC 523 or permission. Cr 4.

CEC 549 Social Development of Children and Adolescents in Educational Contexts

Major theories having impact on society's view of the child are addressed; stressing the relation

of theory to educational practice. Contemporary social issues explored in light of cross-cultural research, sociology and philosophy. Cr 3.

CEC 550 Introduction to Community Agency Counseling

Surveys counseling functions in community agency, private practice and human resource development programs. Emphasizes a holistic approach to developmental, preventative and rehabilitative counseling services. Cr 3.

CEC 551 Introduction to School Guidance

Survey of the philosophy, objectives, principles, and practices of school guidance (kindergarten through grade twelve). Provides an understanding of a well-balanced school guidance program. Prerequisite: Counselor Education major or permission. Cr 3.

CEC 552 Effective Group Work in the Helping Professions

Introductory course linking group theories, research, and practice through a mix of didactic, written, and experiential activities. Lab experience outside of class is required. Prerequisite: permission. Cr 3.

CEC 553 The Profession of Counseling

Examines the history, trends, values, and core beliefs underlying the counseling profession including ethical standards in the counselor-client relationship and applications to various client populations. Emphasizes self-awareness. Counselor Education Majors only. Cr 3.

CEC 554 Counseling Children and Adolescents

Examines the goals of counseling, counseling philosophy and operational issues in counseling children and adolescents. Studies verbal and non-verbal aspects of counseling by psychologists, psychiatrists, social case workers and school counselors. Prerequisite: CEC 553. Cr 3.

CEC 555 Adult Career Development

Examines personal and environmental factors which prompt career changes during adulthood including forces changing the content of work and the workplace. Discusses the mutual responsibility of the worker and the organization for career path development. Prerequisite: Permission. Cr 3.

CEC 556 Established Theories of Counseling
Examines counseling theory and philosophy. Prerequisite: CEC 553. Cr 3.

CEC 557 Play Media

Designed for graduate students preparing to become elementary school counselors, teachers and child development specialists. Provides a background in play media theories, uses and techniques which relate to child development. Cr 3.

CEC 558 Recent Developments in Counseling Theory

Focus on recent applications of contemporary theories in educational or other contexts. Emphasis on critical theory for evaluating contem-

porary developments. Prerequisites: CEC 553, CEC 556 and permission. Cr 3.

CEC 559 Career Information in Counseling
Collecting, evaluating and using informational materials in career counseling. Cr 3.

CEC 560 Counselor Education Prepracticum
Bridges cognitive courses to the counseling practicum. Uses Personal Growth and Development Center video equipment to provide feedback on skills. Prerequisites: CEC 523, CEC 552, CEC 556, CEC 559. Cr 3.

Administration

EAD 500 Fundamentals of Administration
A required introductory examination of the fundamentals and responsibilities of personnel supervision in educational organizations, including establishment of mission, staff roles, supervision and evaluation practices, and staff development. Cr 3.

EAD 504 The School Administrator and the Pupil Personnel Services
Designed for pre- and in-service school administrators. Focus on the study of effective pupil personnel programs and the role of the administrator in their planning, implementation and evaluation. Prerequisite: Graduate standing or permission. Cr 3.

EAD 510 Educational Supervision
Includes creative supervision, techniques of working with professional staff, improvement of curriculum, observational and evaluation techniques. Prerequisites: EDB 202, EDB 203, EDB 204 or equivalents. Cr 3.

EAD 530 School-Community Relations
Process, policy development and communications related to the formulation and implementation of a comprehensive school-community relations program. Practical approaches to interacting with citizens, media, and others will be explored. Prerequisite: EAD 550 or equivalent. Cr 3.

EAD 531 School Law for Administrators
The Constitutional framework, legal issues and state statutes affecting the practice of school administration. Special emphasis on the impact of recent court decisions. Cr 3.

EAD 550 Theories of Administration I
Introduces concepts and research findings in social and behavioral sciences basic to the educational administrator. Interdisciplinary analysis of administrative problems and organizational behavior. Prerequisites: EDB 202, EDB 203, EDB 204 or equivalents. Cr 3.

EAD 560 Functions and Theories of Educational Leadership
The philosophical foundations for schools and leadership, organizational theories underlying school management and leadership, and the inter- and intrapersonal dimensions of leadership. Cr 3-6.

EAD 561 Leadership of Planning and Evaluation
Examination and application of the evaluation and planning cycle in schools through preparation and execution of a program evaluation with colleagues, includes collection of data on programs, personnel and student outcomes. Prerequisites: EAD 560 and EDS 520 or permission. Cr 3.

EAD 562 Group Leadership and Decision-Making in Schools
Introduction to and the application of group dynamics, group leadership and group decision-making in the many contexts encountered by school leaders. Prerequisites: EAD 560 and EAD 561 or permission. Cr 3.

EAD 563 Individual Leadership: Problems, Paradoxes and Possibilities
Provides students a forum to examine interpersonal aspects of school leadership. Students research and prepare strategies in response to leadership dilemmas, then carry them out in simulated situations. Prerequisites: EAD 560, EAD 561 and EAD 562 or permission. Cr 3.

EAD 564 Educational Organizations from a Personal, Social and Political Perspective
Organizational analysis; investigation of the social, political, economic context of organizations; strategies surrounding strategic planning, goal setting and visioning; and change theory and its application. Prerequisites: EAD 560, EAD 561, EAD 562 and EAD 563 or permission. Cr 3.

Adult Education

EAE 400 Trends in Adult Education
Examines the need for and purpose of adult education programs and the program development, organization, and administration of programs. Emphasis on adult education through public schools, Cooperative Extension Service, and community agencies. Cr 3.

EAE 523 Introduction to Adult/Continuing Education
Overview of purposes, clientele, origins, forms, content, sponsors and organizations of adult/continuing education. Cr 3.

EAE 524 Adult Development and Learning
Examination of learning theory, life span development and aging. Focus on the psychological, sociological, physiological and environmental factors which distinguish adult learners. The concepts and theories studied will be related to adult education and counseling. Prerequisite: permission. Cr 3.

EAE 525 The Teaching/Learning Process with Adults
A critical examination including characteristics of adult learners, needs assessment, methods, group process and resource identification and development. Focus on individual and group instruction. Cr 3.

EAE 526 Community Processes and Leadership in Adult/Continuing Education
An applied examination of the process and strategies of community development in relation to Adult/Continuing Education. Prerequisite: EAE 523. Cr 3.

EAE 527 Program Development and Evaluation in the Education of Adults
The application of theory principles and concepts in program development and evaluation to the social, economic and environmental problems of people and communities, studies through simulation, case study, role playing. Prerequisite: EAE 523 or permission. Cr 3.

EAE 528 Management of Adult/Continuing Education Organizations
An introduction to the concept, functions and tasks of management in relation to adult/continuing education organizations. Also examines managerial behavior and style. Prerequisite: EAE 523. Cr 3.

EAE 551 Workshop in Adult/Continuing Education
Focus on development of products useful to adult education administrators, teachers, or counselors. Competency of skill development is stressed. Specific activities, such as simulation design, grant proposals, instructional design and staff development, will be determined as registration. Prerequisite: EAE 523 or permission. Cr 3.

Bilingual

EBI 380 Methods and Materials for Bilingual Instruction
An exploratory overview of bilingual education in the school curriculum. Examines organizational models, methods, strategies and materials appropriate for bilingual education. Prerequisite: EDB 204, junior standing or permission. Cr 3.

EBI 390 Introduction to Bilingual Education
Reviews bilingual education from an international perspective and examines the purposes and components of various educational models used globally and nationally. Maine's native French-speaking population provides the focus for case studies. Cr 3.

EBI 560 Advanced Studies in Bilingual Education
Research of a specific area of bilingual education related to the student's field of study. Possible topics include: cultural pluralism, language planning, language and culture, cognitive and developmental issues in second language learning. Prerequisite: EBI 390 or permission. Cr 3.

Measurement and Testing

EDA 520 Topics in Educational Measurement
Possible topics include: applied performance testing, unobtrusive measures, domain-referenced testing, sequential, testing, item, response theory, sources of response bias in cog-

nitive and affective measures, retrospective measurement in the affective domain. Cr 3.

EDA 521 Evaluation of Instruction

A basic course for elementary and secondary school teachers. Emphasis on utilizing various strategies of evaluation in classroom and school. Prerequisite: EDB 202, EDB 203 or permission. Cr 3.

EDA 570 Models of Educational Evaluation

A study of the different models of educational evaluation including procedures for designing and implementing both formative and summative evaluation studies. Prerequisite: EDA 520 or equivalent. Cr 3.

EDB 202 The American School

Examines the nature, role, purposes, and curriculum of public elementary and secondary schools with special attention to the place and function of the teacher. Prerequisite to student teaching in all regular undergraduate programs. Cr 3.

EDB 204 The Teaching Process

Examines procedures of instructional planning, including improved use of small groups, classroom space, and appropriate teaching materials; measurement, evaluation, and reporting of pupil learning. Prerequisite to student teaching in all regular undergraduate programs. Prerequisite: Sophomore standing or permission. Cr 3.

EDB 221 Educational Psychology

A scientific study of human development, learning, cognition, and teaching. Emphasis on theory and research and their application to educational problems. Prerequisite: PSY 100 and sophomore standing. Cr 3.

Curriculum

EDC 333 Curriculum Development and Evaluation

Provides the prospective teacher with an overview of theory and research in the field of curriculum, plus "hands-on" experience in curriculum development. Historical, philosophical and sociological perspectives on both the explicit and the hidden curriculum. Exploration and guided practice in the processes of writing and evaluating curricula for local school districts. Prerequisites: EDB 202, EDB 204, EDB 221. Cr 3.

EDC 470 Teaching Maine Studies K-12

For teachers of social studies at all grade levels who are teaching or wish to teach about Maine. Covers background, methods, and instructional resources in relation to Maine's social life, geography and natural resources, government, and economy. Cr 3.

EDC 511 Planning the Elementary School Curriculum

Studies the aims and philosophy of elementary education. Includes status of the curriculum, factors affecting curriculum changes, development and modern child psychology. Prereq-

uisites: EDB 202, EDB 221, EDB 204 or equivalents. Cr 3.

EDC 521 Planning the Secondary School Curriculum

Planning curriculum revision and reorganization, with special attention to bringing the curriculum into harmony with needs of modern life. Prerequisites: EDB 202, EDB 221, EDB 204 or equivalents. Cr 3.

EDC 524 Curriculum and Organization of Middle Schools and Junior High Schools

A thorough exploration of the educational program for pre and early-adolescents, including growth and development issues, curriculum planning processes, curriculum development in various subject areas and across subjects, and organizational issues. Cr 3.

EDC 533 Dynamics of the Curriculum

Examines problems and issues of curriculum development common to all areas of instruction and all educational levels. Provides an opportunity to acquire concepts and skills which may be applied to the curriculum development process in local school districts. Prerequisites: EDB 202, EDB 204, EDB 221 or equivalents. Cr 3.

EDC 550 Curriculum and Methods for Economic Education

Students examine basic economic and consumer education concepts as well as contemporary issues affecting the national economy, with emphasis on Maine economy, and develop teaching materials for implementation in their classrooms applicable to K-12 teaching. Prerequisite: Employment in a public or private school and/or permission. Cr 3-6.

EDC 595 Leadership in Curriculum Design for Administrators/Supervisors

Role function and practices for the curriculum leader. Prerequisite: EDC 533 or permission. Cr 3.

EDF 201 Great Ideas, Critical Issues

A selective introduction to the liberal curriculum through multidisciplinary studies of recurring ideological tensions in western civilization, especially as reflected in conflicts between the individual and society. Emphasis on close reading and critical discussion through extensive prose writing. Cr 3.

General

EDG 298 Professional Preparation Team

Field Experience

Only for first and second year students in the Professional Preparation Team (PPT) program. Students will observe in public school classrooms, complete activities, and assist the teachers. To be taken simultaneously with EDB 205, EDB 206, EDB 207 or EDB 208. May be repeated for a total of four semesters. Cr 1.5 - 3.

EDG 399 Professional Preparation Team Senior Seminar

Only for seniors in the Professional Preparation Team (PPT) program, in the semester preceding

internship. Students learn about issues of professional interest, identify and research a particular issue in depth and become oriented to the particular teacher and class with whom they will be doing their internships. Cr 1.

EDG 400 Field Observation (Activity)

Study of educational programs through visits, consultation and appraisal of practices in selected schools, instructional centers, clinics, laboratories and community agencies. Observations are considered in relation to research theory and practice. Prerequisite: permission. Cr 1-6.

EDG 410 Workshop for Cooperative School Personnel (Activity)

Considers the nature and scope of the activities of the supervisor, resource teacher, team leader, critic teacher, and teacher's aide in cooperation with other school personnel, including some discussion of relevant literature, research practices and materials. Cr 3.

EDG 498 Problems in Education

Individual work on a problem selected by the student. Primarily for Education majors. Cr Ar.

EDG 595 Educational Research

Evaluates selected research in education in relation to the appropriateness of the design to the stated purpose of the study. Students select and present research problem with special attention to design and studies related to it. Prerequisite: EDS 521. Cr 3.

History and Philosophy

EDH 102 History of Education

Examines educational thought in historical context with emphasis on current theories in relation to the values, objectives, purposes, and outcomes of American education. Not open to first-year students. Cr 3.

EDH 145 Education Sociology

Major principles of sociology applied to the institution of education including the culture concept and its application, school-community interaction, social groups and patterns of social behavior. Cr 3.

EDH 330 Trends in Education

Considers trends in American education as they relate to current and emerging practices in organization curriculum and teaching methods. Cr 3.

EDH 351 Education for Intercultural Understanding

Examines the sources of cultural, racial and religious conflict in contemporary community life and ways in which schools can assist in defining cultural conflicts. Cr 3.

EDH 361 Introduction to Comparative International Education

An introductory examination of the educational systems of several nations in the world. Emphasis will be place on the analysis of forces and issues contributing to similarities and differ-

ences from American Education. Attention will be given to Confederation of Independent States, Asian, European systems as well as others. Prerequisites: EDB 202, EDB 204 or permission. Cr 3.

EDH 410 Foundations of Community Education

Traces the development of community education from its beginnings in the mid-1930's to the present with emphasis on its relation to current political, economic, social, and educational concerns. Cr 3.

EDH 499 Seminar in the Foundations of Education

The nature, role, policies and curriculum of elementary and secondary schools are re-examined with special attention given to the place and function of the teacher. Prerequisites: STT 490, STT 491, STT 494 or concurrent registration. Cr 3.

EDH 500 Social Context of Education

Considers competing interpretations of the relationship between schools and society, the impact of race, class, and gender on education, and issues of continuity and change in policy and practice. Cr 3.

EDH 531 School Law and the Teacher

A study of the legal bases of public education with specific reference to the State of Maine. Prerequisites: EDB 202, EDB 221, EDB 204 or equivalents. Cr 3.

EDH 540 Students at Risk and Their Families

Examines the roles of educational personnel in addressing the needs of students at risk in the context of contemporary schooling and family life. Identifies various "at risk" categories. Considers implications for school improvement programs, individual intervention, referrals to community services and community action coalitions. Cr 3.

EDH 561 Comparative Education

A study of systems of education in representative countries of the world including an analysis of cultural forces that create differences among them. Countries will be selected from Europe, Asia, the Americas and others. Prerequisites: EDB 202, EDB 204 or permission. Cr 3.

EDL 420 Changing Roles of Men and Women in Education

Provides an understanding of changing sex roles in the U.S. and implications for all educational levels, theories and research related to the school's place in sex-role socialization, identification of sex-role stereotyping, and an overview of innovative approaches, programs and practices. Cr 3.

EDM 520 Teaching in Middle School/Junior High School

Reviews the unique demands that children in grades five through eight place on teachers as a direct result of normal developmental patterns. Focus on specific teaching behaviors that deal

effectively with each of these demands, with special attention to problems of peer influences, periodicity of brain growth, and effects of uneven growth patterns. Prerequisite: teaching experience or permission. Cr 3.

Research

EDS 510 Introduction to Educational Research

For graduate students in education and related fields. Topics include: locating educational research reports, abstracting and evaluating sources, understanding statistical symbols, examining inquiry methodology and communicating about research. Designed for consumers of research. Prerequisite: graduate status or permission. Lec 3. Cr 3.

EDS 520 Educational Measurement

Covers basic measurement theory, construction of test items in achievement and aptitude, evaluation of teacher-made and standardized tests, descriptive statistical techniques used in educational measurement. Cr 3.

EDS 521 Statistical Methods in Education

Introduction to descriptive and inferential statistics as applied to education and human behavior. Emphasis on parametric statistics. Cr 3.

EDS 530 Naturalistic Observation Research in Learning Environments

The acquisition of foundational knowledge and practical application of ethnography, interaction analysis, duration recordings and other naturalistic observation techniques for the study of learning environments. Specific focus on current trends in classroom research methodologies, literature reviews and proposal designs. Cr 3.

EDS 569 Seminar in Educational Leadership

Discussion and reports structured around a series of topics on organizational theory, educational leadership practice and a list of readings. Cr 3.

EDS 571 Qualitative Research: Theory, Design and Practice

Examination and use of phenomenological approaches to social science research, emphasizing ethnographic methods in education and human service settings. Field work required. Typically offered over two semesters. Prerequisites: EDS 521, EDS 530 or equivalent and permission. Cr 3.

EDU 400 Computers in Education

An introduction for students majoring in education. Nature and use of the computer and its impact on the curriculum and other areas of education are studied. Laboratory experience in developing practical programs using the computer included. Prerequisite: permission. Cr 3.

EDU 481 Educational Travel (Area)

A summer session study tour investigates the educational, social, economic, historical, and geographic aspects of the locale visited, particularly of areas that have made major contribu-

tions to our cultural heritage. Tours currently conducted in U.S., Europe, Maritime Provinces and Quebec. Cr 3-6.

EDU 520 Micro-Computer Instruction in Education

Introduces the theoretical and practical aspects of Computer-Assisted Instruction (CAI) and Computer-Managed Instruction (CMI) including discussion of CAI/CMI authoring systems and applications of CAI/CMI in educational settings. Major emphasis on reviewing, evaluating and selecting microcomputer software used in curriculum. Prerequisites: EDU 400 or permission. Cr 3.

EDU 540 Microcomputer Based Instruction in Special Education

Theory and practice of effective microcomputer based instruction of handicapped students. Prerequisites: EDU 400, SED 400. Cr 3.

EDU 580 Educational Institute (Activity)

Provides understanding and insight into areas of special concern including education of teachers of the disadvantaged and retarded, guidance counselors, reading specialists, social studies teachers and school administrators. Attention given to literature, research, practices and materials. Cr 1-6.

Seminars and Workshops

EDW 462 Workshop in Elementary Education (Activity)

Designed to increase the competence of the elementary school teacher, supervisor, curriculum director, administrator, and other school personnel. Considers literature, research and materials concerned with a special aspect of elementary education. Cr 1-6.

EDW 472 Workshop in Secondary Education (Activity)

Designed to increase competence of the teacher, administrator, and other school personnel. Considers literature, research and materials concerned with a special aspect of secondary education. Cr 1-6.

EGS 500 Seminar in Gender Studies in Education

An introductory survey of educational theory and research aimed at gender-sensitive educational policies and practices. Cr 3.

Mathematics

EMA 314 Teaching Mathematics in Elementary School

An instruction to methods and techniques in teaching mathematics, arithmetic readiness program, instructional and evaluation material. Prerequisite: MAT 107 and PSY 100. Cr 3.

EMA 551 Newer Practices in Mathematics Education

Covers objectives, materials and procedures for improvement of teaching fundamentals of arithmetic and a mathematics readiness program, a sensible drill load, and development of

meaningful problem units. Prerequisite: EMA 314 or equivalent. Cr 3.

EMA 555 Problem Solving in Secondary School Mathematics

Considers problem generation, problem posing and problem solving in a wide variety of situations, applications and recreational mathematics. Prerequisite: MAT 305 or equivalent. Cr 3.

EMA 565 Teaching Algebra

Explores current issues in teaching algebra including readiness for algebraic concepts, use of calculators and computers and other alternative teaching methods. Prerequisite: MAT 305 or equivalent. Cr 3.

EML 595 Seminar in Middle Level Education

Examines current issues in middle level education research and practices: curriculum, communicating with the public, the middle level school in the K-12 spectrum, parent programs and staff development. Prerequisite: EDC 524 or permission. Cr 3.

EPT 522 Advanced Educational Psychology

A seminar to explore theoretical and empirical issues in educational psychology. Prerequisites: EDB 221 and EDS 521 or equivalents. Cr 3.

Reading and Language Arts

ERL 313 Teaching of Reading in the Elementary School

Provides the general background including early literacy, relationships between reading and writing, comprehension, word analysis skills, guided reading lessons, literature based reading and writing programs, recreational reading and evaluation. Prerequisite: PSY 100, junior or senior standing. Cr 3.

ERL 317 Children's Literature

An overview of literature written for children between the ages of four and twelve. Emphasis on developing criteria for evaluating various types of books and selecting for individual children. Prerequisite: Junior standing and at least one literature course. May be taken concurrently with ERL 313 and ERL 318. Cr 3.

ERL 318 Teaching Language Arts in the Elementary School

Current methods and materials in teaching the writing process including the relationships between reading and writing; conferencing procedures; handwriting, spelling, and oral language development; analysis and correction of basic difficulties. Prerequisite: PSY 100, junior or senior standing. Cr 3.

ERL 440 Teaching Reading in the Secondary School

An exploratory course for high school teachers who wish to develop competence in teaching reading. Includes the nature of the reading process, rationales for continuing reading instruction in junior and senior high schools, reading and study strategies, improving rates of reading, organization, evaluation. Cr 3.

ERL 450 Newer Practices in Reading

Objectives, materials, and procedures for improving teaching of reading including methods and materials used in evaluating the reading program, comparison of current practices in reading instruction. Prerequisite: ERL 313 or ERL 440 or their equivalents. Cr 3.

ERL 495 Understanding Reading

A study of the processes and (2) proficient reading. Presents theoretical and empirical information relating to communication, structure of language, acquisition of speech, physiology in reading, learning to read, and proficient reading. Prerequisite: sophomore standing. Cr 3.

ERL 517 Literature for Children

A continuation of ERL 317 including a study of the historical development of children's literature; principles, techniques and curriculum planning for the guidance of children's reading; book selection for elementary schools and public libraries. Extensive reading and evaluation of children's books. Prerequisite: ERL 317 or its equivalent. Cr 3.

ERL 518 Literature for Young Adults

Study of the development of literature for adolescents and young adults as it is used in the junior high, secondary school, and public library. Emphasis on recently published books of this nature and the important contributions of the past. Cr 3.

ERL 519 The Library in the School Program

Consideration of the interrelating roles of the librarian and teacher in designing programs, materials, and activities for the learning and reading experiences of students. Intended for teachers and librarians. Cr 3.

ERL 520 Storytelling

Designed for teachers, librarians, or individuals interested in the art of storytelling. Includes techniques and materials for storytelling, practice work with children in schools and libraries. Prerequisite: ERL 317 or permission. Cr 3.

ERL 530 Advanced Study in Language Arts

Intensive study of literature, research, and current practices in teaching language. For thesis candidates. Prerequisite: permission. Cr 3.

ERL 534 Literacy and Language Development

Examines how oral and written language are acquired; sociocultural linguistic variations, connections between language acquisition and print awareness and classroom practices that promote language development. Cr 3.

ERL 535 Developmental Literacy

Exploration of the fundamentals of literacy instruction including history of approaches to literacy instruction, early literacy, and current issues in literacy instruction. Cr 3.

ERL 536 Writing Process in Schools

Process approach to teaching writing with emphasis on language acquisition, cognition, components of a writing program, conferencing and

modeling strategies, classroom management, evaluation, researcher and implementer. Cr 3.

ERL 537 Literacy Across the Curriculum

Examines reading, writing, studying and thinking as elements of content discipline instruction. Cr 3.

ERL 552 Teacher As Researcher

History of the teacher as researcher movement. Presents basic research strategies for classroom teachers. Students will test research techniques in classrooms and design a research study. Prerequisites: ERL 434, ERL 535, ERL 536. Cr 3.

ERL 553 Literacy Assessment

Discussion of both literacy process and product assessment measures and factors affecting these areas. Exploration of past, present and current issues in literacy assessment. Prerequisites: ERL 535 and ERL 536 or equivalents or permission. Cr 3.

ERL 569 Literacy Assessment Internship

Internship in literacy assessment and instruction for small groups of students (K-12). Analyzes and interpretation of assessment data and preparation of case report writing. Prerequisite: ERL 553 or or permission. Cr 6.

ERL 590 Special Topics in English Language Arts and Related Fields

Offered as need, interest, and research require. Specific topics might include: word processor and writing instruction, comprehension and cohesion, reading and writing in the content areas, vocabulary development, reading and cognition, ethnographic research in the language arts, and teacher as researcher. May be repeated for credit. Prerequisite: Permission. Cr 1-3.

ERR 535 Reading Recovery Teacher Training I

Prepares teachers through school-based outreach centers to implement Reading Recovery procedures with first grade children with reading difficulties: tutoring four children daily; tutoring a child behind the one-way mirror one or two times per semester. Prerequisite: Prior acceptance into Reading Recovery Teacher certification program. Cr 3.

ERR 536 Reading Recovery Teacher Training II

A continuation of ERR 535. Prerequisite: ERR 535. Cr 3.

Science

ESC 316 Teaching Science in the Elementary School (K-8)

Presents information and activities designed to encourage students to learn and develop goals and objectives, instructional strategies, selection of curriculum materials K-8, effective management and evaluation techniques. Prerequisite: EDB 221, EDB 204 or EDB 207, EDB 208 and 2 science courses (preferably from different disciplines e.g., Life or Earth or Physical Science). Cr 3.

ESC 340 Studies in the Physical Sciences I

An interdisciplinary study of the physical sciences intended to build science attitudes and knowledge of physical science at pre-service and inservice stages for elementary and junior high school teachers. Laboratory-centered investigations in such areas as light, structure of crystals, liquids and gases, motion and forces, and energy. Cr 3.

ESC 342 Studies in the Earth Sciences I

For elementary/middle school teachers. A series of elementary laboratory and field studies in astronomy and meteorology. Topics will be explored through direct observation and study. Cr 3.

ESC 343 Studies in the Earth Sciences II

An introduction to geology and soil sciences for elementary/middle teachers. Where possible, the studies will be undertaken in a natural setting using equipment and materials appropriate to the learning tasks. Cr 3.

ESC 348 Natural History-Inland (K-12)

Introductory field studies for pre-service or inservice teachers focusing on the natural habitats found in areas surrounding the Orono campus. Emphasis on plants and animals in their environment, their behavior and structural adaptations. Cr 3.

ESC 426 Methods of Teaching Environmental Education (K-12)

Classroom and field-based studies of a broad spectrum of up-to-date environmental teaching methods and resources. Prerequisites: ESC 316 or ESC 452 and permission. Cr 3.

ESC 441 Studies in the Physical Sciences II

Laboratory-centered investigations in such areas as bonding in crystals, electric charges, atomic models, ions, molecules, non-ionic substances. Prerequisite: ESC 340 and permission. Cr 3.

ESC 444 Basic Field Ecology

For teachers (K-12) who wish to learn about the natural environment by carrying out field studies in a variety of biotic communities. Emphasis on experimental procedures and important concepts of ecology. Prerequisite: Permission. Cr 3.

ESC 446 Marine Education for Elementary and Middle School Teachers (K-8)

Designed to help elementary/middle school teachers learn about the world's oceans from a multidisciplinary perspective. Particular focus on the Gulf of Maine. Course topics include geology, physical and chemical oceanography, ecology, natural resources. Cr 3.

ESC 447 Marine Education for Secondary Teachers

Multidisciplinary study of the world's oceans, particularly the Gulf of Maine. Topics include geology, physical and chemical oceanography, ecology, natural resources. Field experiences in Acadia National Park, Mount Desert Island and other significant coastal locations in Maine are

a major component. Marine education curriculum materials and appropriate instructional strategies are also emphasized. Cr 3.

ESC 452 Teaching Science in the Secondary School

Instructional strategies and general approaches to teaching science in grades 7-12. Emphasis on professional literature, curriculum development, teaching and learning styles and reflective teaching. Prerequisite: EDB 221 and EDB 204 or EDB 207, EDB 208. Cr 3.

ESC 463 Workshop in Environmental Education for Elementary Teachers

Natural resource concepts from an ecological perspective. Students will develop a course design to teach these concepts in an elementary school classroom. Includes accessing curriculum resource data bases, using indoor and outdoor activities to teach about natural resources, and selection of intended learning outcomes appropriate for elementary students. Cr 3.

ESC 473 Workshop in Environmental Education for Secondary Teachers

Natural resource concepts from an ecological perspective. Students will develop a course design for secondary classroom. Includes accessing curriculum resource data bases, using indoor and outdoor activities to teach about natural resources, and selection of intended learning outcomes appropriate for secondary students. Cr 3.

ESC 516 Advanced Studies in Science Instruction (Elementary and Middle Schools)

Examines instructional strategies for science education in elementary and middle schools. Prerequisite: ESC 316 or equivalent. Cr 3.

ESC 525 Planning the Environmental Curriculum

Designed to develop skills necessary for curriculum design based on content analysis of student knowledge. A specific topic, such as acid rain or pollution, is selected for group investigation. Cr 3.

ESC 542 Advanced Studies in Science Education (Secondary)

Critical appraisals of curriculum and instructional practices at middle and secondary school levels. Cr 3.

Social Studies**ESS 315 Teaching Social Studies in the Elementary School**

Examines methods and materials for social studies in the elementary school and ways of relating the work of the social studies class to an understanding of practical problems of the community. Not open to first-year students. Cr 3.

ESS 441 Teaching Social Studies in the Secondary School

Covers current practices in teaching social studies, selection and use of instructional materials,

modern trends in curriculum construction for social studies in the secondary school. Not open to first-year students. Cr 3.

ESS 515 Contemporary Issues in Social Studies Education

Focus on current trends in social studies education in relation to its historical and philosophical foundations and to implications for practice. Prerequisites: ESS 315, ESS 441 or equivalent. Cr 3.

ESS 541 Social Studies Curriculum

Studies in development of the curriculum, materials, resources, and methods of social studies instruction. Prerequisites: ESS 315, ESS 441 or equivalent. Cr 3.

Higher Education**HED 561 Developmental Theory in Higher Education**

Developmental theory as a foundation for student affairs emphasizing the interdependence of theory and practice. Prerequisite: Permission. Cr 3.

HED 562 Impact of College on Students

Integrating empirical knowledge and theoretical propositions in the context of the impact of higher education on students. Prerequisite: HED 561 or equivalent. Cr 3.

HED 580 History of Higher Education in the United States

History of American higher education, colonial period to the present. Prerequisite: Permission. Cr 3.

Media**INM 433 Instructional Media**

An introduction to the effective use of instructional media and related materials including learning principles in relation to visual communication media, nature and applications of media and instructional materials, evaluation and selection of media and instructional materials. Cr 3.

INM 434 Media Production

Planning and producing inexpensive instructional materials for both elementary and secondary school subjects, involving either photographic or graphic media. Cr 3.

INM 537 New Media in Education

Development and utilization of new media in educational instruction. Prerequisite: EDB 202, EDB 221, EDB 204 or equivalents. Cr 3.

Special Education**SED 400 Survey of Exceptionality**

An overview of special education to assist the development of exceptional children. Focus on characteristics, identification procedures, educational provisions, and relevant issues and concerns related to categories of exceptional children. Cr 3.

SED 401 Introduction to the Education of Severely Handicapped Students

Provides an overview of the severely handicapped child/adolescent and his/her complex educational needs. Includes history of education of the severely handicapped, service delivery models, terminology, etiology, the role of other related disciplines, health related issues. Prerequisites: Experience with the severely handicapped (professional or volunteer), SED 400. Cr 3.

SED 402 Mainstreaming Exceptional Students

Integrating exceptional students into the regular education program. Prerequisites: EDB 204 or EDB 207, EDB 208 and EDB 221. Cr 3.

SED 430 Assessing the Learning and Behavior of Exceptional Children

A skills course in which students will have the opportunity to gain knowledge and competencies in informal assessment of children's academic performance, development, and social behavior. Prerequisite: Field experience in special education, SED 400. Cr 3.

SED 440 Behavioral Intervention in Educational Settings

A study of the behavior of children in classrooms and the environmental factors affecting it. Considers various methods of teaching appropriate classroom behavior including behavior modification and psycho-social interventions. Field placement required for course activities. Prerequisite: field experience in special education, SED 400. Cr 3.

SED 460 Characteristics and Identification of the Gifted and Talented

A study of the national perspective and leading state identification models, as well as the history of gifted and talented education. The problem of meeting the need of gifted and talented students living in rural communities will receive special attention. Prerequisite: EDB 203. Cr 3.

SED 465 Educational Programming for Exceptional Children

Examines educational, social and vocational planning for the handicapped in both school and the community including educational curriculum, curriculum development, legal requirements, funding sources and the organization of state and private agencies. Prerequisites: Field experience in special education, SED 400, SED 460. Cr 3.

SED 470 Methods of Teaching the Retarded Child

Methods, materials, and techniques in teaching retarded children at the special class level. Prerequisite: SED 400. Cr 3.

SED 475 Instructional Strategies for Exceptional Children

Examines clinical teaching methods appropriate for children with intellectual, behavioral and/or learning deficiencies. Prerequisite: field experience in special education, SED 400. Cr 3.

SED 509 Curriculum Development for Students with Severe Disabilities

In-depth study of curriculum for students with severe disabilities. Emphasizes the development, implementation and evaluation of curriculum designs as well as co-teaching and peer-mediated strategies. Prerequisites: SED 401, SED 402, SED 536 or permission. Cr 3.

SED 510 Planning the Curriculum for Students with Disabilities

Explores aims and philosophy of education for students with disabilities and factors affecting curriculum change. Prerequisite: SED 402. Cr 3.

SED 515 Organization and Management of Special Education Services

Explores the rationale, history, and current status of public school efforts to meet the needs of students with mild-to-moderate disabilities. Various models of service delivery in special education are examined. Prerequisite: SED 402. Cr 3.

SED 520 Law and Policy Affecting Individuals

Examines state and federal laws and policies that affect individuals with disabilities in both school and the community. Prerequisite: SED 402. Cr 3.

SED 532 Teaching Students With Behavioral Disorders

Approaches to teaching constructive social behavior to students with behavioral disorders. Prerequisite: SED 592 or equivalent. Cr 3.

SED 533 Learning Disability - Theory and Characteristics

An examination of the major theories related to etiology and treatment for specific learning disabilities. Familiarization with selected tests. Prerequisite: SED 400 or equivalent. Cr 3.

SED 534 Learning Disabilities-Educational Methods

Application of major systems and methods of working with school-age children with specific learning disabilities including development of appropriate programs for individual children. Prerequisite: SED 533 or equivalent. Cr 3.

SED 536 Educational Strategies For Students with Severe Disabilities

Examines instructional strategies that have been effective in the education of students with severe disabilities. Emphasis on models of inclusive education; nonverbal communication strategies; and behavioral supports. Prerequisite: SED 401. Cr 3.

SED 550 Theories of Exceptionality

Examines diverse perspectives in exceptionality using conceptual models derived from medicine, psychology, education, sociology and anthropology to explore the influence of theory on special education practice and policy. Prerequisite: SED 402. Cr 3.

SED 551 Methods and Curriculum for Students with Mild-to-Moderate Disabilities

A consideration of educational principles and practices essential to the development of effective instructional strategies for students with mild-to-moderate disabilities. Prerequisite: SED 402. Cr 3.

SED 552 Working with Families of Students with Disabilities

Models for consulting with families of children and youth with disabilities. Prerequisite: SED 402. Cr 3.

SED 553 Assessment in Special Education I

Provides introductory experiences with procedures used to assess the educational functioning of students with mild/moderate to severe disabilities. Prerequisites: SED 402 and SED 550 or permission. Cr 3.

SED 554 Mild/Moderate Disabilities Assessment II

Provides advanced training in assessing the educational functioning of students with mild-to-moderate disabilities. Prerequisite: SED 553. Cr 3.

SED 555 Transition Services for Adolescents with Disabilities

Explores models for preparing youth with disabilities in secondary level programs for post-secondary opportunities. Prerequisite: SED 402. Cr 3.

SED 556 Severe Disabilities: Assessment II

Provides advanced training in assessing individual learning needs of students with severe disabilities, emphasizing ecological inventories, person-centered planning and quality of life indicators. Cr 3.

SED 560 Systems and Practices in Vocational Education for Individuals with Disabilities

Explores current practices in vocational education with an emphasis on the secondary and postsecondary levels. Topics will include the history of vocational education in inclusive settings, life-long learning and career development. Cr 3.

SED 561 Community and Residential Supports for Individuals with Disabilities

Knowledge and strategies and service delivery models used to support people with disabilities in integrated community environments. For secondary special educators and transition specialists. Cr 3.

SED 562 Supported Employment for Individuals with Disabilities

Knowledge and strategies for supporting people with various types and degrees of disability in paid, integrated employment in community settings. For secondary special educators and transition specialists. Cr 3.

SED 565 Teaching the Gifted Student

Methods, materials and techniques for teaching gifted students including curriculum and programming alternatives. Prerequisite: SED 360. Cr 3.

SED 570 Technology for Individuals with Disabilities

Develops strategies for identifying and implementing adaptive and assistive technology in educational settings. Explores current technology available to assist students with disabilities. Prerequisite: EDU 520. Cr 3.

SED 572 Educational Needs of Students with Physical and Medical Disabilities

An overview of the physical and medical aspects of children and youth with severe and multiple handicaps. Course taught by skilled health, medical and special education professionals who work directly with students with severe handicaps. Course is appropriate for educators, therapists and other professionals who work directly with students with severe handicaps. Cr 3.

SED 575 Consultation, Collaboration and Teamwork in Special Education

Discusses background information and field-tested recommendations for helping teachers, parents, administrators and support personnel work together within their school context. Stresses the importance of word analysis and semantics, school context, processes and content. Cr 3.

SED 586 Workshop in Special Education (Activity)

Provides insight into practices and problems associated with the education of individuals with disabilities. Cr 3-6.

SED 590 Mental Retardation - Theory and Characteristics

Examines theoretical explanations, research and future trends related to students labeled with mental retardation. Prerequisite: SED 402. Cr 3.

SED 592 Behavior Disorders-Theories and Characteristics

Examines theoretical explanations, research and educational assessment strategies related to students with behavior disorders. Prerequisite: SED 402. Cr 3.

Student Teaching**STT 490 Full-Day Student Teaching (Elementary)**

A full-day, off-campus internship program in a selected school. Prerequisite: Early application and permission. Cr 1-12.

STT 491 Full-Day Student Teaching (Secondary)

A full-day, off-campus internship program in a selected school. Prerequisites: Early application and permission. Cr 1-12.

STT 494 Student Teaching K-12 (Music, Art or Physical Education)

Observation and student teaching in selected elementary and/or secondary schools. Prerequisites: EDB 202, EDB 221, EDB 204 or their equivalents, methods course, and senior standing. Cr 1-12.

STT 496 Advanced Internship (Elementary)

A full-day, off-campus advanced internship, teaching in a selected school. Seminars and conferences. Prerequisite: STT 490 and permission of the Director of Educational Field Experiences. (Pass/Fail Grade Only). Cr 2-6.

STT 497 Advanced Internship (Secondary)

A full-day, off-campus advanced internship, teaching in a selected school. Seminars and conferences. Prerequisite: STT 491 and permission of the Director of Educational Field Experiences. (Pass/Fail Grade Only). Cr 2-6.

Health, Physical Education and Recreation**HPR 222 Personalized Health Fitness**

To develop an understanding of basic principles of health fitness and to develop a personal fitness program. Modern strength training techniques including free weights, plyometrics, and resistance machines. Prerequisite: HPER major or permission. Cr 2.

HPR 223 Lifeguard Training

Develops the necessary skills and competencies to qualify as a certified American Red Cross nonsurf lifeguard. Cr 1.

HPR 230 Archery

Instruction to develop skills and teaching techniques in this leisure activity. Prerequisite: HPER major or permission. Cr 1.

HPR 231 Badminton

Instruction to develop skills and teaching techniques in this leisure net sport. Prerequisite: HPER major or permission. Cr 1.

HPR 232 Golf

Instruction to develop skills and teaching techniques in this leisure activity. Prerequisite: HPER major or permission. Cr 1.

HPR 233 Volleyball

Instruction to develop skills and teaching techniques in this leisure net sport. Prerequisite: HPER major or permission. Cr 1.

HPR 234 Racquetball

Racquetball skills and teaching techniques along with instructions and rules will be presented. Prerequisite: HPER major or permission. Cr 1.

HPR 235 Rhythmic Activities

The purpose of this course is to develop skills, teaching techniques and an understanding of basic rhythms, particularly as they relate to folk, social, and square dance patterns. Prerequisite: HPER major or permission. Cr 1.

HPR 236 Dance Fitness

To develop skills and teaching techniques in performing and teaching aerobic dance. Cr 1.

HPR 237 Swimming Skills

Teaching and improving the skills in swimming, springboard diving, water polo, and related aquatic skills. Each phase developed carefully and fully, enabling the more capable to learn how to teach these basic skills at each

level, including the beginning level. Prerequisite: HPER major or permission. Cr 1.

HPR 238 Tennis

Instruction to develop skills and teaching techniques in this leisure net sport. Prerequisite: HPER major or permission. Cr 1.

HPR 240 Methods of Teaching and Coaching Track and Field

Designed to develop proficiency in basic track and field skills and knowledge of methods of teaching and/or coaching track and field. Cr 1.

HPR 241 Methods of Teaching and Coaching Basketball

Practical instruction in basketball to develop skills, techniques and understandings for people preparing to enter the teaching and coaching professions. Cr 1.

HPR 242 Methods of Teaching and Coaching Baseball

Provides the student with the skills, techniques and understandings necessary to teach and/or coach baseball to youngsters representing all ability levels. Cr 2.

HPR 243 Methods of Teaching and Coaching Football

Develops proficiency in basic football skills and knowledge of methods of teaching and/or coaching football. Prerequisite: sophomore standing. Cr 1.

HPR 244 Methods of Teaching and Coaching Soccer

Practical instruction in soccer to develop skills, techniques, and understandings for those preparing to enter the teaching and/or coaching professions. Prerequisite: sophomore standing. Cr 1.

HPR 247 Methods of Teaching and Coaching Softball

Provides the student with comprehensive instructional materials, including the guiding principles for all aspects of the game. Content includes the skills of softball and methods of coaching and teaching. Prerequisite: sophomore standing. Cr 1.

HPR 248 Methods of Teaching and Coaching Field Hockey

Identifies for the prospective teacher/coach the basic skills and techniques used in field hockey. Emphasis on teaching and coaching methods. Prerequisite: sophomore standing. Cr 1.

HPR 249 Methods of Coaching and Teaching Swimming and Diving

Stroke analysis, training and conditioning for competitive swimming, springboard diving, basic synchronized swimming and pool management. Cr 1.

HPR 250 First Aid and Emergency Care

This course involves instruction in, and practice of, first aid and emergency medical care procedures. Students will be required to pass written examinations and practical tests to demonstrate

competency in cardio-pulmonary resuscitation and how to correctly handle bleeding, wounds, shock, musculo-skeletal injuries, and various medical emergencies. Prerequisite: HPER major or permission. Cr 2.

HPR 253 Theories of Conditioning

Familiarizes the student with different physical conditioning regimens and what these programs can and cannot accomplish. Investigates specific traits and components of physical fitness and develops competencies to prescribe conditioning programs to meet specific needs. Prerequisite: HPER major or permission. Cr 3.

HPR 270 Motor Development and Learning

The understanding and application of major principles in the development and learning of motor behavior from conception through adolescence. The effects of development in the cognitive and affective domains upon the motor domain. Prerequisite: HPER major or permission. Cr 3.

HPR 271 History and Philosophy of Physical Education and Recreation

This course is designed to provide an introduction of the fields of health, physical education and recreation. The history and philosophy of both fields will be discussed and career opportunities will be identified. Cr 2.

HPR 273 Prevention and Care of Athletic Injuries

Prevention and care of common injuries associated with the athletic, school or recreational setting. Use of proper personal and field equipment support methods, medical examinations and therapeutic aids. Prerequisite: ZOL 208. Cr 3.

HPR 278 Health Education

The purpose of this course is to examine all the factors that influence health. This course serves as a channel for education students in all the choices they have for creating positive, healthy lifestyles. Current health issues and information will be presented and discussed. Cr 2.

HPR 310 Outdoor Leadership

Develop and evaluate educational experience which can be pursued beyond the classroom setting. Emphasis will be on leadership, safety and liability in the field of outdoor education. Prepare students to meet the challenges of leading wilderness trips and conducting outdoor education classes. Lab fee will be charged. Cr 3.

HPR 348 Field Experience

Supervised experience in conducting recreation programs in camp, community, social agency or institution situations. Enrollment by permission. Cr 3-6.

HPR 350 Educational Gymnastics, Games and Dance

Development of basic games analysis technique, gymnastic progressions and spotting techniques and group dance development and organization for the elementary and secondary

schools. To develop skills in teaching games, dance and gymnastics, utilizing movement themes and activity. Prerequisite: HPER major or permission. Cr 3.

HPR 361 Organization and Administration of Physical Education and Recreation

This course will provide the student with an opportunity to organize and administer a physical education or recreation program. The student will develop skills in curriculum development, budgeting, bidding and purchasing, scheduling, hiring, evaluating, and insuring as they organize and administrate their program. Cr 3.

HPR 362 Methods-Teaching Physical Education

Methods of teaching physical education to all grade levels and abilities. Teaching models and practical application of models by students will be stressed. Teaching effectiveness techniques, theories, principles, instructional design and methods of evaluation will be examined. Cr 3.

HPR 363 Curriculum and Instruction in Secondary Physical Education

This course will provide the preservice teacher with an opportunity to practice learned effective teaching behavior in various teaching settings. The course will also provide the preservice teacher with an overview of secondary schools. Prerequisite: HPR 362. Cr 3.

HPR 364 Elementary School Physical Education

This course is specifically designed for the elementary physical educator for the purpose of studying the movement education curriculum used in elementary schools. Emphasis will focus on effective teaching techniques, instructional planning and on the progression of skills used in games, dance and gymnastics. A laboratory teaching experience will be implemented at a local elementary school. Prerequisite: HPR 362. Cr 3.

HPR 367 Mainstreaming in Physical Education-Recreation

An introductory course to help teachers, coaches, and recreation personnel meet state and federal requirements for equal opportunities for handicapped persons. Content includes etiology and characteristics for handicapping conditions; implications for teaching; direct experience with handicapped persons. Cr 3.

HPR 372 Tests and Measurements in Physical Education-Recreation

Discussion and use of procedures and instruments for evaluation of persons in physical education, recreation and athletic programs. How to select, construct, administer, score, and interpret tests for psychomotor, affective and cognitive abilities will be emphasized. Cr 3.

HPR 376 Kinesiology

An introduction to the analysis of human motion based on anatomic knowledge, basic biomechanics and kinesiological principles as

they apply to teaching and coaching sport skills. Prerequisites: ZOL 208, HPR 253. Cr 3.

HPR 378 Physiology of Exercise

Develops an understanding of the integration and regulation of physiological functions during physical activity. Through investigation of factors affecting human performance, and the coordinated adjustment of body functions to the stress of exercise, students will become more aware of the theoretical and practical applications of exercise science. Prerequisites: ZOL 208, HPR 253, HPR 376. Cr 3.

HPR 380 Health, Physical Education and Recreation Programs in the Elementary School

Integrates the goals, objectives and concepts of physical education with the curriculum of the elementary school. Emphasis on purposeful, idea-directed movement and the important contributions physical education makes to the health, fitness and development of the elementary school child. Cr 3.

HPR 384 Practicum in Physical Education

Leadership experiences under staff supervision in the service program. Limited opportunities also exist in local public schools. Consult either Dr. Woodbury or Dr. Cobb before registering. Cr 1-3.

HPR 398 Problems in Health and/or Physical Education and Recreation

Individual work on a problem in the area of health, physical education or recreation. Cr 1-3.

HPR 424 Adult Fitness

Adult fitness is designed as an introductory class which provides the student with a broad theoretical background in the area of adult exercise and physical training. The role chronic exercise has in the possible prevention and retardation of coronary heart disease serves as the basic premise of the course. Prerequisite: HPR 378. Cr 3.

HPR 425 Wellness Programming

Will allow the student to be exposed to lifestyle concerns which are typically addressed through intervention programs. Programs to be discussed are as follows: smoking cessation, diabetes, musculoskeletal (osteoporosis, arthritis, low back), weight management and stress management. Students will learn how to incorporate a multi-discipline approach for the management of these specific conditions. Prerequisite: HPR 424. Cr 3.

HPR 426 Exercise Leadership and Class Management

This course provides specific knowledges, skills and competencies needed to appropriately develop, prescribe, instruct and manage various kinds of exercise programs for diverse populations. Prerequisite: HPR 424. Cr 3.

HPR 444 Principles of Coaching

Supplies an appreciation and background in the art of coaching. Deals with the complex prob-

lems facing those that accept the challenge of handling our youth of today in a sport setting. The complete role of the effectiveness of the coach will be surveyed. Field trips to study experienced coaches will be required. Prerequisite: sophomore standing. Cr 3.

HPR 468 Advanced Prevention and Care of Athletic Injuries

Acquaints teachers and athletic coaches with modern principles and practices in prevention, treatment, rehabilitation, and safety in physical education and athletics. Cr 3.

HPR 483 Planning the Health Education Curriculum

Assists students in more thoroughly understanding health education in relation to the total school curriculum. Concepts of curriculum development, national considerations, and current research related to health curriculum construction. Cr 3.

HPR 560 Assessment and Evaluation of Human Performance

The assessment and evaluation of selected anatomical, physiological and psychological aspects of human performance for the purpose of developing prescriptive exercise programs based upon individual needs, goals and interests. Prerequisites: HPR 378 and permission. Cr 3.

HPR 570 Interpretation of Health, Physical Education and Recreation

Analytical interpretation of activity through history. Philosophy, methods, measurement, content, public relations and professional preparation. Cr 3.

HPR 572 Planning the Physical Education Curriculum

Selection of activities, sequentially arranged and organized to produce a curriculum for

physical education for the modern school including time allotments, facilities, individual characteristics, problems of appraisal. Cr 3.

HPR 573 Motor Performance and Learning

Study of motor performance to aid the instructor to provide better theoretical framework to structure learning experiences for skillful individual performance. Prerequisite: EDB 203 and/or permission. Cr 3.

HPR 574 Organization and Administration of Recreation Programs

Cr 3.

HPR 575 Current Studies in Health, Physical Education, and Recreation

Analysis of current and emerging trends in health, physical education, and recreation based on experiments, research, literature and empirical observations. Cr 3.

HPR 577 Organization and Administration of Health, Physical Education and Recreation

Provides the student with an overview of the organization and administration of physical education and recreation programs. Develops an understanding of the essential components (interpersonal interaction, budgeting, scheduling, evaluating, etc.) of an effective program. Cr 3.

HPR 579 Current Studies in the Administration of Athletics

Cr 3.

HPR 580 Mechanical Analysis of Human Movement

Analysis of activities provide the student with scientific basis for teaching and evaluating correct form for execution of the fundamental movements. Prerequisite: HPR 376. Cr 3.

HPR 581 Recreation in the American Community

Cr 3.

HPR 582 Physical Education for the Exceptional

Modifications of instructional programs for atypical individuals in the regular school curriculum. Evaluation of body mechanics, programs of correction, recognition of behavior patterns. Cr 3.

HPR 583 Admin of Elementary and Secondary School Health Programs

Cr 3.

HPR 584 Evaluative Procedures in Health, Physical Education and Recreation

Introduces the student to various evaluative techniques which are designed to improve teaching effectiveness and student learning. Emphasis will be placed on utilizing various strategies of evaluation in the instructional setting. Prerequisite: HPR 372. Cr 3.

HPR 585 Development of an Adapted Physical Education and Recreation Program

This course is designed to assist professionals in developing and implementing a full range adapted physical education or recreation program. It addresses the program needs for children and adults of various types and levels of severity of handicapping conditions. Prerequisite: HPR 367 and HPR 372, or their equivalent. Cr 3.

HPR 588 Advanced Exercise Physiology

The purpose of this course is to broaden the knowledge base of graduate students and to identify potential research areas. The course involves in depth study of selected topics in exercise physiology and requires students to extensively utilize the current research literature. Prerequisite: HPR 378 and permission. Cr 3.

College of Engineering

Norman Smith, *Dean*

Wayne A. Hamilton, *Associate Dean*

Engineering is practiced in a social context. Everything engineers produce affects the way individuals and societies function. To allow its graduates to work successfully in this setting, the University of Maine's engineering education programs are designed to educate students in the design and development of devices, processes and systems for the benefit of individuals and society

the understanding of social, ethical, safety, and health related issues which pertain to the practice of engineering

the dynamic nature of engineering developments and practice which require lifelong maintenance and updating of professional competence.

With this framework each program in the College has a specific philosophy and goals which are expressed in the content and arrangement of its curriculum and are explained in the descriptions of the individual programs.

The College of Engineering offers the following majors:

- A. Four-year bachelor of science in engineering technology degree programs, administered by the School of Engineering Technology: Construction Management Technology, Electrical Engineering Technology, Mechanical Engineering Technology.
- B. Four-year bachelor of science degree programs:
 - Bio-Resource Engineering (jointly with the College of Natural Resources, Forestry and Agriculture)
 - Chemical Engineering
 - Civil Engineering
 - Computer Engineering
 - Electrical Engineering
 - Engineering Physics
 - Forest Engineering (jointly with the College of Natural Resources, Forestry and Agriculture)
 - Mechanical Engineering
 - Pulp and Paper Technology
 - Surveying Engineering

Graduation Requirements

- A. In all programs:
 1. An accumulative average not less than 2.0.
 2. Passing grades in all required courses.
 3. Additional requirements listed under each program description.
- B. Students graduating from engineering programs are required to complete the following:
 1. 16 credits of mathematics
 2. 16 credits of basic science
 3. 48 credits of engineering topics

4. 18 credits of humanities and social science*

5. All additional departmental requirements listed under each program description.

The humanities and social sciences are listed in the catalog under Anthropology, Art, Economics, English, History, Modern Languages and Classics, Music, Philosophy, Political Science, Psychology, Public Administration, and courses of a cultural and non-technical nature offered in the School of Performing Arts. No more than three credits in applied theatre or three credits in applied music may be applied toward this requirement. English composition, scientific German, and courses treating accounting, finance, industrial management, personnel administration, and statistics do not fulfill this requirement. Each department maintains a list of acceptable social science and humanities courses.

Cooperative Work-Study Opportunities

A number of cooperative work-study programs are available in the College of Engineering. Details of each program may be obtained from the appropriate department.

Technology and Society

The Technology and Society Project is intended to develop ways to enhance the humanities and social sciences component of undergraduate engineering programs, to work with other colleges in developing the study of technology as a human activity and to infuse this study into the undergraduate curriculum of the university. The project is responsible for operation of a pilot program for Engineering students involving an interdisciplinary introduction to humanities and social science fields followed by a liberal studies concentration and senior seminar series.

Courses dealing with technological development and with topics involving the interfaces of technology and society are also offered by the project. These courses are usually taught by teams of faculty members in which each member can provide a different perspective on the subject matter. Some courses fulfill part of the Humanities/Social Science requirements for Engineering students. Courses covering the Technology and Society area are:

*The 18 credit humanities and social sciences requirement also applies to the Bachelor of Science degree in Pulp and Paper Technology.

- HTY 419 Science and Society Until 1800
- HTY 420 Science and Society Since 1800
- HTY 485 World Maritime History I
- HTY 486 World Maritime History II
- HTY 491 Technology and Society Until 1800
- HTY 492 Technology and Society Since 1800
- TSO 198 Technology and Society
- TSO 199 Technology and Society II
- TSO 351 Transportation and Social Change
- TSO 398 Special Topics in Technology and Society

Courses in Technology and Society

TSO 188 Energy and Society: Technological Choices and Controversies

An overview of the relationship between humans and their use of energy - particularly electrical energy. The Bangor area will be used as a case study to develop this relationship. A descriptive treatment of the technology will provide a basis for understanding the topic. The course includes several short field trips. Cr 3.

TSO 198 Technology and Society I

A survey of the development of modern technology. The interaction of engineering with other facets of modern society examined in relation to issues of current or recent interest. (This course is identical to HTY 197) Cr 3.

TSO 199 Technology and Society II

A survey of the interaction of modern technology and contemporary societies with emphasis on particular cases and technologies of current interest. Concludes with discussion of possible scenarios for future technological and societal developments based on present trends. (This course is identical with HTY 198). Cr 3.

TSO 288 Issues in Environmental Pollution

Major air, water and solid waste pollution issues, toxicity and health risk assessment and control. Environment and the economy, environmental laws and ethics. Consumption and population issues. Cr 3.

TSO 351 Transportation and Social Change

An interdisciplinary study of the technological development and social impacts of rail, air, and automobile transportation taught by engineers, social scientists, and humanists working as an interactive team. One or more appropriate field trips will be held. Prerequisite: At least sophomore standing or permission. Cr 3.

TSO 398 Special Topics in Technology and Society

Selected subjects in the field of technology and society studies and related areas not covered in

other university courses. May be repeated for credit. Prerequisite: junior standing or permission. Cr 1-3.

Honors Program

Qualified students in the College of Engineering are encouraged to participate in the University Honors Program. For academic and admission requirements of the Honors Program, consult the index. In the College of Engineering, the Honors Program consists of two major segments: studies in the humanities and studies in the student's own field. Successful completion of HON 101 or 102 will exempt a student from the college ENG 101 requirement. HON 101 or 102 (whichever is not used to replace ENG 101), HON 201, 202, 301, and 302 may be used towards completion of the college requirements in humanities and social sciences. Other honors work, including the senior thesis (HON 498-499), may be used to replace portions of the curriculum as specified by the chairperson of the student's engineering department. The area of honors work will show on the student's transcript.

Transfer Credit

All students who transfer to the College of Engineering from another institution must earn a minimum of 30 hours of "Orono" courses to qualify for the B.S. degree. Degree credit will normally be allowed for courses in which grades of "C" or above have been received. Evaluation of such courses for approval of degree credit and possible equivalency rests with the Dean of the College of Engineering. Credits from military service schools do not transfer. Normally credits from associate degree programs may be used for elective credits only. Associate Degree level mathematics and science courses do not fulfill the requirements for the B.S. program.

CLEP credit will be granted only for the appropriate subject exams. No credit is given for the CLEP general examinations.

Double Major

Double majors are permitted between most disciplines in the College of Engineering. The requirements for meeting the double major state that a student must meet all requirements of two separate and distinct disciplines. Students also may obtain a double major or double degrees across colleges by satisfying the requirements for both colleges and majors. Students intending to become candidates for double majors or degrees across colleges must declare their intent to the deans of both colleges no later than the beginning of their junior year.

Minors in the College of Engineering

The College of Engineering offers minors in the departments of Chemical, Civil, Electrical and

Computer, and Mechanical Engineering. In cooperation with the College of Natural Resources, Forestry and Agriculture a minor is offered through the Department of Bio-Resource Engineering. Prior to enrolling in a minor a student must consult with the appropriate Department Chairperson to select the courses most appropriate to his/her background and career goals. Minors are open to students who have completed, mathematics through differential equations; a year of physics and at least one course in Chemistry along with the prerequisites required for the individual Engineering courses.

In addition the Department of Naval Science (NROTC) offers a minor in Naval Science.

Chemical Engineering

Minor in Process Engineering: 23 credits

CHE 200 Fundamentals of CHE	4
CHE 385 Thermodynamics I	3
OR	
CHE 386 Thermodynamics II	3
CHE 360 Unit Operations I	4
CHE 362 Unit Operations II	4
CHE 352 Process Control	3
CHE Electives	5

Minor in Pulp and Paper Technology: 22 credits

BMB 221 Organic Chemistry	3
OR	
CHY 251 Organic Chemistry	3
PPA 465 Pulp Technology	3
PPA 456 Paper Technology	3
PPA 473 Pulp Laboratory	4
PPA 474 Paper Laboratory	4
CHE 200 Fundamentals of CHE	4
One Pulp and Paper Seminar	1

Civil Engineering

Minor in Environmental Quality: 19 credits

CIE 331 Fundamentals of Environmental Engineering	3
CIE 350/351 Hydraulics with lab	4
CIE 431 Pollutant Fate and Transport	3
CIE 432 Water Supply Engineering Design	3
CIE 434 Wastewater Engineering Design	3
plus one of the following:	
CIE 455 Hydrology	3
CIE 456 Groundwater Hydrology and Hydraulics	3
CIE 458 Coastal Engineering	3

Minor in Structures: 19 credits

CIE 340 Introduction to Structures	4
CIE 440 Structural Analysis I	4
CIE 442 Reinforced Concrete Design	4
CIE 443 Structural Steel Design	4
CIE 444 Design of Wood Structure	3

Minor in Water Resources: 19 credits

CIE 331 Fundamentals of Environmental Engineering	3
CIE 350/351 Hydraulics with lab	4
CIE 450 Open Channel Hydraulics	3
CIE 455 Hydrology	3

CIE 456 Groundwater Hydrology and Hydraulics	3
CIE 458 Coastal Engineering	3

Electrical and Computer Engineering

Minor in Digital Systems: 23 credits

ECE 172 Logic Systems	4
ECE 215 Electric Circuit Fundamentals	3
ECE 224 Instrumentation	4
COS 220 Introduction to Computer Science I	3
ECE 471 Microprocessor Applications Engineering	3
ECE 475 Advanced Digital Devices	3
ECE 477 Hardware Applications using C	3

Minor in Electronic Instrumentations: 23 credits

14 credits of core courses and at least 9 credit hours for optional ECE courses.

Core courses:

ECE 215 Electric Circuit Fundamentals	3
ECE 224 Instrumentation	4
ECE 262 Solid State Electronics Device	3
ECE 342 Electronics I	4
Examples of Optional Courses:	
ECE 343 Electronics II	4
ECE 351 Fields and Waves	3
ECE 471 Microprocessor Application Engineering	3
ECE 465 Introduction to Sensors	3
ECE 466 Sensors Technology and Instrumentation	4
ECE 434 Biomedical Engineering	3

Minor in Power: 23 credits

14 credits of core courses and at least 9 credit hours of optional ECE courses.

Core courses:

ECE 215 Electric Circuit Fundamentals	3
ECE 224 Instrumentation	4
ECE 323 Energy transmission and Conversion	4
ECE 427 Electric Power Transmission	3
Examples of Optional Courses:	
ECE 428 Electric Power Systems	3
ECE 498 Power Electronics	3
ECE 314 Linear Systems	3
ECE 351 Fields and Waves	3
ECE 414 Feedback Control	3
ECE 417 Introduction to Robotics	3

Mechanical Engineering

Minor in Solid Mechanics: 18 credits

MEE 150 Applied Mechanics: Statics	3
MEE 251 Strength of Materials	3
MEE 270 Applied Mechanics: Dynamics	3
MEE 453 Experimental Mechanics	3

IEE 455 Advanced Strength of Materials	3	BRE 497 Special Problems in BRE (Fluid Power)	3
IEE 456 Introduction to Computational Methods	3	MEE 360 Fluid Mechanics and one of the following:	3
Minor in Fluid Mechanics: 18 credits		MEE 455 Advanced Strength of Materials	3
IEE 150 Applied Mechanics: Statics	3	MEE 461 Compressible Fluid Flow I	3
IEE 230 Thermodynamics I	3	<i>Naval Science</i>	
IEE 270 Applied Mechanics: Dynamics	3	Minor in Naval Science: 23 credits	
IEE 360 Fluid Mechanics	3	Core courses:	
IEE 456 Introduction to Computational Methods plus one of the following:	3	NAV 101 Introduction to Naval Science	2
IEE 461 Compressible Fluid Flow I	3	NAV 102 Ship Systems I (Engineering)	3
IEE 462 Fluid Mechanics II	3	NAV 201 Ship Systems II (Weapons)	3
Minor in Thermodynamics: 18 credits		NAV 304 Naval Leadership and Management II	3
IEE 150 Applied Mechanics: Statics	3	plus one of the following:	
IEE 230 Thermodynamics I	3	BUA 325 Principles of Management/Organization	3
IEE 231 Thermodynamics II	3	NAV 303 Naval Leadership and Management I	3
IEE 360 Fluid Mechanics plus any two of the following:	3	plus one of the following:	
IEE 383 Turbomachine Design	3	HTY 280 Naval History	3
IEE 384 Power Plant Design and Engineering	3	NAV 202 Seapower and Maritime Affairs	3
IEE 385 Heating and Ventilating System Design	3	plus the required option (6 credits)	
IEE 386 Refrigeration and Air Conditioning Systems Design	3	Navy Option	
IEE 433 Solar-Thermal Engineering	3	NAV 301 Navigation and Naval Operations I	3
IEE 434 Thermodynamic Design of Engines	3	NAV 302 Navigation and Naval Operations II	3
IEE 435 Internal Combustion Engines	3	Marine Option	
<i>Resource Engineering</i>		NAV 310 Evolution of Warfare	3
Minor in Fluid Power: 18 credits		NAV 410 Amphibious Warfare	3
RE 462 Power Transmission and Control	3		
RE 452 Fluid Power and Robotics	3	Away Status	
RE 464 instrumentation and Control Systems	3	Students wishing to register for "Away" status must be in good academic standing and must obtain prior approval from their academic ad-	

visor and dean. Course equivalencies should be determined prior to registration.

Before students of the College of Engineering pursue Summer Session courses in any institution (including UMaine), they must be in good academic standing and secure the approval of the dean and the chairperson of the student's major department if they expect degree credit for such work.

Repeating a Course

When a course is repeated, the last grade received will be used in computing the accumulative grade point average. A course may not be repeated after an advanced course in the same field has been passed if the course that the student desires to repeat was a prerequisite for the advanced course.

Pass/Fail

Students enrolled in the College of Engineering may not take courses that are to be used to fulfill the degree requirements on a Pass/Fail basis.

Departments of Instruction

Courses numbered 100-299 are undergraduate courses. Courses numbered 300-499 are upper-class undergraduate courses. Courses numbered 500-599 are graduate courses which may be elected by undergraduate honor students, or those undergraduates whose advancements in the field will permit their taking a graduate level course among graduate students without disadvantage to themselves. Courses numbered 600-699 are graduate level courses which may be taken only by students admitted to the Graduate School.

Aerospace Studies

Professor of Aerospace Studies Lt. Col. Michael A. Rosebush
 Assistant Professor Captain Burgess,
 NCOIC Master Sergeant Gagnon,
 Information Management NCO Staff Sergeant Carter

Purpose

The Air Force Reserve Officer Training Corps (AFROTC) is an educational training program designed to provide students the opportunity to become Air Force officers while completing requirements for an undergraduate or graduate degree. Academic courses are offered to any interested student, while the Two-Year Program and Cadet Corp Activities are available only to Professional Officers Course (POC) cadets.

Academic Courses

Any student may attend any of the AFROTC courses offered at the University of Maine (i.e., AER 411/412, and/or AER 298). One does not have to be a cadet to attend these courses, and there is no military commitment incurred for taking any AFROTC course.

Two-Year Program

The Two-Year Program is a set of Air Force ROTC classes and activities for those people who have already been selected and enlisted as Professional Officers Course (POC) cadets. Since AFROTC will be phased out at the University of Maine by May 1995, no more students

may apply for the Two-year Program. POC cadets must take AER 411/412, plus take part in all required Cadet Corps Activities.

Cadet Corps Activities

POC cadets are organized into a Cadet Squadron, where they practice leadership and management skills for the purpose of preparing them to be officers in the U.S. Air Force. These Cadet Corps Activities are restricted to POC cadets only, and do not receive any academic credit.

Courses in Aerospace Studies

AER 298 Selected Studies in Aerospace Studies

Topics in Air Force history, organization, doctrine, professionalism, mission, technology, management, and philosophy not covered in other courses. Content varies. May be repeated for credit, with departmental permission, for a maximum of 3 credit hours (only one credit hour may be used for Humanities credit in the College of Engineering. Prerequisite: permission.
 Cr 1-3.

AER 411 National Security Policy Issues

A study of the U.S. civil-military relations and the formulation and implementation of defense policy, including political, social and economic constraints, DOD planning, budgeting and management, the mechanics of national decision-making processes. Emphasizes international alliance building, international peace-keeping forces and conflict and arms control. Considers regional issues and their impact on American national security.
 Cr 3.

AER 412 The Professional Officer

Examines the role of the professional officer in a democratic society including socialization process and value orientation. Critical examination of concepts of military professionalism by MacArthur, Huntington, Janowitz, Moskos and others. Studies the moral and ethical standards of military professionalism in a changing world. The Uniform Code of Military Justice, court-martial, and appellate and review procedures.
 Cr 3.

Bio-Resource Engineering

Professors Riley, Smith;

Associate Professors Christensen, Hedstrom, Huff, Soule (Chairperson);

Assistant Professor McBurnie

The Bio-Resource engineering curriculum combines study in engineering and mathematics, the biological sciences, and the physical sciences to provide a unique background so that students may solve engineering problems and produce engineering designs in fields associated with aquaculture, agriculture, food and fibre processing, and in other environmentally related fields. The curriculum is designed to foster in each student the capability to solve the problems of society that are susceptible to engineering treatment; to develop in the student a sensitivity to socially related technical problems; to help the student develop a sense of professionalism and the habit of ethical conduct; to help the student develop an understanding of the engineer's responsibility to protect the public health and safety; and to instill a desire in the student to maintain professional competence through lifelong learning.

The basic curriculum, combined with electives in engineering, the humanities and social sciences, and in the life sciences, and culminating with a three-semester engineering design experience, provide a broad base of knowledge for engineering practice in today's society. Students may specialize in one of the four areas according to their interests and needs. Areas of concentration are: (1) agricultural engineering; (2) aquacultural engineering; (3) food engineering; and (4) environmental engineering.

With the rapidly expanding world population, a rising demand for higher standards of living, and with limited natural resources, Bio-Resource engineering graduates are in great demand. Employment opportunities are as diverse as the food and fibre industries themselves. Graduates in Bio-Resource engineering may be employed as design engineers by machinery and aquacultural systems manufacturers; as sales engineers by machinery, food, or chemical companies; as research engineers by industry, government, or state experiment stations; or in teaching or extension positions by universities. Some practice as consulting engineers. An increasing number of opportunities for foreign service are available.

The curriculum in Bio-Resource engineering is a joint responsibility of the College of Engineering and the College of Natural Resources, Forestry and Agriculture and is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology.

This degree requires satisfactory completion of at least 130 degree hours at an accumulative grade point average of not less than 2.0.

Specimen Curriculum

First Year			
Fall Semester		Spring Semester	
BRE 220 Introduction to Bio-Resource Engineering	3	BRE 255 Materials in Bio-Resources Engineering	3
BIO 100 Basic Biology	4	BRE 257 Computer Applications in Bio-Resource Engineering	3
NFA 117 Issues and Opportunities	1	MAT 127 Analytic Geometry and Calculus II	4
MAT 126 Analytical Geometry and Calculus	4	PHY 121 Physics for Engineering and Physical Scientists I	4
CHY 113 Chemical Principles I	4	BRE 269 Computer Aided Drafting and Design	3
TOTAL HOURS	16	TOTAL HOURS	17
Second Year			
Fall Semester		Spring Semester	
BRE 281 Surveying	1	BRE 282 Introduction to Bio-Resource Engineering Research	2
ENG 101 College Composition	3	MEE 230 Thermodynamics	3
MEE 150 Applied Mechanics: Statics	3	MEE 270 Applied Mechanics: Dynamics	3
MAT 228 Analytical Geometry and Calculus	4	MAT 258 Introduction to Differential Equations and Linear Algebra	3
PHY 122 Physics for Engineers and Physical Scientists II	4	SPC 103 Fundamentals of Public Communications	3
TOTAL HOURS	15	TOTAL HOURS	15
Third Year			
Fall Semester		Spring Semester	
MEE 360 Fluid Mechanics	3	MEE 251 Strength of Materials	3
BRE 465 Soil and Water Resources Engineering	3	ECE 215 Electric Circuit Fundamentals	3
BRE 469* Process Engineering	3	BRE 492 Design Project	Arr
ENG 317 Technical Writing	3	BRE 460 Power and Machinery Electives	3
INT 110 Modern Economic Problems	3	TOTAL HOURS	6
Electives	3		16
TOTAL HOURS	18		
Fourth Year			
Fall Semester		Spring Semester	
BRE 492 Design Project	Arr	BRE 493 Design Project II	1
BRE 480 Senior Seminar	1	BRE 463* Structures and Environmental Design	3
BRE 462 Power Transmission and Control	3	Electives	12
BRE 464* Instrumentation and Control Systems	3	TOTAL HOURS	16
Electives	8		
TOTAL HOURS	17		
TOTAL REQUIREMENT FOR GRADUATION: 130 CREDIT HOURS			

*Concentrations: These courses are taught on an alternate year schedule so may be taken in either the 3rd or 4th years.

Electives:

12 Credit hours must be Humanities or Social Sciences courses. 20 Credit hours must be from Concentration recommendations.

Concentrations

AGRICULTURAL ENGINEERING

AES 140 Soil Science	3
MEE 380 Design I	3
BRE 466 Irrigation and Containment and a minimum of 8 credits from the following list:	3
AES 100 Plant Science	4
AES 101 Crop Systems	4
MEE 381 Design II	3
MEE 455 Advanced Strength of Materials	3
BRE 452 Fluid Power and Robotics	3
MEE 435 Internal Combustion Engines	3
MEE 471 Mechanical Vibrations	3

AQUACULTURAL ENGINEERING

AVA 211 Aquaculture	3
AVA 220 Topics in Marine Resources	2
OCE 370 Introduction to Oceanography and a minimum of 9 credits from following list:	3
BRE 466 Irrigation and Water Supply Design	3
AVA 212 Maine Mariculture	3
AVA 409 Shell Fisheries Biology	3
CTE 458 Coastal Engineering	3

ZOL 472 Aquatic Food Webs	3
ZOL 213 Introduction to Marine Science	3

FOOD ENGINEERING

CHE 350 Automatic Control	3
FSN 301 Introduction to Food Science	3
FSN 502 Food Processing I	4
FSN 503 Food Processing II	4
and a minimum of 3 credits from the following list:	
ARE 365 Food and Fiber Marketing	3
BMB 300 General Microbiology	3
MEE 231 Thermodynamics II	3
MEE 386 Refrigeration and Air Conditioning Systems Design	3
MEE 432 Heat Transfer	3

ENVIRONMENTAL ENGINEERING

BRE 497 Special Topics: Environmental Aspects of BRE	3
INT 230 Waste Management	3
CTE 331 Fundamentals of Environmental Engineering	3
CTE 431 Pollutant Fate/Transport	3
and a minimum of 5 credits from the following list:	
CTE 450 Open Channel Hydraulics	3

CTE 455 Hydrology	
CTE 456 Ground Water Hydro/Hydraulics	
SVE 271 Introduction to Geographic Information Systems	
AVA 250 Our Environment	
BRE 466 Irrigation and Water Supply	
BRE 497 Special Topics: Compost Engineering	
BRE 497 Special Topics: Des./Use Const. Wetlands	

Graduate Work in Bio-Resource Engineering

The degrees of Master of Science (Bio-Resource Engineering) and Master of Engineering (Bio-Resource Engineering) are offered with options for specialization in soil and water engineering, farm structures, agricultural power and machinery, electric power and processing, and aquacultural systems.

Several research assistantships are available each year. Incumbents devote half time to research work on approved projects of the Agricultural Experiment Station.



Chemical Engineering

Including Pulp and Paper Technology

Professors Ceckler, Chase (Emeritus), Genco (Calder Professor of Pulp and Paper Engineering and Science), Hassler, Kiran (Gottesman Research Professor of Chemical Engineering), LePoutre (Ober Chair), Mumme (Undergraduate Coordinator), Pendse, Thompson (University of Maine Pulp and Paper Foundation Professor of Chemical Engineering);

Associate Professors Co, Hwalek, Bousfield (University of Maine Pulp and Paper Foundation Faculty Fellow);

Research Associate Professor M. Hill;

Faculty Associate Marshall;

Cooperating Professor B. Cole

Chemical engineers are primarily concerned with designing, operating and managing processing systems to alter and upgrade products and materials so that they are more useful for mankind, and to do so with the greatest possible economy and the least possible harm to the environment. The basic chemical engineering curriculum provides the educational breadth and depth necessary to prepare students to perform these important functions in society.

Student candidates for the B.S. degree in Chemical Engineering are prepared for satisfying and challenging careers involving design, operation, and improvement of chemical processes, materials, and products in the chemical and related industries. A chemical engineering education is an excellent component of training for a professional career that leads to management. The broad educational background prepares students for careers in other areas; chemical engineers are active in improving the environment, planning for utilization of resources, food production, health services, and systems analysis. Chemical engineering training provides a unique background for solving problems, especially those involving physical and/or chemical changes in materials.

The curriculum provides a broad background in the fundamentals of science and engineering. Opportunities are afforded for application of these fundamentals to typical chemical engineering problems to illustrate how compre-

hensive problems are analyzed and solved. The curriculum also provides the student an opportunity to select a specialized area and develop skills needed to work more effectively in that area. A background in the humanities and social sciences is provided so that the graduate can understand our society and make decisions which contribute to its development and improvement.

The study of chemistry, physics, and mathematics which are the foundations of engineering, begins in the first year of the chemical engineering curriculum. Courses in organic and physical chemistry provide the extensive knowledge of chemistry required in the education of chemical engineers and in the practice of chemical engineering. Basic knowledge of electricity and mechanics is essential and is provided by courses in the appropriate departments. Applications-oriented chemical engineering topics courses begin during the first year so that students may gain an early understanding of the significance of their major field.

Students are assisted by faculty counselors in developing an elective program in the humanities and social sciences to satisfy their individual interests within the general college requirements. In addition, the department requires that the humanities and social studies program contains one nine credit-hour course sequence in a single subject area.

During the latter part of the academic program, the student must select an area of chemical engineering within which he or she will receive more specialized education in engineering topics (technical electives option). The technical electives option requires a minimum of nine credit hours. A faculty counselor will assist each student in selecting an appropriate option and in scheduling specific courses to meet this requirement. Technical elective options have been defined in process control, polymer engineering, and pulp and paper engineering. Other special options may be approved upon petition to the department.

The senior design sequence occurs during the last two semesters of the student's program. It allows the students to develop and demonstrate their engineering design capabilities which have been developed throughout the entire curriculum.

The four-year curriculum leads to the degree of Bachelor of Science in Chemical Engineering, which is fully accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology. Although the curriculum provides excellent preparation for an effective professional career, superior students can elect to take additional courses; they are encouraged to do so during the latter stages of their academic training.

Pulp and Paper Technology Program

The manufacture of pulp and paper products from wood and other fiber resources is one of the largest industries in the United States and the world. It depends in a major way upon chemical engineering for research, design, and management of a wide range of both organic and inorganic chemical processes in complex and integrated systems.

The Department of Chemical Engineering at the University of Maine pioneered the first program to study pulp and paper engineering in the United States, and continues to provide instruction in the multidisciplinary application of engineering sciences to the varied and complex operations of this forest resources industry. The

modern and extensive paper industry of this state provides an exceptional opportunity for cooperative interaction of university-based programs with real life problems of industrial operations and development.

Students with a special interest in this industry, and whose commitment to the full curriculum for the B.S. degree in Chemical Engineering is subordinate to other goals, can elect a four-year educational program leading to the degree of Bachelor of Science in Pulp and Paper Technology. This curriculum is process-engineering oriented. Specialized courses designed for work specifically in this industry are substituted for

some of the science and engineering courses that are required in chemical engineering.

Advanced Study in Pulp and Paper Management

Students with a B.S. degree can program a fifth-year extension of their undergraduate curriculum to fulfill requirements for a *Certificate in Five-Year Pulp and Paper Management*. One half of the fifth year covers basic fiber science and the engineering technology of pulp and paper production. The other half can be an elective sequence to develop special interests in process engineering, systems engineering, environ-

Specimen Curriculum for the Degree of Bachelor of Science in Chemical Engineering

First Year			
First Semester		Second Semester	
MAT 126 Analytic Geometry and Calculus	4	MAT 127 Analytic Geometry and Calculus	4
CHY 113 Chemical Principles I	4	CHY 114 Chemical Principles II	4
PHY 121 Physics for Engineers and Physical Scientists I	4	PHY 122 Physics for Engineers and Physical Scientists II	4
CHE 111 Introduction to Chemical Engineering	2	CHE 112 Introduction to Chemical Engineering II	2
Humanities/Social Sciences Elective*	<u>3</u>	Humanities/Social Sciences Elective*	<u>3</u>
TOTAL HOURS	17	TOTAL HOURS	17
Sophomore Year			
First Semester		Second Semester	
MAT 228 Analytic Geometry and Calculus	4	MAT 258 Introduction to Differential Equations and Linear Algebra	4
CHY 251 Organic Chemistry Lecture I	3	CHY 252 Organic Chemistry Lecture II	3
CHY 253 Organic Chemistry Laboratory I	2	ECE 215 Electric Circuit Fundamentals	3
CHE 200 Fundamentals of Chemical Engineering	4	CHE 385 Chemical Engineering Thermodynamics I	3
Humanities/Social Sciences Elective	<u>3</u>	MAT 332 Statistics for Engineers	3
TOTAL HOURS	16	Humanities/Social Sciences Elective	<u>3</u>
		TOTAL HOURS	19
Junior Year			
First Semester		Second Semester	
CHY 371 Physical Chemistry I	4	CHY 372 Physical Chemistry II	4
CHE 360 Elements of Chemical Engineering I	4	CHE 362 Elements of Chemical Engineering II	4
CHE 352 Process Control	3	CHE 361 Chemical Engineering Laboratory I	2
CHE 386 Chemical Engineering Thermodynamics II	3	CHE 368 Chemical Engineering Kinetics	3
CHE 330 Engineering Materials	<u>3</u>	Technical Elective I	<u>3</u>
TOTAL HOURS	17	TOTAL HOURS	16
Senior Year			
First Semester		Second Semester	
MEE 252 Statics and Strength of Materials	3	CHE 479 Process Design Projects	4
CHE 477 Elements of Chemical Process Design	3	CHE 493 Chemical Engineering Seminar	1
CHE 493 Chemical Engineering Seminar	0	Technical Elective III	3
CHE 363 Chemical Engineering Laboratory II	2	Humanities/Social Sciences Elective	3
Technical Elective II	3	Humanities/Social Sciences Elective	<u>3</u>
Humanities/Social Sciences Elective	<u>3</u>	TOTAL HOURS	14
TOTAL HOURS	14		

TOTAL DEGREE HOURS: 130

*One must be ENG 101 or equivalent.

mental engineering, applied computer sciences, polymer science, process control, plant design, operations economics, engineering management, business administration, and others.

Students at the University of Maine who are enrolled in a B.S. degree program can undertake an integrated program where the requirements of the fourth year of their basic curriculum and the additional courses of the five-year option are distributed to reinforce each other over the last two years of a five-year program. The B.S. degree and the certificate are awarded concurrently at the end of the fifth year.

Requirements for a *Certificate in Five-Year Pulp and Paper Management* include the successful completion of a minimum of 30 credit hours beyond the B.S. degree requirements. These hours must include the courses PPA 465, PPA 466, PPA 473, PPA 474, PPA 695 and PPA 696 unless written permission is obtained from the faculty advisor. PPA 499 may be substituted for PPA 473 or PPA 474 but not for both. The remaining credits are to be taken in courses that constitute a minor field and are usually taken from the College of Art and Humanities, the College of Business Administration, the College of Engineering, the College of Sciences, the College of Social and Behavioral Sciences and the College of Natural Resources, Forestry and Agriculture. They are selected to enhance the career preparation of the student. A variety of elective course programs can be developed to meet individual needs of the student in consultation with and with approval of the faculty advisors so that requirements for a *Certificate in Five-Year Pulp and Paper Management* can be completed within one academic year beyond the B.S. degree.

The certificate program may be taken concurrently with some M.S. programs with consent of the academic organizations involved. However the certificate program is a fifth-year extension of studies at the undergraduate level in those courses which are required, and courses taken for this certificate will not satisfy degree requirements for an M.S. program unless prior permission by the student's graduate advisory committee has been obtained.

Cooperative "Work-Experience" Program Option in Chemical Engineering

Students with satisfactory academic standing at the conclusion of their fourth semester in the B.S. curriculum of chemical engineering or pulp and paper technology may petition for and accept opportunities provided by cooperative companies to undertake the special "Co-op" program. This involves work as a junior chemical engineer for two periods of supervised and paid professional experience. These periods alternate with two regular terms of study over a continuous 15-month period, which normally begins in June of the sophomore year and ends in September immediately before the fall semester of the senior year. While students must reg-

ter for eight credits for this program, these credits cannot be used as substitutes for courses required in the curriculum for the B.S. degree. These credits are in addition to the minimum required for the B.S. degree. Students in the "Co-op" program can complete their study program to graduate with a B.S. degree at the same time as do other members of their class. Students should consult with the chairperson or faculty advisors of the Department of Chemical Engineering for additional details.

"Co-op" program positions are awarded on competitive basis, with collective consent of the faculty, the selected student, and the industrial "Co-op" employer. Students who complete the requirements of the "Co-op" program are awarded a Certificate of Chemical Engineering Internship together with their B.S. degree.

Graduate Work in Chemical Engineering

The Department offers M.S. and Ph.D. degree programs. Students with a B.S. in chemical engineering are required to complete 30 semester hours of graduate work, including a thesis, two seminars, and six courses to receive an M.S. in chemical engineering. The Ph.D. degree requires a minimum of 90 semester hours of graduate work beyond the B.S. in Chemical Engineering or a minimum of 60 semester hours of graduate work beyond an M.S. in chemical engineering; these requirements are accounted for by a dissertation, four seminars, and six graduate courses. In addition to completing the course and research requirements, Ph.D. students are required to pass a qualifying examination and a research examination on their plan dissertation.

Highly qualified and motivated graduates with a B.S. in a discipline other than chemical engineering may be admitted to the M.S. program. They are required to take selected undergraduate chemical engineering courses in addition to the required graduate work.

Details for the requirements for the degree of Master of Science in Chemical Engineering and Doctor of Philosophy in Chemical Engineering are given in the Bulletin of the Graduate School of the University of Maine, and can be obtained from the Graduate School or the Department of Chemical Engineering.

Fellowships and assistantships are available graduate students.

Students must complete 18 credits in the humanities/social sciences in addition to English 1. These must include nine credits in a single area of study. A maximum of three credits in the performing arts may be included in the total. A listing of most courses that may be included in the humanities/social sciences program can be obtained in the College of Engineering office, 11 Barrows Hall. Students may request permission to include courses not on this list.

Each student must complete a technical elective program consisting of nine credits. Normally, these credits represent a concentration in

Specimen Curriculum for the Bachelor of Science in Pulp and Paper Technology

First Year			
First Semester		Second Semester	
MAT 126 Analytic Geometry and Calculus	4	MAT 127 Analytic Geometry and Calculus	4
CHY 113 Chemical Principles I	4	CHY 114 Chemical Principles II	4
PHY 121 Physics for Engineers and Physical Scientists I	4	PHY 122 Physics for Engineers and Physical Sciences II	4
CHE 111 Introduction to Chemical Engineering	2	CHE 112 Introduction to Chemical Engineering II	2
Humanities/Social Sciences Elective (1)	3	Humanities/Social Sciences Elective (1)	3
TOTAL HOURS	17	TOTAL HOURS	17
Sophomore Year			
First Semester		Second Semester	
MAT 228 Analytic Geometry and Calculus	4	MAT 258 Introduction to Differential Equations and Linear Algebra	4
CHE 200 Fundamentals of Chemical Engineering	4	MEE 231 Thermodynamics II (2)	3
MEE 230 Thermodynamics I (2)	3	ECE 215 Electric Circuit Fundamentals	3
CHY 251 Organic Chemistry Lecture I	3	CHY 252 Organic Chemistry Lecture II	3
CHY 253 Organic Chemistry Laboratory I	2	MAT 332 Statistics for Engineers	3
TOTAL HOURS	16	TOTAL HOURS	16
Junior Year			
First Semester		Second Semester	
CHE 360 Elements of Chemical Engineering I	4	CHE 362 Elements of Chemical Engineering II	4
PPA 465 Pulp Technology	3	PPA 466 Paper Technology	3
CHY 371 Physical Chemistry I	4	CHY 455 The Chemistry of Cellulose and Wood (3)	3
BOT 203 The Plant Kingdom	4	WSC 416 Wood Anatomy	4
Humanities/Social Sciences Elective	3	Humanities/Social Sciences Elective	3
TOTAL HOURS	18	TOTAL HOURS	17
Senior Year			
First Semester		Second Semester	
CHE 477 Elements of Chemical Process Design	3	PPA 474 Paper Manufacture and Testing	4
PPA 473 Pulp Manufacture and Testing	4	MEE 251 Strength of Materials	3
CHF 330 Engineering Materials	3	Humanities/Social Sciences Elective	3
MEE 150 Applied Mechanics: Statics	3	Humanities/Social Sciences Elective	3
Humanities/Social Services Elective	3	Technical Elective	3
TOTAL HOURS	16	TOTAL HOURS	16

TOTAL DEGREE HOURS: 133

Notes:

1. One must be ENG 101 or equivalent.
2. CHE 385 and CHE 386 may be substituted for MEE 230 and MEE 231.
3. CHY 240 Quantitative Analysis may be substituted for CHY 455.

one of three areas: polymer engineering, process control, and pulp and paper engineering. Students may petition the department for permission to develop individual elective programs which may include appropriate courses from outside as well as within the department. Individual programs must meet some educational or professional objective and must consist of upper level courses. Finally, the elective program must contain at least one design credit to fulfill ABET design requirements.

The courses in the three formal elective programs are:

Engineering Engineering

Course: Science: Design:

CHE 431

Polymer Chemistry 2.50.5

CHE 432

Polymer Structures 2.50.5

CHE 433

Polymer Processing 2.50.5

CHE 454

Digital Process Control 1.51.5

CHE 456

Advanced Control II 1

CHE 458

Advanced Control II 21

PPA 465

Pulp Technology 21

PPA 466

Paper Technology 21

PPA 473

Pulp Mfg and Testing 31

PPA 474

Paper Mfg and Testing 3 1

Courses in Chemical Engineering

CHE 111 Introduction to Chemical Engineering

Introduces the fundamentals of chemical engineering studies, career development and professional practice. Includes emphasis on oral and written communication skills and career planning development. Admission: first-year students only. Rec 2. Cr 2.

CHE 112 Introduction to Chemical Engineering II

Introduction to the application of computers to chemical engineering problems. Topics include computer programming, the use of packaged software for computations and graphics and general use of PC operating systems. Rec 2. Cr 2.

CHE 200 Fundamentals of Chemical Engineering

Applies the principles of material and energy balances to the solution of problems in chemical engineering operations and processes through quantitative correlation of basic concepts of chemistry, physics, and mathematics. Prerequisite: CHY 114 or permission. Lec 4. Cr 4.

CHE 330 Engineering Materials

Relationships between the microscopic structure of materials and their macroscopic bulk and engineering properties. Emphasis on met-

als, polymers and ceramics and the effects of their microstructures on engineering performance and design. Prerequisites: CHE 385. Lec 3. Cr 3.

CHE 352 Process Control

Process dynamics described by ordinary differential equations and by linearized approximations. Covers solution of system equations by the use of Laplace transforms, concepts of feedback control, process dynamics and closed loop system analysis. Prerequisites: MAT 258 or MAT 451 or permission. Rec 3. Cr 3.

CHE 360 Elements of Chemical Engineering I

Introduction to rate operations, stage operations, and the principles of molecular and turbulent transport of mass, momentum, and energy including application of these principles to the chemical engineering unit operations. Prerequisite: CHE 200. Rec 4. Cr 4.

CHE 361 Chemical Engineering Laboratory I

Applies the principles of the unit operations and process control in the laboratory, using pilot scale equipment with emphasis on formal reports. Prerequisite: CHE 352, CHE 360. Lab 4. Cr 2.

CHE 362 Elements of Chemical Engineering II

A continuation of CHE 360. Prerequisite: CHE 200, CHE 360. Rec 4. Cr 4.

CHE 363 Chemical Engineering Laboratory II

Application of the principles of the unit operations and process control in the laboratory, using pilot scale equipment. Emphasis is placed upon formal written and oral reports. Prerequisites: CHE 352, CHE 362. Lab 4. Cr 2.

CHE 368 Chemical Engineering Kinetics

A study of the rates and mechanisms of ordinary and catalyzed reactions with the purpose of providing the data for process design. Corequisite: CHY 372. Rec 3. Cr 3.

CHE 385 Chemical Engineering

Thermodynamics I

Applications of the first and second laws of thermodynamics to the analysis of systems of interest to chemical engineers. Topics include state equations for both ideal and real gases, heat and energy relationships in chemical reactions, elementary phase equilibria, and simple heat and power cycles. Prerequisite: CHE 200. Rec 3. Cr 3.

CHE 386 Chemical Engineering

Thermodynamics II

A continuation of CHE 385. Emphasis on homogeneous mixtures, multi-component vapor-liquid equilibria, chemical reaction equilibria and the thermodynamic analysis of chemical processes. Prerequisite: CHE 385. Rec 3. Cr 3.

CHE 431 Polymer Chemistry and Reactions

Synthesis and production of polymeric materials from monomers or by modification of natural polymers. Various polymerization reactions,

their catalysis and their mechanisms and kinetics are considered as well as industrial systems used for polymerization. Prerequisite: CHY 252. Corequisite: CHY 372. Lec 3. Cr 3.

CHE 432 Polymer Structure and Properties

Examines structure and properties of polymeric materials. Polymer structure and morphology, transitional phenomena, crystallinity, solution behavior, characterization, and basic rheology and properties related to chain structure are studied. Prerequisite: CHY 372. Corequisite: CHE 386 or permission. Lec 3. Cr 3.

CHE 433 Introduction to Polymer Processing

The application of engineering principles to polymer processing with particular emphasis on applied rheology, extruder design, die design, spinning, molding, and sheet fabrication. Emphasis on mathematical modelling of processes and the effects of processing on the products formed. Prerequisites: CHE 431, CHE 362, CHE 386, CHY 372 or permission. Lec 3. Cr 3.

CHE 454 Introduction to Digital Computer Process Control

Real-time process programming concepts, the s transformation and design of digital controllers. Advanced control schemes. Dynamic considerations and control of unit operations. Includes laboratory project. Prerequisites: CHE 352. Lec 3. Cr 3.

CHE 456 Advanced Process Control I

Examination of dynamic systems in state variable form including state variable models, interaction and decoupling, controllability and observability, multivariable systems. Prerequisite: CHE 352 or permission. Lec 3. Cr 3.

CHE 458 Advanced Process Control II

Principles and methods of parameter estimation, system identification, and search techniques. Considers advanced process controller and control law design and stochastic systems. Includes applications and examination of current literature. Prerequisites (or concurrent registration): CHE 454, CHE 456 or permission. Lec 3. Cr 3.

CHE 477 Elements of Chemical Process Design

Introduction to chemical process design and engineering economics. Considers principles of design, complex process flow diagrams, heat and material balances, rate equations, and cost estimating techniques as well as principles of engineering economics involving time value of money, taxes, depreciation, profitability indicators, alternative investment and optimization. Prerequisite: CHE 360 and CHE 362 or permission. Rec 3. Cr 3.

CHE 479 Process Design Projects

Application of chemical engineering principles to the solution of complex, open-ended, design problems involving feasibility, analysis, design and optimization of chemical processes. Review of methods for estimating thermodynamic and transport properties required in process design. Emphasis on oral and written communication.

and working in small design groups. Prerequisite: CHE 477. Rec 1, Lab 3. Cr 4.

CHE 493 Chemical Engineering Seminar
Discussion of recent developments in chemical engineering and related fields. Prerequisite: senior chemical engineering standing. Cr 0-1.

CHE 494 Chemical Engineering Practice
A cooperative work experience in some commercial operation of the chemical process industry. May be repeated for credit to a maximum of 8 credit hours. Prerequisite: permission. Pass/Fail Grade Only). Cr Ar.

CHE 497 Independent Study
Individual and independent study of a specialized topic under staff supervision. Maximum of 3 accumulated credit hours. Prerequisite: permission. Cr Ar.

CHE 498 Special Topics in Chemical Engineering
Selected subjects in the field of chemical engineering, or related areas of science and technology, not covered in other courses. May be repeated for credit. Prerequisite: permission. Cr 1-3.

CHE 499 Undergraduate Thesis
Original investigation of a chemical engineering problem, and reporting of the results. Maximum of 3-6 accumulated credit hours. Cr Ar.

CHE 510 Introduction to Transport Phenomena
A study of principles of momentum, energy and mass transport including mathematical modeling of transport processes by exact and approximate techniques. Cr 3.

CHE 520 Colloid Technology
Study and application of chemical and physical factors underlying interfacial phenomena. Includes thermodynamics of absorption, surface tension, capillarity, wetting and spreading, electrical properties of interfaces, electrokinetics, surfactant, aerosols, emulsions, foams. Cr 3.

CHE 521 Intermediate Chemical Engineering Thermodynamics
Studies of phase and reaction equilibria in multi-component, non-ideal, and complex systems. Flow and non-flow systems. Application of general thermodynamic methods to problems in chemical engineering. Cr 3.

CHE 530 Introduction to Polymer Science
Introduces research techniques for synthesis and modification of organic and inorganic macromolecules and analytical methods for relating molecular and phase structure with solubility, transport and interfacial properties. Cr 3.

CHE 531 Advanced Chemical Engineering Kinetics
Examines theory of homophase and heterophase catalysis and chemical transformation as

a base for process design. Includes chain reactions, acidbase catalysis, enzymes, and commercial case studies such as hydrocarbon synthesis, organic oxidations, cracking, and plating. Cr 3.

CHE 560 Heat Transfer
Applies theories of transfer of mass, momentum, and heat from phase boundaries to flowing fluids to the design and prediction of the performance of heat transfer devices under both steady-state and transient conditions. Cr 3.

CHE 562 Mass Transfer
Applies engineering science and mathematical techniques to comprehensive problems of mass transfer in chemical engineering operations. Covers non-isothermal and unsteady-state systems and development of physical models of mass transfer processes. Cr 3.

CHE 570 Chemical Engineering of Pulp and Paper Manufacture
Advanced study of important operation in the manufacture of pulp and paper including flow of fluids, heat transfer, absorption, evaporation, drying. Cr 3.

CHE 580 Chemical Engineering Analysis
Modeling and simulation of chemical engineering processes. Emphasis on the formation of a model using ordinary and partial differential equations, and on the solution of the model using numerical methods. Cr 3.

CHE 594 Chemical Engineering Practice
Individual or group investigation of the operation of commercial processes or practices in industrial situations. Cr Ar.

CHE 598 Special Topics in Chemical Engineering
Special topics presented as need and interest require. Topics will include studies relevant to fields of application, such as pulp and paper, polymers, process control, materials conversion, and surface properties. Prerequisite: permission. Cr Ar.

Courses in Pulp and Paper Technology

PPA 264 Survey of the Paper Industry
Introductory overview of the structure and technology of the U.S. pulp and paper industry. Considers the manufacture of paper from fibrous raw materials to the processing of finished products. Emphasis on papers produced from wood, non-wood, and secondary fibers. Suitable for non-technical students. Rec 3. Cr 3.

PPA 465 Pulp Technology
The chemical and engineering principles of manufacturing various wood pulps. Prerequisite: Junior standing, CHE 200, or permission. Rec 3. Cr 3.

PPA 466 Paper Technology
The chemical and engineering principles of paper manufacturing from the preparation of fiber furnishes to the final stage of drying. Prerequisite: CHE 200 or permission. Rec 3. Cr 3.

PPA 473 Pulp Manufacture and Testing
Problem-oriented laboratory course involving the process design criteria for the production of mechanical, semi-chemical and chemical wood pulps. Prerequisite: PPA 465 (may be taken concurrently). Lab 8. Cr 4.

PPA 474 Paper Manufacture and Testing
A problem-oriented laboratory course involving the process design of paper making and finishing systems. Prerequisite: PPA 466 (may be taken concurrently). Lab 8. Cr 4.

PPA 475 Mathematical Modeling of Pulp and Paper Systems
Introduces computer modeling in the analysis and design of the equipment and processes involved in the manufacture of pulp and paper. Prerequisite: MAT 451 or equivalent. Rec 3. Cr 3.

PPA 499 Undergraduate Thesis
Original investigation of a pulp and paper problem and reporting of the results. Prerequisite: permission. Cr Ar.

PPA 573 Design Practices in the Pulp and Paper Industry I
Problem-oriented laboratory course on analysis and design of products and processes related to manufacture of pulp, paper, and chemical by-products. Emphasis on extraction of pulp or other chemicals from wood. Prerequisites: (may be taken concurrently) PPA 465, PPA 466. Rec 1, Lab 5. Cr 3.

PPA 574 Design Practices in the Pulp and Paper Industry II
Problem-oriented laboratory course on analysis and design of products and processes related to manufacture of pulp, paper, and chemical by-products. Emphasis on conversion of pulp and other silvichemical intermediates into useful consumer products. Prerequisites: (may be taken concurrently) PPA 465, PPA 466. Rec 1. Cr 3.

Interdisciplinary Course
INT 398 (CHE, CHY, ECE) Undergraduate Research Participation
Research topics chosen by students in consultation with faculty members in the College of Engineering. Students submit a final report describing their research and present an oral seminar. Cr 1-3.

Civil and Environmental Engineering

Professors Rock (Chair), Alexander, Brutsaert, Pearce;
Associate Professors Dagher, Garder, Humphrey, Nazmy, Panchang, Sandford;
Assistant Professor Katz;
Faculty Associates Wardwell, Woodard

Undergraduate Programs

The Civil and Environmental Engineering Department offers a four-year undergraduate program leading to the bachelor of science degree in civil engineering.

Civil engineers are primarily responsible for planning, designing, and constructing facilities to serve society. They design and construct highways and railroads, bridges and tunnels, airports and harbors, hydroelectric dams and power plants, irrigation and flood control projects, and the foundations and frames of buildings. Environmental engineers plan and design water purification plants, pollution control facilities, and other environmental protection projects. An engineer may specialize in one or several of these areas and may further specialize in a particular function, such as design or management.

The civil engineering faculty is dedicated to providing a high quality education that will prepare individuals to become professional civil engineers. Many career paths are open to the civil engineer and the goal of the undergraduate program is to ensure that graduates are prepared to achieve success in their chosen careers. Consequently, the curriculum provides a broad-based program stressing the fundamentals common to the many branches of civil engineering. This curriculum is designed to provide the student with a well-founded civil engineering education while allowing the student the option of selecting electives in one or more disciplines such as environmental, geotechnical, structures, transportation, water resources, construction, and coastal engineering.

Engineering design is introduced in the student's first semester, developed in required and elective courses, and culminates in the required "capstone" design course, CIE 411 Engineering Project Design. The practical application of fundamental engineering principles are built through a deliberate integration of laboratory experiences with classroom instruction. Critical thinking skills, technical writing ability, and oral communication skills receive emphasis, along with team participation, so that graduates are prepared for leadership roles in their careers.

Course work also is provided in the humanities and social sciences to give the student a broader view of cultural, political, and economic aspects of society and their relationship to engineering. The understanding of humanistic and societal factors is essential in developing

Civil Engineering Curriculum

First Year			
First Semester		Second Semester	
CIE 110 Materials	3	ENG 101 College Composition	3
CIE 111 Materials Laboratory	1	GEE 101 Introduction to Engineering Design	3
MAT 126 Analytic Geometry and Calculus	4	MAT 127 Analytic Geometry and Calculus	4
CHY 111 General Chemistry I	4	PHY 121 Physics for Engineers and Physical Scientists I	4
Humanities/Social Science Elective (1)	3	CHY 112 General Chemistry II	4
TOTAL HOURS	15	TOTAL HOURS	18
Second Year			
First Semester		Second Semester	
CIE 225 Transportation Engineering	3	MEE 251 Strength of Materials	3
MEE 150 Applied Mechanics: Statics	3	MAT 258 Introduction to Differential Equations and Linear Algebra	4
SVE 111 Plane Surveying	4	COS 215 Introduction to Computing Using FORTRAN	3
MAT 228 Analytic Geometry and Calculus	4	Basic Science Elective (2)	4
PHY 122 Physics for Engineers and Physical Scientists II	4	Humanities/Social Science Elective	3
TOTAL HOURS	18	TOTAL HOURS	17
Third Year			
First Semester		Second Semester	
CIE 331 Fundamentals of Environmental Engineering	3	CIE 365 Soil Mechanics	3
CIE 340 Introduction to Structures	4	CIE 366 Soil Mechanics Laboratory	1
CIE 350 Hydraulics	3	ENG 317 Business and Technical Writing	3
CIE 351 Hydraulics Laboratory	1	Engineering Science Elective(3)	3
MAT 332 Statistics for Engineers	3	Civil Engineering Elective(4)	3
Humanities/Social Science Elective	3	Humanities/Social Science Elective	3
TOTAL HOURS	17	TOTAL HOURS	16
Fourth Year			
First Semester		Second Semester	
Civil Engineering Elective	3	CIE 411 Engineering Project Design	3
Civil Engineering Elective	3	CIE 412 Engineering Decisions	3
Technical Elective(5)	3	Civil Engineering Elective	3
Engineering Science Elective	3	Civil Engineering Elective	3
Humanities/Social Science Elective	3	Humanities/Social Science Elective	3
SPC 103 Fundamentals of Public Communication	3	TOTAL HOURS	15
TOTAL HOURS	18		
TOTAL CREDIT HOURS: 134			

Electives:

Elective courses are used to meet part of the EAC-ABET accreditation requirements for basic science, engineering science, engineering design, and humanities/social sciences as listed in the general college requirements, above. Students are assisted by faculty advisors in developing an elective program to meet the accreditation requirements, and the student's individual needs.

the engineering skills needed to solve today's and tomorrow's problems.

The Department has a number of scholarships available for students majoring in civil engineering. Outstanding incoming students should apply for PaCEsetter Scholarships directly through the Department.

The program is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (EAC-ABET).

Academic Standards

In addition to meeting all University academic requirements, a civil engineering student must adhere to the following conditions:

1. Only one D grade (D-, D, or D+) is allowed in the ten basic science/mathematics courses. (CHY 111, 112; MAT 126, 127, 228, 258, 332; PHY 121, 122; and basic science elective). If a

second D grade is earned, then one of the two courses must be retaken the next time the course is offered.

2. Only one D grade (D-, D, or D+) is allowed in all CIE courses, statics, strength of materials and all technical electives.
3. Courses numbered 500-599 are graduate courses which may only be taken by undergraduate students who have achieved a superior academic record in their undergraduate courses and have received permission of the course instructor and their academic advisor.

Graduate Programs

The Department of Civil and Environmental Engineering offers programs of study and research leading to the Master of Science (thesis), Master of Engineering (non-thesis) and Doctor of Philosophy degrees in Civil Engineering. Stu-

dents with a B.S. in Civil Engineering are required to complete 30 semester hours of graduate work to obtain the M.S. or M.E. degree. For the M.S. degree, the 30 credit hours include 24 course credits and six credits for the thesis. In the non-thesis program the student must complete 30 course credit hours. The Ph.D. requires additional course work and dissertation beyond the M.S.

The graduate program is designed to allow students to obtain specialized training that expands the knowledge gained at the undergraduate level. Specialized areas of study include:

Environmental and Water Resources Engineering,

Geotechnical Engineering and Structural Engineering and Mechanics.

Descriptions of the programs and general requirements for advanced degrees are given in the Graduate School catalog. Teaching assistantships and research assistantships are available through the Department for qualified applicants.

Civil Engineering Curriculum, *continued*

1. Humanities and Social Science Electives:

It is required that the humanities/social science portion of the program contain at least one nine-hour sequence in a specific subject, and that the sequence include at least two upper level courses. A total of 18 credits of approved humanities/social sciences electives are required. Students are cautioned that not all humanities and social science courses are acceptable nor can "upper level" courses be determined by course number. A list of the acceptable humanities/social science electives with "upper level" courses indicated is available at the College of Engineering office 101 Barrows Hall.

2. Basic Science Elective:

Four credits of approved basic science electives in geology, chemistry, physics, or life sciences are required.

3. Engineering Science Electives:

Six credits of approved engineering science electives, usually in mechanical or electrical engineering, are required. Typical courses taken are: MEE 230 - Thermodynamics; MEE 231 - Thermodynamics II; MEE 270 - Dynamics; ECE 172 - Logic Systems; ECE 215 - Electric Circuit Fundamentals; ECE 224 - Instrumentation; ECE 423 - Energy Transportation and Conversion. Civil Engineering courses cannot be used for these six credit hours.

4. Civil Engineering Electives:

A minimum of 15 credit hours of civil engineering electives are required for graduation. This requirement can be met by five three-credit courses or three four-credit courses and one three-credit course.

5. Technical Electives:

An additional three credit hours of technical electives are required. Technical electives are advanced-level engineering, science, or mathematics courses. Civil engineering courses can also be used as technical electives.

6. Engineering Design and Science Electives:

A minimum of 18 credits must be taken in Civil engineering and technical electives. Within the 18 credit hours of civil engineering and technical electives, at least six credit hours must be in design. In selecting a civil engineering and technical elective, it is strongly recommended that students take a second course in three of the four areas (construction, transportation, environmental, geotechnical, and structures) to ensure the breadth required by most civil engineers. The engineering design and engineering science content of each civil engineering elective is as follows:

COURSE	Engineering Design	Engineering Science	COURSE	Engineering Design	Engineering Science
CIE 424	2	1	CIE 539	0	3
CIE 426	3	0	CIE 540	0	3
CIE 431	1	2	CIE 541	0	3
CIE 432	3	0	CIE 542	3	0
CIE 433	0	3	CIE 545	0	3
CIE 434	3	0	CIE 546	0	3
CIE 436	1	2	CIE 547	3	0
CIE 440	0	4	CIE 556	1	2
CIE 442	4	0	CIE 557	2.5	0.5
CIE 443	4	0	CIE 558	2	1
CIE 444	4	0	CIE 559	0	3
CIE 450	1	2	CIE 562	3	0
CIE 455	1	2	CIE 563	1	1
CIE 456	1	2	CIE 564	3	0
CIE 458	1.5	1.5	CIE 565	3	0
CIE 460	3	0	CIE 566	3	0
CIE 470	1.5	1.5	CIE 567	3	0
CIE 533	0	3			

Courses in Civil and Environmental Engineering

CIE 110 Materials

The structure, properties, and testing of engineering materials and their use in constructed facilities. Includes metals, woods, concrete, bituminous mixtures, plastics, insulation, adhesives and corrosion of materials. Engineering design is introduced by readings and discussions on creativity, the design process and the concepts of marginal economic analysis, probability of failure and safety factors. Design problems include design of concrete mixtures and insulating systems to satisfy specific realistic situations taking into account uncertainty, safety, economic factors and intangibles, as well as technical considerations. Prerequisite: MAT 122 or concurrent. Lec 3. Cr 3.

CIE 111 Materials Laboratory

Evaluation of material performance under applied loads for engineering applications. Physical properties of concrete, metals, plastics and wood. Exercises include study of the variability of materials, construction of probability density functions from test data and computation of the probability of failure. Prerequisite: Concurrent with CIE 110. Lab 2. Cr 1.

CIE 225 Transportation Engineering

An introduction to the broad field of transportation with emphasis on the motor vehicle mode. Principles of roadway and urban transportation planning, economic analysis methods, and route design elements are discussed and related to the planning and design of highway transportation routes. Students design a section of roadway and prepare a technical paper on a current transportation engineering problem. Prerequisite: Civil Engineering majors or permission. Corequisite: SVE 111. Lec 3. Cr 3.

CIE 294 Civil Engineering Practice

Work experience in civil engineering. May be repeated for credit. Prerequisite: sophomore standing. Cr 3.

CIE 331 Fundamentals of Environmental Engineering

Introduction to environmental engineering including water quality, water and wastewater treatment plant design, solid and hazardous wastes, landfill design, radioactive waste control, and air pollution abatement. Prerequisites: CHY 111, MAT 127. Lec 3. Cr 3.

CIE 340 Introduction to Structural Analysis

The cyclic process of analysis and design. Structure idealization and modeling. Design methodologies and loads considerations. The analysis of determinate trusses, beams and frames. Introduction to indeterminate structures. Prerequisite: MEE 251. Lec 3, Lab 3. Cr 4.

CIE 350 Hydraulics

An elementary course presenting fundamental principles of fluid flow and their applications to engineering problems. Includes study of hydrostatics, liquid measuring devices, and channel and pipe flow. Prerequisite: MEE 150 and MAT 258. Lec 3. Cr 3.

CIE 351 Hydraulics Laboratory

Application of hydraulic principles in laboratory experiments. Includes experiments on buoyancy and flotation, forces on submerged planes, venturi meter calibration, pipe friction, minor losses, weirs and others. Prerequisite: CIE 350 or concurrent. Lab 2. Cr 1.

CIE 365 Soil Mechanics

An introduction to fundamental physical properties, engineering behavior and performance of soils and rocks. Prerequisite or Corequisite: MEE 251. Lec 3. Cr 3.

CIE 366 Soil Mechanics Laboratory

Covers geotechnical laboratory testing including classification, density, permeability, shear strength, and consolidation tests. Design project reports are also submitted to ENG 317. Corequisites: CIE 365, ENG 317. Lab 2. Cr 1.

CIE 411 Engineering Project Design

Student design teams develop the conceptual design of an active civil engineering project. Topics include: consulting firm practice, the design process, evaluation of alternatives, regulatory constraints and the permit process, legal, ethical and social aspects of professional engineering practice, cost and scheduling estimations. Oral presentations and written technical reports are required. Open only to civil engineering students during their last spring semester. Lec 3. Cr 3.

CIE 412 Engineering Decisions

Application of various analysis methods to engineering design decisions. Evaluation of economic, financial, legal, and ethical factors affecting engineering design. Topics include: engineering economy, consideration of risk and uncertainty, and evaluation of ambiguous and in-

tangible factors in engineering design. Prerequisite: Senior standing or consent of instructor. Lec 3. Cr 3.

CIE 424 Urban Transportation Planning

Basic concepts and practices in the field of transportation planning, including the process and policy surrounding urban transportation planning, characteristics of urban travel, air quality - noise, energy - land use, the elements of decision making, data management and diagnosis, demand and supply analysis, project evaluation and implementation. A transportation demand management study constitutes a major part of the course. (2.0 ED/1.0 ES) Prerequisite: CIE 225. Lec 3. Cr 3.

CIE 426 Advanced Roadway Design

Principles of highway location, design of vertical and horizontal alignment, design and construction of surface treatments, pavement structures and roadway drainage systems. Student project preparing necessary plan-profile and cross section drawings required to construct a 3,000 foot section of roadway, which is evaluated with respect to road-user travel time, comfort and safety; impact on surrounding environment including aesthetical aspects; and construction cost. (3.0 ED/0.0 ES) Prerequisite: CIE 225. Lec 3. Cr 3.

CIE 431 Pollutant Fate and Transport

Introduction to environmental transformation processes which controls the fate and transport of contaminants in the environment and in engineered systems. Topics include reaction energetics and kinetics, reactor engineering concepts, interphase mass transfer and phase partitioning. (1.0 ED/2.0 ES) Prerequisite: CIE 331 and MAT 258 or permission. Lec 2, Lab 3. Cr 3.

CIE 432 Water Supply Engineering Design

Theory and design of water supply, treatment facilities, and distribution systems. Design projects cover design and economics of pipeline, pumping station, and distribution systems, includes computer software applications in all areas. (3.0 ED/0.0 ES) Prerequisites: CIE 331, CIE 350. Lec 3. Cr 3.

CIE 434 Wastewater Engineering Design

Theory and design of wastewater collection, treatment, and disposal. Design project covers development of a facility plan, sewer design, treatment process design, and sludge disposal. (3.0 ED/0.0 ES) Prerequisites: CIE 331. Prerequisite or Corequisite: CIE 350. Lec 3. Cr 3.

CIE 435 Environmental Engineering Laboratory Methods

Fundamental aspects of chemistry applied to sample collection, handling protocol, biological and chemical analyses and laboratory techniques are emphasized. (0.0 ED/3.0 ES) Prerequisite: CIE 331. Lec 2, Lab 3. Cr 3.

CIE 436 Introduction to Hazardous and Solid Waste Engineering

Process and design approaches for the remediation, minimization and disposal/treatment of

waste materials including both hazardous and solid waste engineering considerations; topics to be covered include hazardous waste definition, regulatory impacts on engineering processes, treatment technologies, solid waste recycling, incineration, and landfill design. (1.0 ED/2.0 ES). Prerequisites: CIE 331, CIE 365. Lec 3. Cr 3.

CIE 440 Structural Analysis I

Classical and matrix methods in the analysis of linear redundant systems. The basic concepts of equilibrium, stress-strain relations, and compatibility are emphasized. Manual and introductory computer aided solution techniques are utilized. (0.0 ED/4.0 ES). Prerequisite: CIE 340. Lec 3, Lab 3. Cr 4.

CIE 442 Reinforced Concrete Design

The design and detailing of reinforced concrete structures: beams, columns, beam-column slabs, footings, retaining walls. Microcomputer aided design. (4.0 ED/0.0 ES). Prerequisite: CIE 340. Lec 3, Lab 3. Cr 4.

CIE 443 Structural Steel Design

The design and detailing of steel structures: tension members, beams, columns, beam columns, and connections. Covers composite construction. Introduces the Load and Resistance Factor Design concept and computer aided design. (4.0 ED/0.0 ES). Prerequisite: CIE 340. Lec 3, Lab 3. Cr 4.

CIE 444 Design of Wood Structures

Study of unique mechanical and design characteristics of structural wood and wood composite members and design of systems containing these members. (4.0 ED/0.0 ES). Prerequisite: CIE 340 or WSC 425. Lec 3, Lab 3. Cr 4.

CIE 450 Open Channel Hydraulics

Covers uniform and nonuniform flow in open channels, gradually and rapidly varying flow, computational methods for flow profiles, open channel flow structures. (1.0 ED/2.0 ES). Prerequisite: CIE 350 or equivalent. Lec 3. Cr 3.

CIE 455 Hydrology

Application of statistical analysis of rainfall and runoff processes for the development of design parameters of water resources projects, including uncertainty of these parameters. Includes collection and presentation of rainfall and runoff data, methods for developing hydrographs and flood control, development of design hydrographs for urbanizing watersheds. (1.0 ED/2.0 ES). Prerequisite: CIE 350. Lec 3. Cr 3.

CIE 456 Groundwater Hydrology and Hydraulics

Fundamentals of the hydromechanics of flow through porous media, and the development and application of methodology for solving the many open-ended problems of groundwater flow, supply and pollution. Considers concepts of groundwater modeling design and aspects of field variability and uncertainty. (1.0 ED/2.0 ES). Prerequisites: CIE 350 and MAT 258 or MAT 451 or permission. Lec 3. Cr 3.

CIE 458 Coastal Engineering

Applies principles of fluid mechanics and coastal hydraulics to civil engineering problems in coastal areas. Covers linear wave theory, wave transformation in coastal areas (shoaling, refraction, diffraction), wave forecasting, sediment transport, wave forces on pilings and walls, design of rubble mound structures. Case study of coastal engineering project. Project work to include estimation of wave heights in a coastal area and providing design and cost for a breakwater. (1.5 ED/1.5 ES). Prerequisite: CIE 350 and MAT 258. Lec 3. Cr 3.

CIE 460 Geotechnical Engineering

The application of geotechnical engineering to practical engineering design and construction problems including consideration of economic and safety constraints. (3.0 ED/0.0 ES). Prerequisite: CIE 365. Lec 3. Cr 3.

CIE 470 Construction Management and Estimating

Management of construction activity with emphasis on cost estimating and bid preparation. Topics include: construction business management, advertising and contracting process, construction plans and specifications, quantity take-off, unit costs, and bid proposals. (1.5 ED/1.5 ES). Prerequisites: CIE 110, CIE 225. Lec 2, Lab 3. Cr 3.

CIE 498 Selected Studies in Civil Engineering

Topics in civil engineering not regularly covered in other courses. Specific topics vary. May, with consent of the department, be repeated for credit. Prerequisite: permission. Cr 1-3.

CIE 499 Undergraduate Thesis

The study and reporting of some original investigation or design. Prerequisite: permission. Cr 2-3.

CIE 533 Environmental Aquatic Chemistry

Fundamental aspects of aquatic chemistry emphasizing environmental engineering applications. (0.0 ED/3.0 ES). Prerequisite: CIE 331. Lec 3, Lab 3. Cr 3.

CIE 539 Water Quality

Impact of pollutants on water quality in streams, lakes and reservoirs. Design of natural systems for the treatment of waste discharges, including both point and non-point sources. Application of water quality standards. (1.0 ED/2.0 ES). Prerequisite: CIE 533 or permission. Cr 3.

CIE 540 Structural Analysis II

Microcomputer based analysis of linearly elastic trusses, frames, beams and grids and limited analysis of continuous beams and frames. Covers substructuring. Reviews selected commercial structural analysis software packages. Includes techniques for verifying computer generated results. (0.0 ED/3.0 ES). Prerequisite: CIE 440. Cr 3.

CIE 541 Finite Element Analysis of Structures

Review of matrix analysis of structures and preliminary topics in elasticity and energy princi-

ples. Covers the finite element concept, plane stress and strain analysis, axisymmetric solids and flat shells of revolution, three dimensional solids, plate bending and flat shell elements, isoparametric elements, natural coordinates and numerical integration. Application and introduction to computer programs. (0.0 ED/3.0 ES). Prerequisites: CIE 440 or MEE 456. Lec 3. Cr 3.

CIE 542 Advanced Reinforced Concrete Design

Continuous concrete structures; torsion; serviceability; slender and biaxially loaded columns; design of two-way floor systems; joints; introduction to prestressed concrete; computer-aided building design project. (3.0 ED/0.0 ES). Prerequisite: CIE 442. Lec 3. Cr 3.

CIE 545 Structural Dynamics

Examines free vibration and response to harmonic and general dynamic loading of the single degree of freedom system, Fourier analysis and response in the frequency domain, response spectra, framed structures modeled as discrete multi-degree-of-freedom systems, dynamic analysis of systems with distributed properties. Introduction to seismic design, machine foundations and structural dynamics computer programs. (0.0 ED/3.0 ES). Prerequisite: CIE 440. Cr 3.

CIE 546 Probabilistic Methods in Structural and Geotechnical Engineering

Covers uncertainties in structural and geotechnical engineering, review of probability theory, probabilistic models for load and resistance variables, fundamentals of reliability theory, Monte-Carlo simulations and numerical integration techniques, introduction to the reliability of structural systems, introduction to time-dependent reliability, load combinations, applications to code development. (0.0 ED/3.3 ES). Prerequisite: MAT 332 and one 400-level design course and CIE 365. Cr 3.

CIE 547 Prestressed Concrete Structures

Design and behavior of prestressed concrete components and structures; pretensioning and post-tensioning technology. (3.0 ED/0.0 ES). Prerequisite: CIE 442. Cr 3.

CIE 556 Advanced Groundwater Hydrology and Modelling

Advanced topics in the groundwater system and flow through porous media pertaining to the modelling of fluid flow and mass transport in the groundwater environment. (1.0 ED/2.0 ES). Prerequisite: CIE 456 or equivalent. Cr 3.

CIE 557 Water Resources Engineering

Development, control, and engineering of water resources systems with emphasis on basin-wide and regional analyses. Introduction to systems engineering techniques applied to water resources problems. (2.5 ED/0.5 ES). Prerequisite: CIE 455 or permission. Lec 3. Cr 3.

CIE 558 Advanced Coastal Engineering

The principles of hydraulics applied to civil engineering problems in lakes and coastal areas.

Topics include: wave forecasting, shoaling, refraction, sediment transport, stability of rubble mound structures and design of coastal structures. Emphasis on analysis and development of material not covered in CIE 458. (2.0 ED/1.0 ES). Prerequisite: CIE 458, MAT 258 or MAT 451 or permission. Lec 3. Cr 3.

CIE 559 Numerical Modeling of Lake and Estuarine Processes

Using various numerical models as case studies, strategies for environmental modeling are discussed. Emphasis on calculation of flows and transport of water-borne material and pollutants. Topics include the relative validity of different numerical formulations as well as considerations of stability, economy, and accuracy. Discussion of model verification using field data and measurement techniques. (0.0 ED/3.0 ES). Prerequisite: MAT 258 or MAT 451. Lec 3. Cr 3.

CIE 562 Earthwork Design

Design and construction of earth structures including earth dams, landfill liners and roadway embankments. Economic, safety, reliability, ethics, social impact, and legal constraints are considered in design decisions. (3.0 ED/0.0 ES). Prerequisite: CIE 365. Lec 3. Cr 3.

CIE 563 Thermal Soil Mechanics

A study of the thermal properties of soils, heat transfer, and methods for predicting soil temperature under freezing conditions. Design of pavements, foundations, and excavations to resist the effects of freezing. (1.0 ED/1.0 ES). Prerequisite: CIE 365. Lec 2. Cr 2.

CIE 564 Deep Foundations

The theories, design concepts, and construction of pile and caisson foundations for buildings and bridges. Economic, safety, and reliability constraints are considered in design decisions. (3.0 ED/0.0 ES). Prerequisite or Corequisite: CIE 460. Cr 3.

CIE 565 Foundations and Underground Structures

Covers design of shallow foundations for buildings and bridges including effect of economics and reliability on choice of foundation system, design of dewatering systems, buried pipes, and tunnels, legal and ethical aspects of geotechnical practice. Intended for structural and soils students. (3.0 ED/0.0 ES). Prerequisite or Corequisite: CIE 460. Cr 3.

CIE 566 Retaining Earth Structures

Geotechnical analysis and design for structures which retain earth. Economic, safety and reliability constraints are considered in design decisions. (3.0 ED/0.0 ES). Prerequisite: CIE 460. Cr 3.

CIE 567 Ground Improvement Techniques

Practical techniques to overcome unfavorable ground conditions applied to foundation, roadway, and embankment design. Covers compaction, in-situ densification, stone columns, chemical stabilization, reinforced embank-

ments, preloading, sand drains, and wick drains. (3.0 ED/0.0 ES). Prerequisite: CTE 460.
Cr 3.

CTE 592 Civil Engineering Seminar I
Individual oral presentation and discussion of current research and topics of civil engineering interest. Required of all civil engineering graduate students.
Cr 1.

CTE 593 Civil Engineering Seminar II
Individual oral presentation and discussion of current research and topics of civil engineering

interest. Required of all civil engineering graduate students.
Cr 1.

CIE 598 Selected Studies in Civil Engineering
Advanced topics in Civil Engineering not regularly covered in other courses. Content varies to suit individual needs. May be repeated for credit with permission of department. Prerequisite: permission.
Cr 1-3.

Interdisciplinary Course

INT 330 (CIE, REP) Waste Management
The study of the history and current problems of society's municipal solid waste. Waste generation, recycling and disposal will be covered for both Maine and the nation. Social, economic and engineering aspects will be examined.

Cr 3.



Electrical and Computer Engineering

Professor Field (Chairperson) Irons, Sheppard, Vetelino;
 Associate Professors Eason, Hanselman, Hummels, Musavi;
 Assistant Professors Patton, Segee, Wolpert;
 Lecturers Beenfeldt, Whitney;
 Adjunct Professors Josse, Kazmerski;
 Research Professor Lec;
 Teaching Associate Robash

Overview of Undergraduate Electrical and Computer Engineering Programs

The Department of Electrical and Computer Engineering offers both graduate and undergraduate degrees. The undergraduate program has two degree programs, one leading to a Bachelor of Science in Electrical Engineering and the other leading to a Bachelor of Science in Computer Engineering. Both programs are accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology. The goal of each program is to give students a quality education that will prepare them for positions in industry or government as well as further study in graduate school. This is accomplished with dedicated faculty having a strong interest in undergraduate teaching, who combine classroom theory with practice using well-equipped laboratories.

In the early levels of both majors, students build a strong foundation by taking courses in mathematics, physics, chemistry and computer science. In addition, students are introduced to their major with courses that familiarize them with their profession and also give them useful skills. Learning these skills introduces the students to one part of their profession and also makes it easier for them to qualify for meaningful employment during summers or cooperative work experiences.

Cooperative work placements in industry are available for those students who wish to include relevant industrial experience in their programs.

In addition, many opportunities exist for students to work with faculty on their research/development projects and also to assist with laboratory instruction. In addition to 18 credit hours in humanities and social sciences, ECE students take 9 credit hours of speech and writing courses. It has been estimated that as much of 50% of engineering can be writing, speaking, and persuading, so these courses not only broaden one's perspective they also help develop communication skills that are very important to an engineer.

In the upper levels, students take ECE 300 seminar and the senior project course sequence ECE 401, 402, and 403. The junior ECE seminar provides career orientation and instills professional values through a series of presentations

by faculty and practicing professionals from industry. The senior project course sequence occurs during the last three semesters of a student's program. It allows students to demonstrate their engineering design capabilities through proposing, creating, and reporting on detailed design projects. These engineering design capabilities are developed throughout the curriculum, beginning with the first year, by asking that students apply the knowledge they have learned to create something new. This "something" has to meet a set of specifications, while at the same time being subject to a set of constraints; the thing to be designed could be a device, a software module, or a system combining hardware and software. By their senior year, ECE students have been given the theoretical and practical background to handle challenging design problems.

Detailed information about the Electrical Engineering and Computer Engineering Programs is presented in the following sections.

Computer Engineering

The Computer Engineering Program provides its graduates with the knowledge necessary to design systems based on computers and complex digital logic devices. These systems find use in such diverse tasks as computation, communication, entertainment, information processing, artificial intelligence and control. There are many career opportunities in the public and private sectors for persons with a background in Computer Engineering. Some of these opportunities are in computer-aided design, computer-aided manufacturing as well as developing hardware and software for computer-based systems.

A computer engineer must know how to select and interconnect the electronic and mechanical devices which make up a computer-based system. This is the kind of work usually associated with electrical engineering. However, the computer engineer must also be capable of developing the software that makes a computer system perform its task. He or she might need to know, for example, which programming language is best for a particular need or what is the most efficient way to store or process data. This area is normally associated with computer science. Thus, a computer engineer must be proficient with computer science

material as well as electrical engineering material.

The choice of technical elective courses is based on individual interest and presently allows specialization in areas like Digital Control, Communications, Power Systems, Robotics, Computer Graphics, Machine Vision, and Integrated Circuit Design.

Academic Policies for Computer Engineering

The program in Computer Engineering is normally completed within four years. The program is divided into lower and upper divisions. Lower division courses, 1xx and 2xx courses numbers, are normally taken in the first four semesters and upper division courses, 3xx and 4xx course numbers, in the last four semesters. With advisor permission, a lower division student may take up to 9 credit hours of upper division courses which have no upper division prerequisites.

The ENG 101 requirement may be satisfied by successful completion of the exit exam given in the first semester of the first year. Advanced math placement may also be obtained by examination.

Admission in ECE 210 is not allowed with more than one grade less than C- in MAT 126, MAT 127, PHY 121 and PHY 122. No ECE or COS class may be taken unless all prerequisites have been satisfied. Repeating a course more than once requires the Dean's approval.

Admission to the upper division may be granted (1) upon completion of all lower division courses with a minimum GPA of 2.0, (2) by having no more than three course repeats, and (3) obtaining grades of C- or better in all lower division ECE courses.

Dismissal may be recommended if: (1) any course in the program is failed twice or (2) a GPA of less than 2.0 in ECE and COS courses is obtained for two successive semesters.

To obtain a B.S. in Computer Engineering, a student must: (1) meet all University academic requirements, (2) meet all Computer Engineering curriculum requirements, and (3) have a GPA of 1.8 or better in upper division ECE and COS courses without the benefit of lineout. Deviation from the above policies requires approval of the Electrical and Computer Engineering faculty.

Computer Engineering Curriculum

First Year		Second Semester	
First Semester		Second Semester	
CHY 113 Chemical Principles	4	MAT 127 Analytic Geometry and Calculus	4
MAT 126 Analytic Geometry and Calculus	4	PHY 122 Physics for Engineers and Physical Scientists II	4
PHY 121 Physics for Engineers and Physical Scientists I	4	COS220 Introduction to Computer Science I	3
ECE 101 Introduction to Electrical and Computer Engineering	3	ECE 172 Logic Systems	4
TOTAL HOURS	15	ENG 101(1) College Composition	3
		TOTAL HOURS	18
Sophomore Year			
First Semester		Second Semester	
MAT 228 Analytic Geometry and Calculus	4	MAT 258 Differential Equations and Linear Algebra	4
ECE 210 Electrical Networks I	4	ECE 211 Electrical Networks II	3
COS 221 Introduction to Computer Science II	3	ECE 212 Electrical Networks Laboratory	3
Basic Science(4)	4	ECE 262 Solid State Electronic Devices	3
Humanities Elective(2)	3	COS 250 Discrete Structures	3
TOTAL HOURS	18	TOTAL HOURS	16
Junior Year			
First Semester		Second Semester	
ECE 300 Seminar	1	COS 315 Introduction to Software Engineering	3
ECE 314 Linear Circuits and Systems	3	ECE 401 Electrical and Computer Engineering Design Project	1
ECE 342 Electronics I	4	ECE 475 Sequential Logic Systems	3
ECE 471 Microprocessor Applications Engineering	3	ENG 317 Business and Technical Writing	3
Humanities Elective(2)	3	MAT 332 Statistics for Engineers	3
Engineering Science(3)	3	Humanities Elective(2)	3
TOTAL HOURS	17	TOTAL HOURS	16
Senior Year			
First Semester		Second Semester	
ECE 402 Electrical and Computer Engineering Design Project	4	ECE 403 Electrical and Computer Engineering Design Project	2
COS 331 Operating Systems	3	SPC 103 Fundamentals of Public Communications	3
Technical Elective(5)	3	Humanities Elective(2)	3
Humanities Elective(2)	3	Humanities Elective(2)	3
Technical Elective(5)	3	Technical Elective(5)	3
TOTAL HOURS	16	Technical Elective(5)	3
		TOTAL HOURS	17
TOTAL HOURS TO GRADUATE: 133			

1. ENG 101 is a prerequisite for ENG 317. Certain students may meet this prerequisite by examination.

2. A list of courses qualifying for humanities credit is available in the ECE office. At least 2 humanities and/or social science electives must be courses which have, as prerequisites, introductory courses in the appropriate area.

3. A list of courses qualifying for engineering science elective credit is available in the ECE office.

4. Suggested basic science courses include: AST 110/ AST 215, CHY 114, PHY 226 or BIO 100 (4 hours required).

5. Technical electives must include at least 4 hours of engineering design and maintain a hardware/software balance.

Electrical Engineering

The electrical engineering curriculum is designed to provide students with the relevant skills and the basic scientific background needed to advance today's technology and to

keep abreast of future developments in the electrical engineering profession.

The early part of the program emphasizes electrical engineering skills which form the background for the upper level elective and design courses. The upper level courses are ar-

ranged in concentration areas to provide guidance in selecting a particular area of interest for in-depth study. Additional technical electives are chosen from outside of the area of concentration to provide breadth of knowledge.

The 5 upper level concentration areas offered are:

Power and Industrial Control - Including robotics, power generation, transmission and distribution, automation and computer controlled systems.

Analog Electronics - Including solid state analog circuit design, operational amplifiers, phase-locked loops and hardware design.

Digital Electronics - Including VLSI design, sequential machines, solid state digital circuit design and microprocessors.

Signals and Systems - Including computer vision, communication systems and signal processing.

Fields, Waves and Devices - Including electromagnetic and acoustic fields, microwaves, antennas, optics, ultrasonic transducers, sensors, solid state and microwave devices.

Academic Policies for Electrical Engineering

The program in Electrical Engineering is normally completed within four years. The program is divided into lower and upper divisions. Lower division courses, 1xx and 2xx course numbers, are normally taken in the first four semesters and upper division courses, 3xx and 4xx course numbers, in the last four semesters. With advisor permission, a lower division student may take up to 9 credit hours of upper division courses which have no upper division prerequisites.

The ENG 101 requirement may be satisfied by successful completion of the exit exam given in the first semester of the first year. Advanced math placement may also be obtained by examination.

Admission in ECE 210 is not allowed with more than one grade less than C- in MAT 126, MAT 127, PHY 121 and PHY 122. No ECE class may be taken unless all prerequisites have been satisfied. Repeating a course more than once requires the Dean's approval.

Admission to the upper division may be granted (1) upon completion of all lower division courses with a minimum GPA of 2.0, (2) by having no more than three course repeats, and (3) obtaining grades of C- or better in all lower division ECE courses.

Dismissal may be recommended if: (1) any course in the program is failed twice or (2) a GPA of less than 2.0 in ECE courses is obtained for two successive semesters.

To obtain a B.S. in Electrical Engineering, a student must: (1) meet all University academic requirements, (2) meet all Electrical Engineering curriculum requirements, and (3) have a GPA of 1.8 or better in upper division ECE courses without the benefit of lineout. Deviation from the above policies requires approval

of the Electrical and Computer Engineering faculty.

Electrical Engineering Concentration Area Policies

Each Student must take 7 technical electives accumulating at least 7 design credit hours.

These 7 courses must be chosen so that:

- (a) 3 courses are from one concentration area.
- (b) 2 courses are from two of the remaining four concentration areas but are not included in the selected concentration area,
- (c) 2 additional technical electives are completed.

In part (a), each concentration area has two courses that are required of all students in that area.

Courses cannot be used to satisfy more than one requirement. If a course appears in more than one concentration area, it can be counted only once in meeting (a), (b), and (c) above.

Upper Level Courses required for all concentration areas:

- Humanities Electives
- EAT 332 Statics for Engineers
- SPC 103 Fundamentals of Public Communication
- ENG 317 Technical Writing
- ECE 300 Seminar
- ECE 314 Linear Circuits and Systems
- ECE 342 Electronics I
- ECE 351 Fields and Waves
- ECE 401 Electrical and Computer Engineering Design Project
- ECE 402 Electrical and Computer Engineering Design Project
- ECE 403 Electrical and Computer Engineering Design Project

Upper Level Concentration areas:

- Power and Industrial Control**
- ECE 323 Electric Power Systems I
- ECE 414 Feedback Control Systems (required)
- ECE 416 Design of Control Systems
- ECE 417 Introduction to Robotics
- ECE 425 Control Devices and Systems
- ECE 427 Electric Power Systems II
- ECE 428 Electric Power Systems III
- ECE 471 Microprocessor Applications Engineering

Analog Electronics

- ECE 343 Electronics II (required)
- ECE 444 Analog Integrated Circuits (required)
- ECE 414 Feedback Control Systems
- ECE 416 Design of Control Systems
- ECE 441 Micro-Electronics Filter Theory and Design
- ECE 463 Solid State Electronic Devices II
- ECE 464 Microelectronics

Digital Electronics

- ECE 343 Electronics II (required)
- ECE 475 Sequential Logic Design (required)

Electrical Engineering Curriculum

First Year			
First Semester		Second Semester	
CHY 113 Chemical Principles I	4	MAT 127 Analytic Geometry and Calculus	4
MAT 126 Analytic Geometry and Calculus	4	PHY 122 Physics for Engineers and Physical Scientists II	4
PHY 121 Physics for Engineers and Physical Scientists I	4	COS 220 Introduction to Computer Science I	3
ECE 101 Introduction to Electronic and Computer Engineering	3	ECE 172 Logic Systems	4
		ENG 101 *College Composition	3
TOTAL HOURS	15	TOTAL HOURS	18

*ENG 101 is a prerequisite for ENG 317. Certain students may meet this prerequisite by examination.

Sophomore Year			
First Semester		Second Semester	
MAT 228 Analytic Geometry and Calculus	4	MAT 258 Differential Equations and Linear Algebra	4
ECE 210 Electrical Networks I	4	ECE 211 Electrical Networks II	3
Engineering Science Elective (5)	3	ECE 212 Electrical Networks Laboratory	3
Humanities Elective (1)	3	ECE 262 Solid State Electronic Devices	3
Basic Science (2)	4	Engineering Science Elective (4)	3
TOTAL HOURS	18	TOTAL HOURS	16

Junior Year			
First Semester		Second Semester	
ECE 300 Seminar	1	ECE 401 Electrical and Computer Engineering Design Project	1
ECE 314 Linear Circuits and Systems	3	ENG 317 Technical Writing	3
ECE 342 Electronics I	4	Technical Elective (required)(3)	3-4
ECE 351 Fields and Waves	3	Technical Elective (required)(3)	3
Humanities Elective (1)	3	Technical Elective (required)(3)	3
MAT 332 Statistics for Engineers	3	Humanities Elective(1)	3
TOTAL HOURS	17	TOTAL HOURS	16-17

Senior Year			
First Semester		Second Semester	
ECE 402 Electrical and Computer Engineering Design Project	4	ECE 403 Electrical and Computer Engineering Design Project	2
SPC 103 Fundamentals of Public Communications	3	Technical Elective (3)	3
Technical Elective (required)(3)	3	Technical Elective (3)	3
Technical Elective (3)	3	Humanities Elective (1)	3
Humanities Elective (1)	3	Humanities Elective (1)	3
TOTAL HOURS	16	TOTAL HOURS	14

TOTAL HOURS TO GRADUATE: 130-131 depending on concentration area.

Electives:

1. A list of courses qualifying for humanities credit is available in the Electrical and Computer Engineering office.
2. Suggested basic science courses include AST 110/AST 215, CHY 114, PHY 236, or BIO 100 (four hours required).
3. Technical electives must comply with concentration area policies.
4. A list of courses qualifying for engineering science elective credit is available in the electrical and computer engineering office. One Engineering elective must be either MEE 230 or MEE 252.

ECE 445 Analysis and Design of Digital Integrated Circuits
 ECE 463 Solid State Electronic Devices II
 ECE 464 Microelectronics
 ECE 471 Microprocessor Applications Engineering
 ECE 486 Digital Signal Processing

Signals and Systems

ECE 383 Communications Engineering (required)
 ECE 414 Feedback Control Systems (required)
 ECE 416 Design of Control Systems
 ECE 453 Microwave Engineering
 ECE 484 Communications Engineering II
 ECE 486 Digital Signal Processing
 ECE 487 Digital Image Processing

Fields, Waves and Devices

ECE 343 Electronics II (required)
 ECE 453 Microwave Engineering (required)
 ECE 463 Solid State Electronic Devices II
 ECE 464 Microelectronics
 ECE 465 Introduction to Sensors
 ECE 466 Sensor Technology and Instrumentation
 MAT 453* Partial Differential Equations
 PHY 480* Physics and Materials

Double Majors and Double Degrees

Students may wish to consider having a double major or obtaining a second degree. For example, common choices are to combine electrical and computer engineering or electrical and mechanical engineering. Ordinarily this will take approximately one more year of study. However, the student should see his or her advisor early in the process to be sure all requirements will be met.

Graduate Work in Electrical Engineering

Programs leading to the degree of Master of Science in Electrical Engineering and Master of Engineering (Electrical) are described in the University of Maine Graduate School Catalog.

Courses in Electrical and Computer Engineering

ECE 101 Introduction to Electrical and Computer Engineering
 Introduction to the engineering profession as well as information and concepts of general use in Electrical and Computer Engineering. Topics include: exploration of career paths and professional responsibilities, basic use of personal computers, mathematical concepts such as complex numbers and solution of simultaneous linear equations, development of problem solving skills and professional communication. Corequisite: PHY 121. Lec 3, Design Cr 0. Cr 3.

ECE 172 Logic Systems

Logic design using integrated circuit implementations of combinational logic. Microcomputer and its component parts explored. Basic microcomputer programming and applications investigated. Prerequisite: ECE 101 or permission. Lec 3, Lab 3, 2 Design Cr. Cr 4.

ECE 210 Electrical Networks I

Covers basic circuit laws and theorems, natural and forced responses of first and second order systems, phasor concepts, application of basic circuit theorems to steady-state a-c networks. Characteristics and proper use of basic circuit instruments. Introduces the PC as a network analysis tool. Prerequisite: MAT 127, PHY 122. Lec 3, Lab/Comp 3. Cr 4.

ECE 211 Electrical Networks II

Covers steady-state power concepts, analysis of polyphase circuits and magnetically coupled circuits, frequency domain analysis, network representation using two-port parameters, Fourier series applications. Prerequisite: MAT 228, ECE 210; also ECE 212 concurrently or permission. Lec 3. Cr 3.

ECE 212 Electrical Networks Laboratory

Practical application of concepts developed in ELE 210/211. Covers tools and techniques of electrical measurements, computer analysis of electrical networks, op-amp applications. Corequisite: ECE 211. Lec 2, Lab 3. Cr 3.

ECE 215 Electric Circuit Fundamentals

Covers direct and alternating circuits, first order transients, three phase circuits, operational amplifiers. Prerequisites: PHY 122, MAT 127. Not open to Electrical Engineering majors. Lec 3. Cr 3.

ECE 224 Instrumentation

Application and characteristics of electronic instrumentation including the oscilloscope and digital indicators, sensitivity and frequency limitations, meters and bridges, instrumentation systems. Prerequisites: ECE 211 or ECE 215. Lec 3, Lab 3. Cr 4.

ECE 262 Solid State Electronic Devices

Examines basic characteristics of materials important to device applications. Introduces the theory of pn junctions, bipolar and field effect transistors. Prerequisites: CHY 113. Corequisite: ECE 212. Lec 3. Cr 3.

ECE 300 Seminar

Exploration of career opportunities, organizational structure of industry and professional responsibilities. Prerequisite: Junior standing. (Pass/Fail Grade Only). Lec 1. Cr 1.

ECE 314 Linear Circuits and Systems

Analysis of continuous and discrete linear systems including Fourier series, Fourier transforms, and Laplace transform techniques; convolution, transfer functions and state variable system representations; discrete Fourier transform and Z-transform techniques. Prerequisites: MAT 258, ECE 211, COS 220. Lec 3. Cr 3.

ECE 323 Electric Power Systems I

Three-phase power, power system supply and distribution, magnetic circuits and transformers, theory and operation of DC machines, fundamentals of industrial control and ladder logic, per unit system, radial line voltage, power factor and loss calculations. Prerequisite: ECE 212 or ECE 215. Lec 3, Lab 3, 1 Design Cr. Cr 4.

ECE 342 Electronics I

Covers the fundamentals of digital electronic devices and circuits, diodes, FET's, BJT's, monolithic IC fabrication, LSI Fundamentals, design of logic gates and families, combinational and sequential logic circuits. Prerequisites: ECE 211, ECE 262. Lec 3, Lab 3, 2 Design Cr. Cr 4.

ECE 343 Electronics II

Covers the fundamentals of analog electronic circuits and systems, design of analog semiconductor circuits, amplifiers, frequency response, op amp characteristics and applications feedback. Prerequisite: ECE 342. Lec 3, Lab 3, 2 Design Cr. Cr 4.

ECE 351 Fields and Waves

Topics include: static electric and magnetic fields, field mapping, properties of dielectric and ferromagnetic materials, time varying fields, Faraday's law, Maxwell's equations, plane waves in dielectric and conducting media, calculation of the fields and other properties of common transmission lines. Prerequisite: MAT 258, PHY 122. Lec 3, 5 Design Cr. Cr 3.

ECE 383 Communications Engineering

A study of basic principles of modern communication engineering including methods of analysis, modulation techniques, effects of noise, information transmission. Prerequisite: ECE 314. Lec 3. Cr 3.

ECE 394 Electrical and Computer Engineering Practice

Work experience in electrical engineering and/or computer engineering. May be repeated for credit. Prerequisite: sophomore standing and permission. (Pass/Fail Grade Only). Cr 1-3.

ECE 401 Electrical and Computer Engineering Design Project

First of a three semester sequence of courses involving the design, implementation and supporting of an engineering device, system or software package by an individual student or small group. Part one: project selection, feasibility studies and proposal writing. Prerequisites: ECE 314 and ECE 342. 1 Design Cr. Cr 1.

ECE 402 Electrical and Computer Engineering Design Project

Second of a three semester sequence of courses involving the design, implementation and supporting of an engineering device, system or software package by an individual student or small groups. Part two: resource location, module debugging, prototype testing. Prerequisite: ECE 401. 4 Design Cr. Cr 4.

*Can only be used to satisfy criterion (C) above.

ECE 403 Electrical and Computer Engineering Design Project

Third of a three semester sequence of courses involving the design, implementation and reporting of an engineering device, system or software package by an individual student or small group. Part three: written and oral presentation of the completed project. Prerequisite: ECE 402. 2 Design Cr. Cr 2.

ECE 414 Feedback Control Systems

Analysis and design of continuous and discrete control systems using transfer function and state variable system representations. Covers signal flow graphs and Mason's gain formula, decomposition of transfer functions, controllability and observability, root locus techniques, Routh-Hurwitz criterion, Nyquist criterion, controller design in time and frequency domains, State feedback, phase lead and lag controllers, PID type controllers. Occasional laboratory experimentation. Prerequisite: ECE 314, basic knowledge of matrix algebra. Lec 3, 2 Design Cr. Cr 3.

ECE 416 Design of Control Systems

Continuation of topics covered in ECE 414 including control system design using the LAM method, design of DC servomotor systems, modeling and analysis of nonlinear systems. Includes laboratory experimentation and computer simulation. Prerequisite: ECE 414. Lec 1, Lab 6, 2 Design Cr. Cr 3.

ECE 417 Introduction to Robotics

Introduces robotics and operation of microcomputer-controlled manipulators with their applications in automation. Includes a general review of robot structure, current application of robots in automation, spatial descriptions and coordinate transformations, manipulator kinematics and solutions, robot control and path planning, dynamics, vision in robot application. Prerequisite: COS 215 or COS 220; MAT 228; knowledge of matrix algebra and some familiarity with basic control and rigid body mechanics suggested. Lec 2, Lab 3. 1.5 Design Cr. Cr 3.

ECE 425 Control Devices and Systems

Topics include: characteristics of power electronic devices, control of heating, dc motor control systems, adjustable frequency drives for three phase motors, effect of harmonics on system performance, computer stimulation of electro-mechanical systems. Prerequisite: ECE 323 or permission. Lec 3. 1 Design Cr. Cr 3.

ECE 427 Electric Power Systems II

Induction and synchronous machines, transmission line models, bus admittance and impedance analysis methods. Prerequisite: ECE 323. Lec 2, Lab 3. 2 Design Cr. Cr 3.

ECE 428 Electric Power Systems III

Electric power system control, load flow analysis, power system faults and unbalances, system protection. Prerequisite: ECE 427. Lec 2, Lab 3. Design Cr. Cr 3.

ECE 434 Biomedical Engineering

A survey of devices and practices in Bioengineering. Describes physiological principles and biomedical devices for the circulatory, respiratory and nervous systems, with engineering emphasis on methods of transduction, signal processing and imaging. Makes frequent use of biomedical research journals in order to balance the theoretical and the applied aspects of the field. Prerequisites: BIO 100 and ECE 342 or instructor's permission. 1 Design Cr. Cr 3.

ECE 441 Micro-Electronics Filter Theory and Design

Design of inductorless electric filter stressed. Standard forms of lowpass, bandpass, high-pass, and bandstop realized with op-amps. Applications include data and voice communication systems in modern micro-electronic engineering. Prerequisite: ECE 314 and ECE 342. Lec 3. 3 Design Cr. Cr 3.

ECE 444 Analog Integrated Circuits

Considers topics in the internal circuit design and system applications of analog integrated circuits; current sources, differential amplifiers, level shifters, op amps, regulators, high frequency considerations; digital-to-analog and analog to digital converters, phase-locked loops. Prerequisite: ECE 314 and ECE 343. Lec 3. 2 Design Cr. Cr 3.

ECE 445 Analysis and Design of Digital Integrated Circuits

Analysis and design of digital circuits for compatibility with integrated circuit processing technology. Reviews device physics with emphasis on switching behavior. Includes computer device models, analysis of inverters and basic gates, logic families, regenerative logic circuits, memory technologies. Brief introduction to circuit design for LSI and VLSI. Overview of gallium arsenide digital IC's. Prerequisite: ECE 342. Lec 3. Design Credit 2. Cr 3.

ECE 453 Microwave Engineering

Topics include: high-frequency transmission lines, impedance matching, graphical methods, microwave circuits, measurement techniques, microwave components, rectangular and cylindrical waveguides, antennas. Prerequisite: ECE 351. 1 Design Cr. Cr 3.

ECE 463 Solid State Electronic Devices II

Introduction to the theory of selected devices including pnpn structures and optoelectronic devices. Covers device characterization and design. Prerequisites: ECE 262. Lec 3 with an occasional laboratory period substituted for equivalent class time. Cr 3.

ECE 464 Microelectronics

Emphasis on fabrication topics, process design. Prerequisite: ECE 262. Lec 3 with an occasional laboratory period substituted for equivalent class time. 2 Design Cr. Cr 3.

ECE 465 Introduction to Sensors

Various types of conductometric, acoustic, magnetic, thermal and optical sensors are presented. Techniques for interfacing the sensors using mi-

croprocessor control systems and signal processing are discussed. Applications of sensor systems in medicine, environmental monitoring, the automotive industry, the chemical industry, manufacturing and construction are given. Prerequisite: junior level standing in engineering. 1 Design Cr. Cr 3.

ECE 471 Microprocessor Applications Engineering

Application of micro-processors to the solution of design problems, including hardware characteristics, peripheral control techniques and system development. Prerequisites: ECE 172. Lec 2, Lab 3. 2 Design Cr. Cr 3.

ECE 473 Computer Architecture and Organization

Historical computers and topics of importance in the design of modern computer systems including memory technology, memory system design, and parallel processing. Prerequisite: ECE 471. Lec 3, 1 Design Cr. Cr 3.

ECE 475 Sequential Logic Systems

Methods of design and testing for logic systems with memory. Includes sequential machine flow charting and algorithmic approaches to design, test procedures and the design of system tests. Prerequisite: ECE 172. Lec 3. 2 Design Cr. Cr 3.

ECE 477 Hardware Applications Using C

Programming examples will include hardware application, timing, sound generation and instrumentation interfacing. Review of the necessary features of the C programming language will be included. Prerequisites: ECE 172, COS 220. Lec 3, 1 Design Cr. Cr 3.

ECE 484 Communications Engineering II

Topics include: digital communication systems, multiplexing, signal space, information theory and coding. Prerequisite: ECE 383. Lec 3. Design Cr. Cr 3.

ECE 486 Digital Signal Processing

A study of processing signals in discrete form. Review of z-transforms, discrete Fourier series and transforms. Covers flow graph and matrix representations of digital filters, digital filter design techniques and fast Fourier transforms. Emphasis on using the computer both to design and to realize various signal processors. Prerequisites: ECE 383. Lec 3. 1.5 Design Cr. Cr 3.

ECE 487 Digital Image Processing

Introduction to optical and computer image processing techniques and their applications including the physics of images and sensors, image digitizer organization and computer communication; image generation, sampling and quantization; thresholding, binary images, gray level images, pseudo-color, coding techniques; image processing mathematics, two dimensional discrete Fourier transform, convolution and correlation, image transforms; masking, image smoothing, image sharpening, highpass and lowpass filters, histogram, image enhancement. Use of image processing facilities and

laboratory. Prerequisite: ECE 314. Lec 2, Lab 3. 1.5 Design Cr. Cr 3.

ECE 498 Selected Topics in Electrical and Computer Engineering

Topics in electrical engineering not regularly covered in other courses. May include advanced microprocessor applications, robot applications, instrumentation semiconductor technology, introduction to VLSI design and microwave acoustics. Content can be varied to suit current needs. May be repeated for credit, with departmental permission. Prerequisite: permission. Cr 1-3.

ECE 512 Linear Systems Analysis

Analysis of linear dynamic systems using matrices and linear vector spaces, internal and external models, state variable analysis, controllability and observability, stability. Prerequisites: ECE 314, MAT 262. Cr 3.

ECE 514 Modern Control Systems

Analysis and design of continuous and discrete control systems. Includes state variable, linear algebraic, and quantitative feedback design, tracking and disturbance rejection, optimal, robust and adaptive control, application to motion control. Prerequisite: ECE 512. 1 Design Cr., 2 Science Cr. Cr 3.

ECE 515 Random Variables and Stochastic Processes

Engineering applications of probability theory. Analysis of random variables, random processes and stochastic models. Introduction to the analysis and optimization of linear systems with random inputs. Prerequisite: graduate standing, ECE 383 or equivalent. Lec 3. Cr 3.

ECE 521 Transient Phenomena in Power Systems

Switching transients, damping, transients in three-phase circuits, transients in dc circuits, power conversion equipment, transient modeling of power system components, insulation coordination, protection of power systems against transient overvoltages. Prerequisite: ECE 323 or permission. Lec 3. Cr 3.

ECE 523 Mathematical Methods in Electrical Engineering

Application of advanced mathematical methods to problems in electrical engineering. Topics include conformal mapping, calculus of variations, and difference equations. Prerequisite: ECE 512 or permission. Lec 3. Cr 3.

ECE 524 Reliability Evaluation of Engineering Systems

Probability review, series, parallel, standby, cut and tie sets, fault trees, probability distributions in reliability evaluation, system reliability evaluation using probability distributions, discrete markov chains, continuous markov processes, state space diagrams, frequency and duration techniques. Prerequisite: ECE 515 or permission. Cr 3.

ECE 533 Advanced Robotics

Introduces intelligent robot control system and programming. Robot dynamical equations, path planning and trajectory generation, control system, off-line simulations, robot languages, and vision integration in robot applications will be discussed. Prerequisite: ECE 417. Lec 2, Lab 3. 1 Design Cr., 2 Science Cr. Cr 3.

ECE 535 Computer Vision

Topics include: image generation, the physics of images and sensors, binary images, image processing and understanding, computational methods for recovery and representation of visual information, review of available vision systems and their applications in automation. Prerequisite: COS 215 or COS 220 and ECE 314 or equivalent. Lec 2, Lab 3. 1 Design Cr., 2 Science Cr. Cr 3.

ECE 550 Electromagnetic Theory

Reviews of Maxwell's Equations and waves in dielectric and lossy media. Covers Image Theory, Induction Theorem and Green's Functions, plane cylindrical and spherical wave functions, radiation and antennas, rectangular, cylindrical and spherical waveguides and cavities, perturbational and variational techniques. Prerequisite: ECE 351 or equivalent. Lec 3. Cr 3.

ECE 552 Wave Propagation

Considers theory of propagation of electromagnetic waves, sound waves and unbounded media. Presents theoretical techniques and their applications to wave propagation in the ocean, ionosphere and the earth. Prerequisite: ECE 453 or equivalent. Lec 3. Cr 3.

ECE 553 Microwave Circuits and Devices

Examines the generation, transmission, control and detection of energy at microwave frequencies including active and passive microwave devices (klystrons, magnetrons, traveling wave tubes), solid state devices (microwave semiconductor diodes, tunnel diode amplifiers, Gunn oscillators, IMPATT and Josephson junction devices), and microwave integrated circuits (filters, couplers, circulators and combiners). Prerequisite: ECE 550. Lec 3. 1 Design Cr., 2 Science Cr. Cr 3.

ECE 562 Microwave Acoustics

A study of the theory of acoustic wave propagation in nonpiezoelectric and piezoelectric media. Focus on bulk acoustic waves, surface acoustic waves, plate modes, pseudo surface acoustic waves and Bleustein-Gulyaev waves and use of these waves may be utilized in microwave acoustic devices. Prerequisite: ECE 550 or permission. Lec 3. 1 Design Cr., 2 Science Cr. Cr 3.

ECE 563 Design and Fabrication of Surface Wave Devices

Covers the design, fabrication and measurement of surface acoustic wave (SAW) devices, e.g. delay lines, filters, resonators, oscillators, convolvers, and sensors. Topics include: planar fabrication techniques, surface properties of piezoelectric crystals, photolithography, vac-

uum technologies for thin film deposition, electronic systems for the measurement of impulse and frequency response, phase and group velocity, insertion loss, distortions, and spurious effects. Prerequisites: ECE 550, ECE 562 or permission. Lec 2, Lab 3. 2 Design Cr., 1 Science Cr. Cr 3.

ECE 565 Semiconductor Devices I

A study of physical principles underlying device operation. Topics include: elementary excitation in semiconductors such as phonons, photons, conduction holes and electrons, carrier trapping and recombination, effect of high doping, contacts. Prerequisite: ECE 463 or equivalent. Lec 3. Cr 3.

ECE 566 Semiconductor Devices II

Application of the principles of ELE 565 to specific devices. Prerequisite: ECE 565. Lec 3. Cr 3.

ECE 567 VLSI Devices and Technology

Covers VLSI device and process modeling, alternative device structures. Prerequisite: ECE 464. 1 Design Cr., 2 Science Cr. Cr 3.

ECE 571 Advanced Microprocessor-Based Design

Includes techniques for developing software and hardware for microprocessor-based systems, computer aided design using a multistation logic development system, use of components commonly found in microprocessor-based systems. Prerequisite: ECE 471 or permission. Lec 2, Lab 3. 1 Design Cr., 2 Science Cr. Cr 3.

ECE 573 Microprogramming

Fundamentals of microcoding and the design of microcoded systems including bit slice design. Prerequisites: ECE 471, ECE 475. Lec 2, Lab 3, 2 Design Cr. Cr 3.

ECE 580 Communications Engineering III

Topics include: probability theory, random processes, optimum receivers, vector channels, matched filters, block orthogonal signaling, time-bandwidth product, channel capacity, and implementation of coded systems. Prerequisite: ECE 383 or equivalent. Lec 3. Cr 3.

ECE 581 Estimation and Detection Theory

Mathematical fundamentals of optimal signal processing strategies. Neyman-Pearson and Bayes Detectors applied to radar and sonar systems. Maximum Likelihood and Bayes Estimators and applications. Prerequisite: ECE 515. Cr 3.

ECE 582 Modern Filters

Modern statistical approach to filter theory and signal analysis. Discrete time signals and systems emphasized. Wiener filters, linear smoothing and prediction, Kalman filters and applications. Prerequisites: ECE 512, ECE 515. Cr 3.

ECE 590 Neural Networks

Introduces artificial neural networks. Provides supervised and unsupervised learning in single and multi-layer networks, software implementation, hardware overview. Applications in pat-

in recognition and image analysis. Prerequisite: permission. 1 Design Cr., 2 Science Cr. Cr 3.

ECE 595 Graduate Seminar

Detailed study of some aspect of electrical engineering and preparation of a paper or solution to a pertinent comprehensive problem. Cr 1-3.

ECE 598 Selected Advanced Topics in Electrical and Computer Engineering

Advanced topics not regularly covered in other courses. Content varies. May be repeated for credit. Prerequisite: permission. Design Cr. 1-3 Science Cr. Cr 1-3.

ECE 599 Selected Study in Electrical and Computer Engineering

Advanced independent study for qualified students who present suitable projects for intensive investigation in the area of faculty interest. Prerequisite: permission. Cr 1-3.

Interdisciplinary Courses

INT 398 (CHE, CHY, ECE) Undergraduate Research Participation

Research topics chosen by students in consultation with faculty members in the College of Engineering. Students submit a final report de-

scribing their research and present an oral seminar. Cr 1-3.

INT 454 (ECE, PHY) Optical Communications

A study of the theory of optical dielectric waveguides including light propagation, attenuation, pulse broadening, and mode coupling in fiber-optic waveguides. Includes coupling components, semi-conductor light sources and detectors, modulation and switching of light, repeaters for fiber-optic systems, optical integrated circuits and optical communication systems. Prerequisite: permission. Lec 3. 1 Design Cr. Cr 3.



Engineering Physics

Professors Brownstein (Chairperson), Camp, Comins, Csavinszky, Hess, Kleban, Krueger, Morrow, Smith, Unertl,
Associate Professors Batuski, Harmon, Lad, McClymer, McKay, Mountcastle,
Lecturer Clark

The Bachelor of Science (B.S.) degree in Engineering Physics is designed to meet the needs of students who are interested in both engineering and science (especially physics and mathematics). The program is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (ABET). It combines a traditional university-level physics program with an "area of engineering specialization" in a particular engineering discipline. The program offers a high degree of flexibility to meet specific interests and career goals. In addition to the obvious technical training (physics, engineering, mathematics, etc.) an emphasis is placed upon humanities and social sciences, technical writing, as well as ethics, safety and similar aspects associated with being a productive, well-rounded engineer/citizen.

Many of the graduates from this program go directly into engineering or engineering-related jobs. The Engineering Physics training is particularly useful for those students who are likely to be employed in a variety of engineering areas during their careers. Other graduates go on to further their education, obtaining advanced degrees (M.S. or Ph.D.) in physics, engineering, or other disciplines at schools all over the country. Some features of the program are:

- Required courses in physics. These include general physics, modern physics, optics, mechanics, electricity and magnetism, and quantum mechanics. Additional elective courses can be in astrophysics, biophysics, thermodynamics, materials physics, nuclear physics, statistical mechanics. Many of these combine traditional physics with some engineering science or engineering design.
- A physics laboratory course in each of the eight semesters, including first year introductory physics (PHY 121/122). Starting with the sophomore year laboratory (PHY 229/230), these classes tend to be small with each student receiving personal attention from a faculty member. The junior year laboratory sequence (PHY 441/442) also treats experimental error analysis and modern instrumentation techniques. The senior year laboratory (PHY 481/482) focuses on an individual student project. In this senior "capstone" design experience, each student works under the guidance of a physics (or engineering) faculty project advisor. The student brings to bear his/her classroom and laboratory experience upon a project

Specimen Curriculum			
First Year			
First Semester		Second Semester	
PHY 121 Physics for Engineers and Physical Scientists I	4	PHY 122 Physics for Engineers and Physical Scientists II	4
CHY 113 Chemical Principles I	4	Humanities Elective I(1)	3
MAT 126 Analytic Geometry and Calculus	4	MAT 127 Analytic Geometry and Calculus	4
GEE 101 Introduction To Engineering Design	3	COS 220 Introduction to Computer Science(2)	3
TOTAL HOURS	15	Engineering Sequence Elective I(3)	3-4
		TOTAL HOURS	17-18
Sophomore Year			
First Semester		Second Semester	
PHY 236 Introductory Modern Physics	4	PHY 238 Mechanics	3
PHY 229 Physical Measurements Laboratory I	2	PHY 230 Physical Measurements Laboratory II	2
MAT 228 Analytic Geometry and Calculus	4	MAT 259 Differential Equations	4
Engineering Sequence Elective II	3	MET 109 Machine Shop and Welding	2
Humanities Elective II	3	Engineering Sequence Elective III	3
TOTAL HOURS	16	Humanities Elective III	3
		TOTAL HOURS	17
Junior Year			
First Semester		Second Semester	
PHY 454 Electricity and Magnetism I	3	PHY 455 Electricity and Magnetism II	3
PHY 441 Physical Electronics Laboratory	2	PHY 442 Modern Experimental Physics	2
MAT 453 Partial Differential Equations I	3	PHY 472 Geometrical and Fourier Optics	3
Engineering Sequence Elective IV	3	Math Elective(4)	3
Engineering Sequence Elective V	3	Humanities Elective V	3
Humanities Elective IV	3	Engineering Sequence Elective VI	3
TOTAL HOURS	17	TOTAL HOURS	17

Notes:

- Humanities Electives: 18 credit hours from an approved list are required for accreditation; at least two of these courses should be upper level.
- Students with programming experience may substitute BCE 172, Logic Systems (Cr 4).
- Student selects an area of engineering specialization normally from electrical and computer, mechanical, chemical, or civil engineering. The seven course sequence is carefully chosen by the student in consultation with his/her advisor so as to meet the college requirement of 48 hours of engineering topics. Normally, the engineering physics major will take a minimum of 32 hours of engineering topics. Normally, the engineering physics major will take a minimum of 32 hours of engineering science and 16 hours of engineering design (some of these are contained in the physics courses) to meet this requirement. A detailed list of possible engineering courses, suitable for engineering physics majors, along with their contribution to the engineering topics requirement is available in the department office.

chosen by the student in consultation with the project advisor.

-) A senior year seminar course (PHY 488/489), the second aspect of the senior "capstone" experience, emphasizes oral as well as written, technical communication. Guest speakers address issues such as professional ethics, patents, resumes, information retrieval, etc.
-) Engineering sequence. This consists of a minimum of seven engineering courses most of which lie in the student's area of engineering specialization. These courses contribute heavily to the required amount of engineering science and engineering design.
-) Writing (especially technical writing). This is emphasized throughout the four year curriculum: each laboratory course has graded written reports while every non-laboratory course has graded written problem work with some courses requiring term papers. In the junior year laboratory (PHY 441/442) students receive additional individualized training in technical writing.
-) Six required courses in mathematics (in addition to computer programming) with the upper level ones chosen to involve those topics which may be of benefit to an engineering student.

Engineering Physics and Cooperative Education

Any student in good standing enrolled in the engineering physics curriculum who has completed the sophomore year has the option of working within a cooperative education program. Cooperative education is the integration of practical work experience, obtained through specific periods of employment in industry, business, or government, into the on-campus classroom and laboratory course curriculum. A student in the Cooperative Education Program works as a paid employee in an engineering environment at a job selected by mutual agreement with the student, the employer, and the cooperative Education Coordinator of the De-

Senior Year			
First Semester		Second Semester	
PHY 469 Quantum and Atomic Physics	3	PHY 482 Project Laboratory in Physics II	3
PHY 481 Project Laboratory in Physics I	3	PHY 489 Physics Seminar II	1
PHY 488 Physics Seminar I	1	Humanities Elective VI	3
Engineering Sequence Elective VII	3	Technical Elective I(6)	3
Physics Elective(5)	3	Technical Elective II	3
Free Elective	3	Free Elective	2-3
TOTAL HOURS	16	TOTAL HOURS	15-16
TOTAL DEGREE HOURS: 130			

4. Choose from MAT 454, MAT 459, MAT 434, MAT 471, or an approved similar math course. Students also may satisfy this requirement by taking PHY 475, Mathematical Physics, in the fall of their senior year. PHY 475 may be counted either as a math elective or a physics elective, but not both.

5. Possible Physics Electives:

First Semester: PHY 462 Physical Thermodynamics; PHY 470 and 471 Nuclear Physics; PHY 475, Methods of Mathematical Physics; INT 454, Optical Communications; PHY 501, Mechanics; AST 451, Astrophysics I.

Second Semester: PHY 447, Molecular Biophysics; PHY 463, Statistical Mechanics; PHY 473, Modern Optics Lab; PHY 480, Physics of Materials; AST 452, Astrophysics II.

6. Technical Elective: physics, engineering, or approved science course.

partment of Physics. Academic credit is received through enrollment in PHY 495, Engineering Physics Practice.

Graduate Work in Physics and Engineering Physics

Graduate opportunities and requirements for the Master of Science degree in physics and the Doctor of Philosophy degree in physics, and the Master of Engineering degree in Engineering Physics are described in the catalog of the Graduate School.

Engineering Physics Curriculum

The specimen curriculum represents the program for a typical student in the engineering physics curriculum. There are possible alterations to this schedule and substitutions may be made for some courses on approval of the De-

partment Chairperson. Students desiring to transfer from another engineering program in their first or sophomore years may do so without loss of credit or delays in graduation. The considerable flexibility in the engineering physics program will allow a student to design an individual curriculum with the assistance of his or her advisor.

Engineering Physics students receive instruction and evaluation in technical writing as part of PHY 441 and PHY 442. Students not evaluated as satisfactory may be required to take an additional course (ENG 101 or ENG 317); this can be counted as a free elective.

Students admitted to the Honors Program can substitute Honors courses for appropriate humanities and physics courses.

Courses in Engineering Physics

Consult courses listed under Physics and Astronomy in the College of Sciences.

Forest Engineering

Professors Corcoran, Riley (Co-Administrators); Ashley (Emeritus), Brann, Hoffman (Emeritus), Rowe (Emeritus), Soder, Smith;
Associate Professors Christensen, Hedstrom, Huff, Soule

The forest engineering curriculum, a joint administrative responsibility of the Bio-Resource Engineering Department and the Department of Forest Management, combines study of basic physical sciences, mathematics, engineering, and forestry to provide students with the in-depth education necessary in a career emphasizing the design, planning, and management of tree harvesting systems, logging equipment, and environmental engineering in general.

The curriculum is designed to foster in each student the capability to solve the problems of society that are susceptible to engineering treatment; to develop in the student a sensitivity to socially related habit of ethical conduct; to help the student develop an understanding of the engineer's responsibility to protect the public health and safety; and to instill a desire in the student to maintain professional competence through lifelong learning. The basic curriculum, combined with electives in the humanities and social science, and culminating with an engineering design experience, provides a broad base of knowledge for engineering.

Forest engineering is engineering in a natural environment. Forest engineers are involved in reforestation methods, systems for wood production and harvesting, handling and transportation, forest road systems, design of improvised bridges, soil-water control, and conservation and recreational development.

A unique feature of the forest engineering curriculum is that it provides the academic background necessary for full association with both professional engineering and forestry societies. Founded upon intensive study in the physical and natural sciences, the professional subject matter contained in the program is directed toward off-campus as well as on-campus study. The realities encountered in the use of mechanized logging equipment in a natural environment are recognized as the inherent constraints imposed by the interaction of technology, biology, and social order.

In addition to basic engineering and forestry courses, four specific areas of forest engineering are dealt with: forest machinery, soil and water control, forest roads and structures, and logging systems planning.

Graduates may find employment as forest engineers with companies producing forest machinery and equipment, with pulp and paper and lumber firms, and with federal and state agencies. Positions are open in research and development work, or in direct wood production and processing fields. Opportunities are nationwide in this area.

Specimen Curriculum			
First Year			
First Semester		Second Semester	
BRE 220 Principles of Mechanization	3	BRE 255 Materials in Bio-Resource Engineering	3
MAT 126 Analytic Geometry and Calculus	4	BRE 257 Computer Applications in Agricultural and Forest Engineering	3
CHY 113 Chemical Principles I	4	OR	
Communications Elective	3	COS 220 Introduction to Computer Science	(3)
Humanities/Social Science Elective	3	MAT 127 Analytic Geometry and Calculus	4
TOTAL HOURS	17	PHY 121 Physics for Engineers and Physical Scientists I	4
		FTY 105 Introduction to Forest Measurements	3
		TOTAL HOURS	17

The curriculum in forest engineering is a joint offering of the Colleges of Engineering, and of Natural Resources, Forestry and Agriculture. It is accredited by the Society of American Foresters and the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology.

The curriculum requires completion of 141 degree hours (including six degree hours in Forestry Field Practice) at an accumulative degree point average of not less than 2.0.

Forest Engineering Curriculum

Basic Sciences and Math

CHY 113 Chemical Principles I	4
PHY 121 Physics for Engineers and Physical Scientists I	4
PHY 122 Physics for Engineers and Physical Scientists II	4
MAT 126 Analytic Geometry and Calculus	4
MAT 127 Analytic Geometry and Calculus	4
MAT 228 Analytic Geometry and Calculus	4
MAT 258 Differential Equations/Linear Algebra	4
FTY 204 Statistical Inference in Forest Resources	3
BRE 257 Computer Applications in Agricultural and Forest Engineering	3
OR	

COS 220 Introduction to Computer Science Elective*

TOTAL HOURS

Basic Engineering

BRE 281 Plane Surveying	
OR	
SVE 111 Plane Surveying	
MEE 150 Applied Mechanics: Statics	
MEE 230 Thermodynamics	
MEE 251 Strength of Materials	
MEE 270 Applied Mechanics: Dynamics	
MEE 360 Fluid Mechanics	
OR	
CIE 350 Hydraulics	
BRE 268 Computer Aided Drafting and Design	
TOTAL HOURS	

Forest Engineering

FOE 206 Photogrammetry and Remote Sensing	
FOE 453 Harvesting of Forest Crops	
BRE 220 Principles of Mechanization	
BRE 255 Materials in Bio-Resource Engineering	
BRE 465 Soil and Water Engineering	
BRE 462 Power Transmission and Control	

*Recommended Bio-Earth Science electives include AES 140/140L Soil Science, BOT 101 Plant Biology, BOT 230 Dendrology, INT 256 Forest Protection

471 Production Analysis in Forestry	2
472 Planning and Control of Forestry Operations	2
473 Forest Roads and Structures	3
460 Power and Machinery	3
491 Design Project I	1
492 Design Project II	2
493 Design Project III	1
TOTAL HOURS	31

Forestry	
FTY 105 Introduction to Forest Measurements	3
FTY 255 Forest Inventory and Growth	3
FTY 241 Field Practice in Forest Management	3
FTY 441 Advanced Field Practice in Forest Management	3
FTY 407 Forest Ecology	3
FTY 408 Silviculture	2
FTY 409 Forest Ecology and Silviculture Field Laboratory	2
FTY 446 Forest Resources Policy	3
FTY 470 Forest Management and Resources	4
TOTAL HOURS	26

Humanities and Social Sciences	
Economics	6
Electives	17
TOTAL HOURS	23
TOTAL CREDIT HOURS REQUIRED FOR GRADUATION: 135 + 6 (May Term)	

General Engineering

Courses in General Engineering

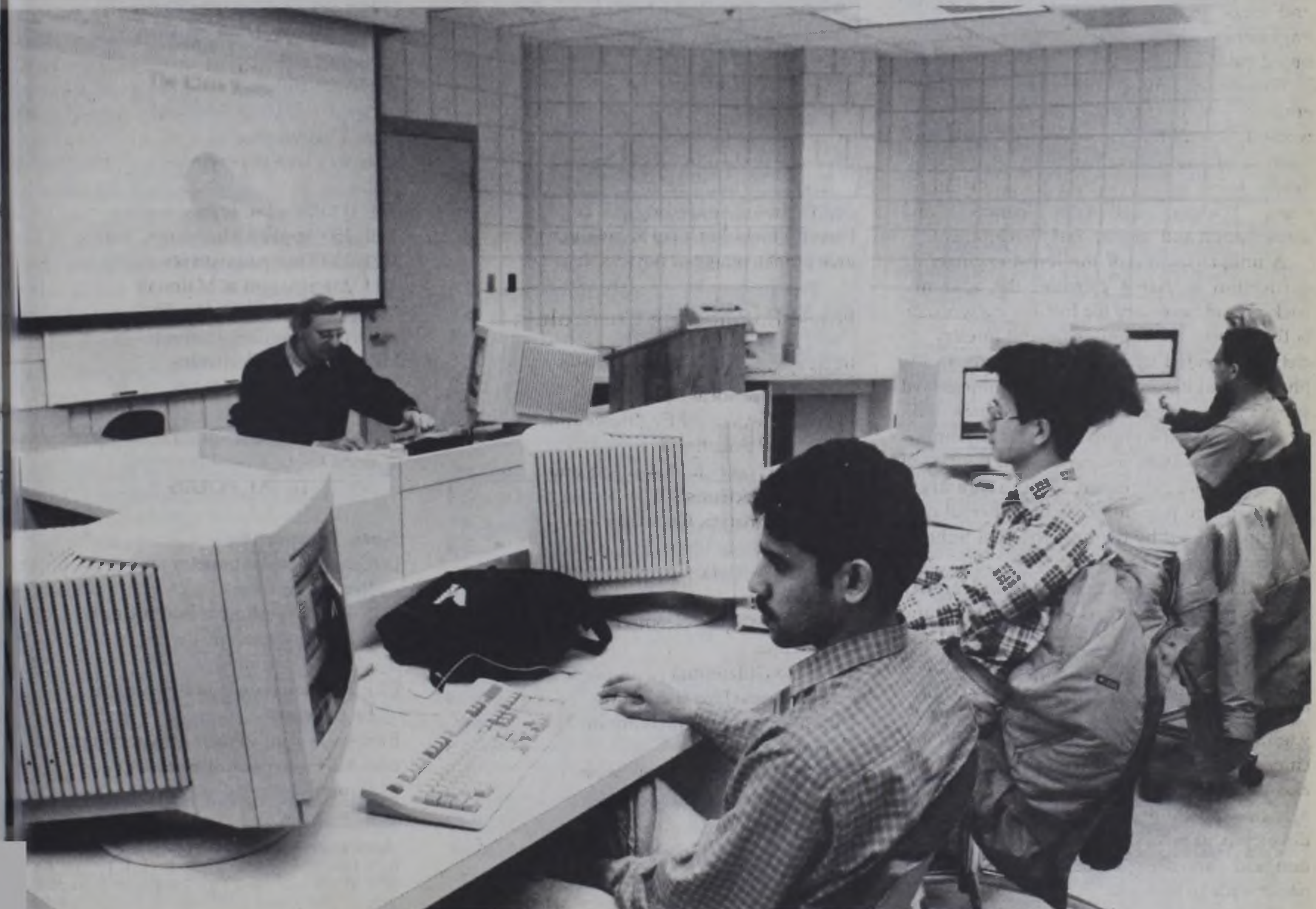
GEE 101 Introduction To Engineering Design I
 Graphic principles, concepts, and techniques involving applied problems and creative exercises in orthographic projection, dimensioning, and data analysis. Exercises will be done in the

form of sketches or created in 2D/3D form using CADD software. Lec 1, Lab 2, Rec 1. Cr 3.

GEE 302 Introduction to Microcomputer-Aided Design

The engineering design process utilizing the microcomputer as a tool in vector graphics, descriptive geometry, three-dimensional rotation

for area and volume calculations, and statistical graphs. A creative design project incorporating the microcomputer to produce a set of working drawings is required. Prerequisite: GEE 101. Lec 1, Lab 4. Cr 3.



Mechanical Engineering

Professors Grant (Chairperson), Rivard, Sucec
Associate Professors Boyle, Caccese, Johnson, Messier, Poland, Sayles,
Assistant Professor Dewhurst

Undergraduate Program

The Mechanical Engineering Department offers a four-year undergraduate program leading to the bachelor of science degree in mechanical engineering which is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology.

Mechanical engineers apply scientific methods to the solution of mechanical problems and are concerned with the principles of motion, energy transformation, and force. Mechanical engineering is a challenging profession which encompasses many areas of design, development and production. Mechanical engineers design simple devices like fishing reels and automatic door closers, and more complex systems such as airplanes, automobiles, satellites and power plants, and in manufacturing companies they develop computer systems that improve the production process. They also design advanced materials and structures to meet the demands of supersonic and hypersonic space travel. Mechanical engineers also work in the nuclear energy field on the design of underwater vessels, electrical power plants equipped with reactors, pressure piping, heat exchangers, and other specialized components. It would be difficult to find an area or object in everyday life that was not in some way affected by a mechanical engineer.

Mechanical engineers work in industry, consulting practices, universities and government research. The vast majority are employed in industry at equipment manufacturers, aerospace companies, utilities, material processing plants, transportation companies, petroleum companies and a host of other firms. Job functions and responsibilities range from systems design to power plant operations and quality control. Mechanical engineers working in governmental design and research projects assist on key policy decisions regarding technology development and use. For example, engineers working with government agencies conduct research on solar energy, advanced materials, radioactive waste removal, magnetic-levitation trains, and the space program—research that will have direct impact on American business and the lives of people in the years ahead.

The Mechanical Engineering Department is committed to the preparation of the student for the initiation of a professional career in mechanical engineering or for the continuation of studies in graduate school. The program develops the student's creative potential to meet the increasingly complex needs of industry, government and education. The curriculum pre-

Mechanical Engineering Curriculum			
First Year			
First Semester		Second Semester	
MAT 126 Analytic Geometry and Calculus	4	MAT 127 Analytic Geometry and Calculus	4
PHY 121 Physics for Engineers and Physical Scientists I	4	PHY 122 Physics for Engineers and Physical Scientists II	4
GEE 101 Introduction To Engineering Design	3	MEE 150 Applied Mechanics: Statics	3
ENG 101 English Composition Elective*	3	COS 215 Introduction to Computing Using FORTRAN Elective*	3
TOTAL HOURS	17	TOTAL HOURS	17
Sophomore Year			
First Semester		Second Semester	
MAT 228 Analytic Geometry and Calculus	4	MAT 258 Differential Equations	4
CHY 113 Chemical Principles I	4	ECE 215 Electric Circuit Fundamentals	3
MEE 230 Thermodynamics I	3	MEE 231 Thermodynamics II	3
MEE 251 Strength of Materials	3	MEE 270 Applied Mechanics: Dynamics	3
Elective*	3	Elective*	4
TOTAL HOURS	17	TOTAL HOURS	17
Junior Year			
First Semester		Second Semester	
ECE 224 Instrumentation	4	MEE 320 Materials Engineering and Science	3
MAT 332 Statistics for Engineers	3	MEE 341 Mechanical Laboratory I	3
MEE 340I, Machine Tool Processing	2	MEE 381 Design II	3
MEE 360 Fluid Mechanics	3	MEE 456 Introduction to Computational Methods	3
MEE 380 Design I	3	ENG 317 Technical Writing	3
Elective*	3	TOTAL HOURS	15
TOTAL HOURS	18		
Senior Year			
First Semester		Second Semester	
MEE 342 Mechanical Laboratory II	2	MEE 343 Mechanical Laboratory III	2
MEE 387 Design III	4	MEE 388 Design IV	4
MEE 432 Heat Transfer	3	Elective*	3
Elective*	3	Elective*	3
Elective*	3	Elective*	3
TOTAL HOURS	15	TOTAL HOURS	15

*The curriculum contains 10 elective courses, six of which (18 credit hours) must be approved humanities or social sciences, and four must be technical with the courses selected from specified groups. Lists of courses qualifying for the electives are available in the mechanical engineering office.

pares the student for a professional career or more advanced studies. It provides a foundation of knowledge in mathematics, basic physical sciences, thermal sciences, dynamic systems, material science, fluid and solid

mechanics and design of systems. The development of abilities in mathematical analysis, experimental techniques, computer methods and design are emphasized throughout the program. Technical electives in the program p-

dents the opportunity to gain additional competence in specific areas. Engineers must address problems which raise issues requiring awareness of economic, ethical, political, social and legal issues as well as the technical issues of the profession. Therefore, preparation for a career in mechanical engineering includes an introduction to the humanities and social sciences as well as mathematics, science and engineering fundamentals. A major strength of the department is its capstone senior design sequence where design experiences are frequently drawn from government or industry. These activities create an awareness of the origins of the engineering work and the breadth of parameters to be considered in order to carry out the work successfully. To encourage these interactions and provide other opportunities for student contacts with practicing engineers and other professionals, the Department supports the major student professional associations. These include the American Society of Mechanical Engineers, the Society of Women Engineers and the honor societies Pi Tau Sigma and Tau Beta Pi.

In consultation with an academic advisor the student plans a program based on the following Mechanical Engineering Curriculum. The format is a suggested program which can be modified within constraints of satisfying all of the requirements and course prerequisites to satisfy scheduling needs or student preferences. The program has ten elective courses among the 41 courses required for the degree. Six of the electives must be approved humanities or social sciences, and four must be technical with the courses selected from specified groups. Lists of courses qualifying for these electives are available in the Mechanical Engineering office. By careful use of this flexibility in electives, students may pursue in some depth their particular interests in both technical and non-technical projects. Some Mechanical Engineering electives will not be offered every year.

Graduate Program

The Department of Mechanical Engineering offers programs of study and research leading to the Master of Science degree (thesis program) and the Master of Engineering degree (non-thesis program). Students with a B.S. in Mechanical Engineering are required to complete 30 semesters of graduate work. For the M.S. degree, 30 credit hours includes 24 credit hours of course work and 6 credit hours for the thesis. In the non-thesis M.E. degree program the student must complete 30 credit hours of course work. Descriptions of the programs and general requirements for advanced degrees are described in the Graduate School catalog. Some teaching assistantships and research assistantships are available through the department.

Double Majors and Double Degrees

Students may wish to declare a double major or obtain a second degree. One common choice is to combine mechanical and electrical engineering. A minimum of one extra year is ordinarily required for a double major or double degree. The student should see his or her advisor early in the program to be sure all requirements are being met.

Mechanical Engineering Department Cooperative Education Program

The Mechanical Engineering Department provides students the opportunity to participate in a cooperative education course, MEE 394. The course is under the direction of a mechanical engineering co-op coordinator who monitors the student's progress in the course. The course requires that appropriate project work be assigned by the cooperating company or agency.

Pulp and Paper Option in Mechanical Engineering

Students who are enrolled in the undergraduate program can undertake an integrated program where the requirements of the fourth year of their basic curriculum and the additional courses of the five-year option are distributed to reinforce each other over the last two years of a five-year program. The five year pulp and paper program is described in detail in the Chemical Engineering section of this catalog. The Bachelor of Science in Mechanical Engineering degree and a pulp and paper certificate are awarded concurrently at the end of the fifth year.

Courses in Mechanical Engineering

MEE 150 Applied Mechanics: Statics

A study of force systems and equilibrium, structural models, friction, distributed forces. Designed to develop the ability to analyze and solve engineering problems. Rec 3. Cr 3.

MEE 230 Thermodynamics I

Covers energy and energy transformations, the First and Second Laws applied to systems and to control volumes, thermodynamic properties of systems, availability of energy. Prerequisite: MAT 127. Rec 3. Cr 3.

MEE 231 Thermodynamics II

A continuation of MEE 230 and includes thermodynamics of mixtures, chemical thermodynamics, thermodynamics of fluid flow, vapor and gas cycles, applicable to compressors, internal combustion engines and turbines. Computers used. Prerequisite: MEE 230, COS 215 or equivalent. Rec 3. Cr 3.

MEE 251 Strength of Materials

The principles of solid mechanics and their applications to practical problems, stresses and

deflections in axial loading, torsion, beams, columns, combined stresses. Prerequisite: MEE 150, MAT 127. Rec 3. Cr 3.

MEE 252 Statics and Strength of Materials

The basic principles of statics and their applications in strength of materials. Emphasis on equilibrium of various systems, stresses and deformations of axially loaded members, connections, circular shafts, beams and columns. Prerequisite: MAT 127. Rec 3. Cr 3.

MEE 270 Applied Mechanics: Dynamics

Motion of particles and rigid bodies, impulse and momentum, work and energy and simple harmonic motion, force, mass and acceleration. Prerequisite: MEE 150 or MEE 252, and MAT 228. Rec 3. Cr 3.

MEE 320 Materials Engineering and Science

The principles of material science with emphasis on the relationship between structure and properties and their control through composition, mechanical working and thermal treatment. Prerequisite: MEE 230 and MEE 251. Rec 3. Cr 3.

MEE 340L Machine Tool Processing

Topics include: the characteristics and operation of machine tools, numerically controlled machining, computer directed machining from memory contained blueprints. Lab 3. Cr 2.

MEE 341 Mechanical Laboratory I

An introduction to experiment design, data analysis, laboratory techniques, instrumentation, and calibration of equipment. Application to thermodynamics, mechanics of materials, fluid mechanics and metallurgy. Prerequisite: MAT 258, MEE 251 and MEE 360. Rec 1, Lab 3. Cr 3.

MEE 342 Mechanical Laboratory II

A continuation of MEE 341. Mechanical engineering problems in a laboratory setting. Prerequisite: MEE 231, MEE 341 or permission. Lab 3. Cr 2.

MEE 343 Mechanical Laboratory III

A continuation of MEE 342. Mechanical Engineering problems in a laboratory setting. Prerequisites: MEE 231, MEE 341, MEE 342 or permission. Cr 2.

MEE 360 Fluid Mechanics

Includes fluid statics, kinematics, Bernoulli equation, free-surface flow, viscosity, friction, dimensional analysis and similitude, and an introduction to compressible flow. Prerequisite: MEE 230, MEE 270 and MAT 258. Rec 3. Cr 3.

MEE 380 Design I

Kinematical design of machines. Prerequisite: MEE 270. Rec 3. Cr 3.

MEE 381 Design II

Includes analysis of mechanical elements. Advanced concepts in mechanics of materials, stress concentration, fatigue, factor of safety. Introduction to creative synthesis and economic design. Prerequisite: MEE 251 or MEE 252, MAT 258. Rec 3. Cr 3.

MEE 383 Turbomachine Design

Topics include: the theory and design of turbomachinery flow passages, control and performance of turbomachinery, gas-turbine engine processes. Prerequisite: MEE 230. Rec 3. Cr 3.

MEE 384 Power Plant Design and Engineering

A study of power station engineering and economy, including design, construction and operating theory of steam, internal-combustion, and hydroelectric power plants. Introduction to nuclear power plants, solar energy, fuel cells, and associated problems. Prerequisite: MEE 230. Rec 3. Cr 3.

MEE 385 Heating and Ventilating System Design

Topics include: determination of heating and ventilating requirements for buildings and industrial processes, analysis of heat transfer devices and their applications, heating and ventilating systems designs, layout and control. Prerequisite: MEE 230. Rec 3. Cr 3.

MEE 386 Refrigeration and Air Conditioning System Design

Examines methods of producing artificial low temperatures including refrigeration for controlled-temperature applications in comfort air conditioning and for industrial manufacturing processes. Prerequisite: MEE 230. Rec 3. Cr 3.

MEE 387 Design III

Design of mechanical engineering systems components, including problem definition, analysis, synthesis and optimization. Prerequisite: MEE 231, MEE 381, MEE 432 concurrently or permission. Rec 4. Cr 4.

MEE 388 Design IV

Design of mechanical engineering systems, including problem definition, analysis, synthesis and optimization. Prerequisite: MEE 231, MEE 381, MEE 432. Rec 4. Cr 4.

MEE 394 Mechanical Engineering Practice

Full-time engineering work with companies participating in the Mechanical Engineering Department Cooperative Education Program. (Pass/Fail Grade Only). Cr 3.

MEE 397 Seminar

Rec 1. Cr Ar.

MEE 421 Metallography

Covers methods of preparation of metal specimens for optical microstructure examination, microstructure interpretation, effect of processes on microstructure, photomicroscopy, microhardness testing. Includes experimental problems. Prerequisite: MEE 320 or permission. Lab 6. Cr 3.

MEE 422 Thermal and Mechanical Processing of Engineering Metals

Explores microstructure and mechanical property control of carbon and alloy engineering steels, tool steels, stainless steels, cast irons and selected nonferrous alloys through heat treatment and mechanical working. Constraints im-

posed on design, fabrication, and service environment by processing and failure analysis also covered. Prerequisite: MEE 320. Rec 3. Cr 3.

MEE 432 Heat Transfer

The fundamental laws of heat transfer by conduction, convection and radiation, applied to the study of engineering problems via analytical, numerical, and graphical techniques. Prerequisite: MAT 258 and MEE 360. Rec 3. Cr 3.

MEE 433 Solar-Thermal Engineering

Introduces solar energy collection and use as process thermal energy. Includes performance analysis of solar collectors and thermal energy storage devices both separately and as a combined system. Prerequisite: MEE 230. Rec 3. Cr 3.

MEE 434 Thermodynamic Design of Engines

An introduction to combustion, with applications to the design of propulsion systems, such as gas turbines, I-C engines, rocket engines. Prerequisite: MEE 231. Rec 3. Cr 3.

MEE 435 Internal Combustion Engines

Application of thermodynamic laws and principles to internal combustion engine cycles, design and operation, fuels and combustion, carburetion, detonation, cooling, and lubrication. Prerequisite: MEE 230. Rec 3. Cr 3.

MEE 453 Experimental Mechanics

Experimental methods and techniques for analysis of stress and displacement. Also covers electric strain gages, brittle lacquers, mechanical and optical strain gages, and introduction to photoelasticity. Prerequisite: MEE 251. Rec 2, Lab 2. Cr 3.

MEE 455 Advanced Strength of Materials

Considers limitations of elementary stress formulas, theories of failure, unsymmetrical bending, beams, plates, torsion of non-circular bars, thick-walled cylinders, stress concentrations, energy methods. Introduces theory of elasticity. Prerequisite: MEE 251. Rec 3. Cr 3.

MEE 456 Introduction to Computational Methods

Introduces numerical methods for solution of partial differential equations. Existing and prepared programs are applied to engineering problems in heat transfer, solid mechanics, and fluid dynamics. Prerequisite: MAT 258. Rec 3. Cr 3.

MEE 461 Compressible Fluid Flow I.

Fundamental equations and concepts considered in isentropic flow, normal shock waves, flows in constant area ducts, and generalized one-dimensional continuous flow. Prerequisite: MEE 230 and MEE 360. Rec 3. Cr 3.

MEE 462 Fluid Mechanics II

Considers flow in multiple-pipe systems, boundary-layer flows, inviscid incompressible flow, compressible flow, open-channel flow. Prerequisite: MEE 360. Rec 3. Cr 3.

MEE 471 Mechanical Vibrations

Examines free and forced vibrations with viscous damping for discrete and continuous mass systems as well as derivation and application of energy methods. Prerequisite: MEE 270 and MAT 258. Rec 3. Cr 3.

MEE 472 Advanced Dynamics

Covers particle dynamics, planetary motion, projectiles, variable mass motion, angular momentum, impact, generalized constraints, coordinates and forces, Hamilton's principle, Lagrange's equations, gyroscopes. Prerequisite: MAT 258 and MEE 270. Rec 3. Cr 3.

MEE 498 Selected Topics in Mechanical Engineering

Topics in mechanical engineering not regularly covered in other courses. Content varies to suit needs. May be repeated for credit, with departmental permission. Prerequisite: permission. Cr 1-3.

MEE 501 Macroscopic Thermodynamics

Concepts of energy transfer, internal energy and entropy are used to formulate the first and second laws of thermodynamics for a system. The equivalent entropy maximum and energy minimum principles are introduced. Emphasis on mechanical engineering problems including air conditioning applications, steam and gas turbine power plants, solar power, and thermoelectric phenomena. Prerequisites: MEE 231, MAT 258 or permission. Cr 3.

MEE 523 Fatigue Failure

Examines mechanisms of metal fatigue, and metallurgical, mechanical and environmental factors. Covers methods of failure analysis. Prerequisite: MEE 320 or permission. Cr 3.

MEE 536 Advanced Heat Transfer I

A study of transfer of heat by conduction including use of approximate, exact analytical and numerical techniques for the prediction of temperature distributions in both the steady and unsteady state. Prerequisite: MEE 432. Cr 3.

MEE 546 Finite Elements in Solid Mech

Basics of the finite element method with emphasis placed on applications. Fundamentals: matrix algebra and computer solution techniques. Derivation of relatively simple spring and elements which uses the direct approach: truss, frame, plane strain, plate bending, axisymmetric elements which uses the nodal approach. Isoparametric formulation introduced. Prerequisite: MEE 456.

MEE 554 Theory of Elasticity

Includes plane stress and plane strain, function problems in Cartesian and polar coordinates, photo-elasticity, strain energy, three-dimensional problems. Prerequisite: MA and MEE 251. Rec 3.

MEE 557 Introduction to Continuum Mechanics

Includes general formulation of classic theories, fundamental concepts of a

stress, and energy for a continuum; general nature of constitutive equations for a continuum. Prerequisite: MEE 251 or permission. Cr 3.

MEE 562 Advanced Fluid Mechanics
Development of the differential and integral equations of mass, momentum, and energy conservation for viscous fluids and application of these to internal, external, and boundary layer flows of incompressible, viscous fluids. Prerequisite: MEE 360. Cr 3.

MEE 573 Advanced Vibrations I
Advanced vibration theory and applications including multi-degree of freedom systems, transient and random vibrations, Lagrange's equation, Laplace transformation and matrix iteration, computer techniques. Prerequisite: MEE 471. Cr 3.

MEE 574 Advanced Vibrations II
Covers theory of vibrations with continuously varying mass and stiffness; solutions of wave equations for strings, longitudinal and torsional

systems, vibration of beams, methods of Rayleigh, Ritz and Stodola. Introduction to non-linear vibrations. Prerequisite: MEE 573 or permission. Cr 3.

MEE 588 Advanced Thermodynamics II
A continuation of MEE 434, including the study of chemical equilibrium in systems of reacting gases, with applications to the design of propulsion systems, particularly rockets. Prerequisite: MEE 434. Cr 3.



Military Science

Professor of Military Science LTC Wright,
Instructors MAJ Smyth, CPT Burns, CPT Reed, MSG McKim, SFC Mayer,
Supply Technician Mr. Smith

General

The Department of Military Science conducts general military science education at two levels, basic and advanced military studies. MS I and II level courses are open to all university students with the exception of MIS 100 - Leadership Laboratory, which is only open to enrolled or contracted ROTC students. Students taking 100 and 200 level courses are under no obligation to the U. S. Army in any way—Students may take MS courses at the 300 and 400 level with the permission of the Professor of Military Science. Students wishing to contract and pursue a commission in the U.S. Army as a Second Lieutenant may do so in one of four (4) ways: 1. be selected and accept an ROTC Scholarship, 2. complete MIS 101, 102, 201 and 202 classes with a grade of C or better, be accepted by the Professor of Military Science and sign a contract at either the end of their sophomore year or during the first semester of their junior year, 3. complete "basic camp" at Fort Knox, KY, during the summer between their sophomore and junior year, at which time the student is eligible to contract if he/she desires to do so, and 4. Veterans of any branch of military service may be eligible to contract at the start of their junior year if he/she desires to do so.

The Advanced Course

The Advanced Course is open to students who have been accepted by the professor of military science, have completed the Basic Course or the equivalent, and who are contracted in the ROTC Program. Students must complete the courses numbered greater than 300. In addition, students are required to attend a six-week ROTC Advanced Camp at Fort Bragg, North Carolina, between their junior and senior years. In exceptional cases, ROTC Advanced Camp may be deferred by the Professor of Military Science until the student completes the senior year. Students receive \$100.00 a month and may be commissioned in either the Army Reserve, Army National Guard or Active Army.

Scholarship Program

The Department of Army offers four, three and two year general Scholarships, two year Guaranteed Reserve Forces Duty and Basic Camp ROTC scholarships to selected students, regardless of enrollment in the Military Science Program, who have demonstrated outstanding leadership and scholastic ability. These scholarships pay full tuition for the respective number

of years at the University, mandatory fees, a stipend for textbooks, and \$100 per month during the academic year for the duration of the scholarship. Four year scholarship winners (with 1100 SAT Score) or three-year Advance designated Scholarship winners (with 1200 SAT Score) who attend the University of Maine will receive an additional \$2,500 per year grant from the University.

Simultaneous Membership Program

Students who are members of the Army National Guard or the Army Reserve and who have completed basic training may qualify for entry into the Advanced Course upon completion of their sophomore year and have 4 academic semesters remaining. The student is automatically advanced to the pay grade of E-5 in his or her Guard/ Reserve unit upon entering the ROTC program and receives training as a "third lieutenant." Upon completion of the Advanced Course the student is eligible to be commissioned as a Second Lieutenant in the National Guard, Army Reserve, or Active Army.

Professional Military Education Courses
All ROTC cadets must complete the following undergraduate type courses. (CCR145-3)

1. Written Communication Skills.
2. Human Behavior Skills.
3. Military History.
4. Computer Literacy.
5. Math Reasoning.

Recommended Courses:

1. Management Skills.
2. National Security Studies.

All colleges accept some Military Science courses toward degree completion. Ten credits from the MIS 300 and 400 level courses are accepted by the College of Arts and Humanities, College of Business Administration, College of Sciences and the College of Social and Behavioral Sciences. The College of Engineering accepts 3 credits from MIS 310 and MIS 420. The College of Education and College of Natural Resources, Forestry and Agriculture require students to meet with their advisors to determine course applicability toward program requirements. All Military Science credits count towards a student's overall GPA.

Areas of Specialization

Military Science	Credits
MIS 040 Mountain School	0
MIS 050 Northern Warfare School	0
MIS 060 Air Assault School	0

MIS 070 Airborne School	0
MIS 100 Leadership Laboratory (R-O)	0
MIS 101 Introduction to Leadership (R-O)	1
MIS 102 Introduction to the United States Army (R-O)	1
MIS 105 Military Physical Fitness (E)	1
MIS 201 Basic Military Skills (R-O)	1
MIS 202 Orienteering (R)	1
MIS 290 Basic Camp (R-O)	6
RPM 300 Global Wilderness Survival (E)	3
MIS 310 Advanced Leadership (R)	3
MIS 320 Advanced Tactics (R)	3
MIS Advanced Camp (R)	0-6
MIS 410 Military Management and Justice (R)	3
MIS 420 Leadership and Ethics (R)	3
TOTAL	15-21

Courses in Military Science

MIS 040 Mountain School
A 22 day school conducted in Vermont stressing basic mountaineering training, ropes, knots and rappelling as appropriate to the training conditions. Available only to students in the ROTC Program. (Pass/Fail Grade Only). Cr 0.

MIS 050 Northern Warfare School
A 30 day school conducted at the Northern Warfare school in Alaska. Available only to students in the ROTC Program. (Pass/Fail Grade Only). Cr 0.

MIS 060 Air Assault School
A 10 day school conducted at Ft. Campbell, Kentucky, on the tactical utilization of Army Helicopters. Available only to students in the ROTC Program. Students who graduate are awarded the Army Air Assault Badge. (Pass/Fail Grade Only). Cr 0.

MIS 070 Airborne School
A 3 week school conducted at Fort Benning, Georgia. Available only to students in the ROTC Program. Students who graduate are awarded the Army Parachutist Badge. (Pass/Fail Grade Only). Cr 0.

MIS 100 Leadership Laboratory
Leadership laboratory is available only to students enrolled/contracted in the ROTC pro-

(R) = Required
(R-O) = Required-Optional depending on specific commissioning program
(E) = Elective

am. Cadets develop and improve military leadership skills. Includes continuous counseling and periodic evaluations of cadet performance. In case of class conflicts an alternate Leadership Lab will be arranged. (Pass/Fail Grade Only). Cr 0.

MIS 101 Introduction to Leadership: Theory and Application

Includes study and discussions of leadership concepts, traits, beliefs, values, and ethics. Provides increased self-confidence through physical training in rappelling, mountaineering skills, leadership reaction course, and first aid. Practical application of leadership skills in classroom and outdoor laboratory environments. Leadership self assessment paper required. Participation in Leadership Laboratory (MIS 100) is suggested but optional. Cr 1.

MIS 102 Introduction to the United States Army

Considers past and current Army leaders and contrasting styles of leadership, the politics of leadership at increasing levels of responsibility and introduces the organizational structure role of the Army. Provides awareness and study of physical fitness and mental health interrelation. Develops communication skills to improve individual performance and group interaction. Participation in Leadership Lab (MIS 100) required. Cr 1.

MIS 105 Military Physical Fitness

Study of the United States Army physical fitness program, including aerobic exercises and strength-building programs which provide actual leadership and fitness opportunities. Emphasis on the importance of exercise and fitness to the individual and development of a personalized training program. Cr 1.

MIS 201 Basic Military Skills

Study and practice in military skills required during completion of the Army ROTC Basic course: Physical Fitness Program Planning, Military Correspondence, Oral Briefings and Communications, Command and Staff Functions, Basic Military First Aid and the Leadership Assessment Program. Subjects promote understanding of the Roles and Organization of the Army, World Military Powers, and the Principles of War. The Leadership Assessment Program investigates leadership techniques and the processes used in leadership situations. Par-

ticipation in Leadership Lab (MIS 100) is required. Cr 1.

MIS 202 Orienteering

A study of map reading and land navigation based on the sport of Orienteering and using topographic maps and compasses to study and practice navigation skills. Participants will need appropriate outdoor clothing and may experience rigorous physical activity. Participation in Leadership Lab (MIS 100) is suggested but optional. Cr 1.

MIS 290 ROTC Basic Camp

A 6 week summer camp conducted at Fort Knox, Kentucky. The student receives pay, and travel costs are defrayed by the Army. No military obligation incurred. Includes the role and mission of the U.S. Army, map reading and land navigation, first aid, marksmanship, leadership, physical training, parades, and tactics. Satisfies all Basic Course requirements. Four different cycles offered during the summer, but candidates are accepted during the entire spring semester. Participation in a physical fitness program during the spring semester is required. Students apply for enrollment to the Professor of Military Science. Selection is based on qualifications and merit. Cr 6.

MIS 310 Advanced Leadership and Army History (1770 to 1898)

Examines advanced principles of leadership applicable to both civilian and military careers. Includes fundamentals of leadership theory, psychology of leadership, leadership environment, interpersonal communication and contemporary human problems. Historical survey of U.S. Army, its leadership and contributions into the formative period of America history, 1770-1898. Participation in Leadership Laboratory (MIS 100) and FTX's is required. Cr 3.

MIS 320 Advanced Tactics

Covers rifle squad, platoon level tactics including offensive and defensive tactics, squad and platoon level patrolling skills, operation orders, combined arms tactics, field fortifications, camouflage and concealment at squad and platoon level. Students participate in intensive physical training, primary marksmanship instruction, land navigation skills and other basic soldier level training in preparation for attending Advanced Camp the summer between their junior

and senior year. Participation in Leadership Laboratory (MIS 100) and FTX's is required. Cr 3.

MIS 390 ROTC Advanced Camp

A 6 week camp conducted at Fort Bragg, NC. The student receives pay. Travel costs are defrayed by the U.S. Army. Environment is highly structured, stressing physical training and basic tactical training at squad and platoon leadership levels. Individual leadership training is evaluated throughout the full training period. Training includes: advanced land navigation skills, marksmanship training, tactical training, combined arms demonstrations, Army branch orientation and air mobile operations. Eight different cycles are offered during the summer. Participation in a structured physical fitness program during the spring semester prior to attending advanced camp is required. (Pass/Fail Grade Only). Cr 0-6.

MIS 410 Military Management, Justice and Leadership Assessment

Training management including preparation of training schedules and Battalion Training Management System. Military Law at the unit level and higher, non-judicial punishment and the Uniform Code of Military Justice, the uses and requirements of the Army installation and post support system, and the function and manipulation of the Army logistics system. Utilization of simulations to assess leadership potential through recognition, classification, and evaluation of behavior; feedback to provide basis for behavioral modification. Participation in Leadership Laboratory (MIS 100) and FTX's is required. Cr 3.

MIS 420 History (WWI to present), Leadership and Ethics Seminar

A consideration of military ethics including situations ranging from peacetime conduct to wartime activities through training and writing projects as well as case studies. Includes intensive investigation of the rules and regulations governing conduct during war, the staffing and operations of larger units, U.S. Army history from WWI to the present. Participation in Leadership Laboratory (MIS 100) and FTX's is required. Cr 3.

Naval Science

Professor of Naval Science CDR Goodman,
Associate Professor CDR Stevenson,
Assistant Professors LT Crotty, LT French, LT Pond, CAPT Wesche (USMC)

General Information

The Naval ROTC program is designed to train and educate well-qualified students for ultimate commissioning and active service as officers in the United States Navy and United States Marine Corps. Commissionees also receive a minor degree in Naval Science. In order to be eligible for application for this program a student must:

1. be a U.S. citizen
2. be at least 17 but less than 21 years of age
3. be physically qualified
4. possess satisfactory records of academic ability and moral integrity
5. demonstrate those characteristics desired of a Naval Officer; and
6. have no moral obligation or personal conviction that will prevent the bearing of arms.

The NROTC Scholarship Program offers the following benefits: all tuition paid, books furnished, \$100 per month subsistence allowance during the school year and a substantial uniform allowance. Eligible graduates of this program receive commissions in the United States Navy or Marine Corps and are required to serve on active duty for four years. High school students may apply for the national scholarship program between March 1st of their High School junior year to November 15th of their High School senior year. Application forms are available from any Navy recruiter and most guidance counselors. Early application is recommended, as this program is highly competitive. Students already enrolled in UMaine may also be eligible for non-national scholarships. Call the NROTC unit at 581-1551 for further information.

The NROTC College Program offers students not selected to receive a scholarship an opportunity to participate in NROTC. The monetary benefits of the College Program include a substantial uniform allowance and \$100 per month subsistence allowance during their junior and senior class years. Graduates of the College Program receive commissions and are required to serve on active duty for three years. Students may apply for the College Program from the beginning of their first year to the end of their sophomore year. For further informa-

tion concerning either program, contact your local Navy recruiter or the University of Maine NROTC unit. Telephone: (207) 581-1551.

Courses in Naval Science

NAV 100 Naval Leadership Laboratory
By permission of instructor. (Pass/Fail grade only) Cr 0.

NAV 101 Introduction to Naval Science
Examines the historical development of the Navy, the development of seapower, and its application in today's geopolitical world. Introduces the many career paths available in the navy and the Marine Corps. Focus on the responsibilities of the officer, the Navy's mission, general military information. Cr 2.

NAV 102 Naval Ships Systems I (Engineering)
Examines the engineering systems currently in use aboard a U.S. Naval Ship. Emphasis on shipboard propulsion systems with additional coverage of auxiliary equipment and ship structural design. Cr 3.

NAV 201 Naval Ships Systems II (Weapons)
An indepth study of the theory and principles of operation of contemporary naval weapons systems. Includes coverage of weapons system types, capabilities and limitations, theory of target acquisition, identification and tracking, trajectory principles, basics of naval ordnance. Cr 3.

NAV 202 Seapower and Maritime Affairs
An overview of United States Naval History. Introduces the nature of international challenges on the oceans of the world and explores current trends in maritime developments and national maritime policy. Cr 3.

NAV 301 Navigation and Naval Operations I
Provides fundamental understanding and practical working capability in safe navigation. Includes a comprehensive treatment of coastal piloting and introduces celestial and electronic navigation methods. Cr 3.

NAV 302 Navigation and Naval Operations II
Considers the functions and responsibilities of the Junior Naval Officer in the areas of shipboard operations and administration. Includes a comprehensive study of Naval communications procedures, formation maneuvering, replenishment at sea, fundamentals of three dimensional warfare and a thorough overview of inland and international rules. Prerequisite: NAV 301. By permission of instructor. Cr 3.

NAV 303 Naval Leadership and Management I
A study of effective management and leadership with focus on the human side of the complex, formal organizational reality of the Navy. Cr 3.

NAV 304 Naval Leadership and Management II
A study of the duties, responsibilities, and overall authority of a newly commissioned Officer including personnel and equipment management, counseling and interviewing, performance appraisal, the Navy Human Resource Management Support System, military law and division administration. By permission of instructor. Cr 3.

NAV 310 Evolution of Warfare
Traces historically the development of warfare from the dawn of recorded history to the present, focusing on the impact of major military theorists, strategists, tacticians and technological developments. The student requires a basic sense of strategy, develops an understanding of military alternative, and see the impact of historical precedent on military thought and actions. By permission of instructor. Cr 3.

NAV 410 Amphibious Warfare
A historical survey of the development of amphibious doctrine and the conduct of amphibious operations. Emphasis is placed on the evolution of amphibious warfare in the 20th century, especially during World War II. Present day potential and limitations on amphibious operations, including the rapid deployment force concept, are explored. By permission of instructor. Cr 3.

Surveying Engineering

Professor Tyler, (Chairperson);
Associate Professors Beard-Tisdale, Hintz, Leick, Onsrud;
Assistant Professor Collins, Egenhofer,
Faculty Associate Mundo

Undergraduate Program

The Department of Surveying Engineering offers a four-year undergraduate program leading to a bachelor of science degree in surveying engineering. Surveying Engineers design and use automated systems and techniques for efficiently collecting, processing, analyzing and disseminating spatial information about land and natural resources. Earth-orbiting satellites, cameras and digital imaging systems and computers capable of handling very large data sets are a few of the tools used by surveying engineers. Particular emphasis is placed on understanding and evaluating the quality of information. Surveying Engineers play a key role in both the protection of the environment and in the wise utilization of the nation's resources. They are involved in the design and construction of the nation's housing, roads, utilities and other built facilities.

The Surveying Engineering curriculum combines study in engineering and mathematics, and the physical sciences to provide a unique background so that students may solve engineering problems and produce engineering designs in fields associated with boundary surveying, cadastral systems, cartography, engineering surveying, geodesy, geographic information systems, hydrographic surveying, image processing, land information management, land use planning, photogrammetry, remote sensing and resource mapping. The curriculum is designed to foster in each student the capability to solve the problems of society that are susceptible to engineering treatment; to develop in the student a sensitivity to socially related technical problems; to help the student develop a sense of professionalism and the habit of ethical conduct; to help the student develop an understanding of the engineer's responsibility to protect the public health and safety; and to instill a desire in the student to maintain professional competence through life-long learning. The basic curriculum, combined with electives in engineering, the humanities and social sciences, and in the life sciences, and culminating with an engineering design experience, provide a broad base of knowledge for engineering practice in today's society.

Surveying Engineers may work in large cities or in remote wilderness areas. They may be located in modern office buildings or in exposed outdoor locations. Some graduates of this program work for large multi-national corporations while others have elected to work for small firms in rural areas using their skills to address

local problems. A few graduates are self employed in the surveying, mapping and land information fields. Although the curriculum provides thorough preparation for an effective professional career, graduates may also further their education with graduate programs in surveying engineering or they may do graduate work in law, business, or related engineering disciplines.

The program is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology.

Graduate Programs in Surveying Engineering

The Department of Surveying Engineering offers programs of study and research leading to Master of Science (thesis), Master of Engineering (non-thesis) or Doctor of Philosophy degrees in Surveying Engineering and a Master of Science in Geographic Information. Descriptions of the programs and general requirements for the advanced degrees can be found in the graduate school catalogue.

Courses in Surveying Engineering

SVE 101 Introduction to Surveying

An overview of the profession of surveying including the institutions of property and ownership, land survey and recording systems, professionalism, surveying in the United States, the present and future role of surveyors, the relationships between surveyors and users of surveying expertise. Lec 1. Cr 1.

SVE 111 Plane Surveying

Introduces plane surveying concepts including reference planes and surfaces, distance and angular measurement, traverse computations, horizontal and vertical curves, error propagation, area determination and stadia mapping. Prerequisite: high school trigonometry. Lec 3, Lab 3. Cr 4.

SVE 112 Advanced Plane Surveying

A continuation of SVE 111 including horizontal control networks, state plane coordinate systems, surveying, astronomy, earthwork computations and engineering surveys. Prerequisite: SVE 111, MAT 126. Lec 3, Lab 3. Cr 4.

SVE 221 Legal Aspects of Land Surveying

Covers property law, boundary law, conveyance of property, recording systems and procedures, interpretation and writing of land description. Prerequisite: SVE 111. Lec 3. Cr 3.

SVE 225 Land Development Design

Advanced design covering all phases of the land development process. Site evaluation includes consideration of boundary surveys, topography, soil analysis, hydrographic analysis, traffic evaluation, plus environmental, aesthetic and cultural considerations. Students design lot and building arrangements and design all streets, drainage channels, detention basins, culverts, sanitary sewers and storm sewers. Prerequisite: SVE 112. Lec 3, Lab 3. Cr 3.

SVE 271 Introduction to Geographic Information Systems

Covers traditional representation of spatial data and techniques for representing spatial data in digital form. Combines an overview of general principles associated with the implementation of geographic information systems and practical experience in the analysis of geographic information. Also covers typical operations on spatial information and techniques for analyzing spatial information. Students convert map data to digital form, perform coordinate transformations, and analysis. Prerequisite: Sophomore standing. Lec 2, Lab 1. Cr 3.

SVE 331 Photogrammetry

Includes procedures and methods used for deriving metric information from photographs, analog processes for using aerial photographs in production of topographic maps, flight planning and cost estimation in aerial mapping work. Introduction to photocoordinate measurement devices and their calibration. Prerequisite: SVE 111. Lec 2, Lab 3. Cr 3.

SVE 333 Digital Analysis of Times Series

Methods for digitalization and analysis of multidimensional signals, spectral analysis, FFT, autocorrelation, leakage, image restoration, enhancement, transformation. FIR, IIR and Kalman filtering. Prerequisites: MAT 258 and MAT 434 or equivalents. Cr 4.

SVE 361 Adjustment Computations

Covers least squares adjustment as applied to surveying, propagation of random errors and variance-covariance propagation, observation equation model, conditions between parameters, sequential solutions, observed parameters, minimal constraint solutions, statistical tests, laboratories. Some concepts from linear algebra and statistics reviewed. Prerequisite: MAT 258, MAT 262 or consent, SVE 281. Lec 3. Cr 3.

SVE 393 Junior Seminar

Selected topics of current interest within the surveying profession are discussed by outside

speakers and enrolled students. Juniors in Surveying Engineering must research, prepare and present a paper to receive credit. The seminar is open to anyone who chooses to attend. Prerequisite: junior standing or permission. Lec 1.

Cr 1.

SVE 394 Field Practice

Work experience in surveying engineering through the cooperative education program. Prerequisite: sophomore standing and 2.5 GPA.

Cr 3.

SVE 411 Hydrographic Surveying

Examines functions of hydrographic instruments operating from different types of marine platforms as well as the planning and operational aspects of hydrographic surveys. Emphasis on measurement instruments for position, tidal control and depth and magnetic, bottom, water and geological parameters. Prerequisites: SVE 112, MAT 228, SVE 441. Lec 3.

Cr 3.

SVE 432 Advanced Photogrammetry

Advanced topics in metric photogrammetry including advanced stereoscopic plotting instruments, analytical methods in stereoplotter orientation, aerial mapping control requirements, creation of digital data bases, design criteria in stereoscopic digital data collection, photogrammetric control extension, orthophotography. Prerequisite: SVE 331, SVE 361 or equivalent. Lec 3, Lab 3.

Cr 4.

SVE 433 Remote Sensing

Provides definition and overview of remote sensing, sensors, signatures and information. Topics include: electromagnetic radiation and interactive mechanisms, photographic systems, photometry and spectroradiometry, electro-optical sensors, non-imaging sensors, radar system, space platforms, information systems, processing, interpretation, application and practical utility of remotely sensed data, term project. Prerequisite: MAT 228, PHY 122. Lec 3, Lab 1.

Cr 4.

SVE 441 Geodetic Models

Include three dimensional geodesy, computations on the ellipsoid, conformal mapping, geometric properties of ellipsoids, normal sections, geodesics, geodetic datum definitions, direct and inverse solutions, adjusting networks on the ellipsoid, on the mapping plane and in space, reduction of observations and elements of physical geodesy, review of spherical trigonometry, differential geometry and complex variables. Prerequisite: MAT 228, SVE 111, SVE 281. Lec 3, Lab 1.

Cr 4.

SVE 451 Engineering Databases and Information Systems

Students develop a theoretical foundation for representation of knowledge in information systems. Logic based programming considered as a tool for fast prototyping and design of data structures. Also covers database management systems and their suitability for engineering data, the structure of a network DBMS, physical data storage and basic datastructures (list, tree,

Surveying Engineering Curriculum

First Year			
First Semester		Second Semester	
SVE 111 Plane Surveying	4	SVE 112 Advanced Plane Surveying	4
SVE 101 Introduction to Surveying	1	ENG 101 College Composition	3
MAT 126 Analytic Geometry and Calculus I	4	COS 221 Introduction to Computer Science II	3
COS 220 Introduction to Computer Science I	3	MAT 127 Analytic Geometry and Calculus II	4
ECO 120 Principles of Microeconomics	3	ECO 121 Principles of Macroeconomics or Humanities/Social Sciences Elective (1)	3
TOTAL HOURS	15	TOTAL HOURS	17
Sophomore Year			
First Semester		Second Semester	
SVE 221 Legal Aspects of Land Surveying	3	SVE 225 Land Development Design	3
SVE 271 Introduction to Geographic Information Systems	3	PHY 122 Physics for Engineers and Physical Scientists II	4
CHY 113 Chemical Principles I	4	MAT 258 Introduction to Differential Equations and Linear Algebra	4
MAT 228 Analytic Geometry and Calculus III	4	MAT 332 Statistics for Engineers	3
PHY 121 Physics for Engineers and Physical Scientists I	4	Humanities/Social Science Elective (1)	3
TOTAL HOURS	18	TOTAL HOURS	17
Junior Year			
First Semester		Second Semester	
SVE 361 Adjustment Computations	3	SVE 441 Geodetic Models	4
SVE 451 Engineering Databases	4	SVE 432 Advanced Photogrammetry	4
SVE 331 Photogrammetry	3	SVE 393 Junior Seminar	1
GES 101 Introduction to Geology	4	ENG 317 Business and Technical Writing	3
Humanities/Social Science Elective (1)	3	Engineering Science/Design Elective	3
TOTAL HOURS	17	TOTAL HOURS	19
Senior Year			
First Semester		Second Semester	
SVE 433 Remote Sensing	4	SVE 493 Senior Seminar	1
REP 473 Land Economics	3	REP 474 Land Use Planning	3
Engineering Science/Design Elective	3	SVE 460 Communication and Community Information System Design	4
Engineering Science/Design Elective	3	Engineering Science/Design Elective	3
Free Elective (2)	3	Engineering Science/Design Elective	3
TOTAL HOURS	16	TOTAL HOURS	16

MINIMUM CREDIT HOURS: 129

Electives:

1. 18 credit hours of humanities and social sciences are required for graduation. Of the 18 required credits, it is required that the humanities program must contain at least one 3-hour sequence in a specific sequence include at least two upper level courses.
2. Free electives are any technical or non-technical courses offered for credit by any academic unit of the University.

washing), transaction concept, design of database scheme for engineering application. Prerequisite: COS 220 and SVE 281 or permission. Lec 3, Lab 1. Cr 4.

SVE 452 Geometry and Computer Graphics
A study of analytical geometry on computer systems, including representation of topological and metric properties of two dimensional geometric structures. Overview of raster based systems. Examines computer graphics hardware, design of device independent programs for graphics output, coordinate systems and transformation, principles of effective visual communication and their applications. Prerequisite: SVE 451 or permission. Lec 3, Lab 1. Cr 4.

SVE 460 Community Information System Design
A capstone design course for seniors in Surveying Engineering. Integrates knowledge and skills acquired in previous courses and has a practical focus in which theory must be applied in a realistic problem solving environment. Students will function in the role of consultants and be responsible for the development of design options and solutions for a designated client. Students are required to work in groups to define project scope, conduct research and produce a final report. Lec 3. Cr 3.

SVE 471 GIS Applications
Introduces both the conceptual and practical aspects of developing GIS applications. Covers issues from project planning through project implementation. Students will be required to develop specific applications using Arc/Info software. Course grades will be based on class participation, completion of several exercises and satisfactory development and completion of a project. Exercises will be used to develop specific skills and will be completed individually. Projects will be implemented by groups and each group will be responsible for a final project report, an interactive demonstration and presentation to the class and outside agency representatives as appropriate. Lec 3. Cr 3.

SVE 493 Senior Seminar
Presentations by students and faculty of pertinent happenings in surveying. Discussions based upon term projects, literature reviews, current events, or thesis topics. Professional practice and ethics are explored with members of the surveying community. Each participant prepares and moderates a seminar session. A paper is required. Prerequisite: senior standing or permission. Lec 1. Cr 1.

SVE 496 Surveying Engineering Practice
Applies theoretical concepts introduced in previous surveying, geodesy, photogrammetry and adjustments to the solution of comprehensive problems in surveying engineering. Emphasis on laboratory work including field observations. Prerequisite: SVE 112, SVE 361, SVE 432, SVE 542. Lec 2, Lab 3. Cr 3.

SVE 498 Selected Studies in Surveying Engineering
Topics in surveying, photogrammetry, remote sensing, land information systems, and geodesy not covered in other courses. Content varies. May be repeated for credit, with departmental permission. Prerequisite: permission. Cr 1-3.

SVE 499 Senior Thesis
Required for seniors in Surveying Engineering. Students select an area of study, perform a full literature search, conduct the necessary research and report results in thesis format. The thesis must meet University format requirements. Prerequisite: senior standing. Lec 1. Cr 3.

SVE 521 U.S. Public Land Survey System
Historical basis of the U.S. Public Land Survey System. Original and dependent retracement surveys; geodetic aspects; proportioning; subdivision of sections; fractional survey problems; evaluation of field evidence; uniqueness with regard to particular states; land information systems within the U.S.P.L.S.S. Prerequisite: SVE 221 or consent of instructor. Lec 3. Cr 3.

SVE 522 Environmental Law and Resource Regulation
Selected topics in common law solutions to environmental problems, major statutes in air, water, solid waste, and coastal zone management, environmental litigation, land use controls, water rights. Prerequisite: permission. Lec 3. Cr 3.

SVE 525 Computer Law
Current status of computer law: rights of privacy, freedom of information, confidentiality, work product protection, copyright, security, legal liability; impact of law on use of databases and spatial datasets; legal options for dealing with conflicts and adaptations of law over time. Cr 3.

SVE 526 Land Information Systems in Developing Countries
Colonial Spanish, English, French land records traditions and alternatives reviewed; goals and purposes of land tenure systems with attention to social, political, legal, economic, organizational, technical issues examined. Cr 3.

SVE 531 Analytical Photogrammetry
Considers optimization of data collection for control extension by photogrammetry and semianalytical and analytical methods of aerotriangulation. Examines reliability considerations in large blocks of aerial photographs. Covers real-time and a posteriori blunder detection techniques including sparsity of equations in large blocks of photographs, recursive partitioning techniques, self-calibration in aerotriangulation, analytical applications in digital imagery, techniques in stereo-correlation. Prerequisite: SVE 361, SVE 432. Lec 3. Cr 3.

SVE 532 Close Range Photogrammetry
Topics include network optimization in non-topographic mensuration, auxiliary constraints in photogrammetric adjustments, methods of

calibration of close-range cameras, use and limitations of non-metric cameras, accident and crime scene reconstruction, applications in architecture, construction, industry, mining, biomedicine, X-ray photogrammetry, and scanning electron microscopy. Prerequisite: SVE 361, SVE 432. Cr 3.

SVE 533 Image Processing in Remote Sensing
Introduction to image processing techniques suitable to the processing of remotely sensed data. Topics include image digitization, quantization and sampling; image storage, display and image file management; geometric operations, rectification, registration and resampling techniques; image enhancements, point operations and filtering; multispectral imaging concepts, supervised and unsupervised classification techniques, clustering; Fourier transforms, intensity-hue-saturation transform; interfaces to image processing systems. Prerequisite: SVE 433. Lec 2, Lab 2. Cr 3.

SVE 541 Satellite Geodesy
Topics include: stellar coordinate systems, precession, nutation, time systems, troposphere, ionosphere; satellite orbital theory, Global Positioning System (GPS), space segment, correlating receivers and code-less receivers; pseudo ranges; single, double, and triple difference phase processing; point positioning, relative positioning; dual frequency processing; code smoothing techniques; positioning of moving platforms; simultaneous orbital and baseline estimation; GPS vector adjustments and combination with terrestrial observations; astronomical azimuth, latitude and longitude determination; proper motion, aberration, parallax. Prerequisite: SVE 361. Lec 3. Cr 3.

SVE 542 Integrated Geodesy
Topics include: measurement of gravity and gravity gradients; gravimeters; reduction due to height, terrain, and tides; isostasy; normal gravity fields, geodetic reference systems; height systems, spirit leveling and gravity; elements of potential theory, spherical harmonic expansions of global fields such as geoid undulations, deflections of the vertical, gravity anomalies; Bruns, Stokes and Meinesz formulae; the integrated geodetic model; local geoid from GPS satellites and gravity. Prerequisite: SVE 361. Lec 3. Cr 3.

SVE 551 Interactive Query Languages
Covers types of interactive query languages, specific needs in Land Information System applications, transformation between the database conceptual schema and user views. Advanced topics (e.g. automatic name placement, generalization). Prerequisite: SVE 452. Lec 3. Cr 3.

SVE 552 Interactive Land Information Systems
Advanced treatment of the interactive input and update of data in a Land Information System. Emphasis on treatment of consistency constraints (including geometrical consistency constraints) and solution to a conceptual simple

model of interaction with the user. Prerequisite: SVE 551, Lec 3. Cr 3.

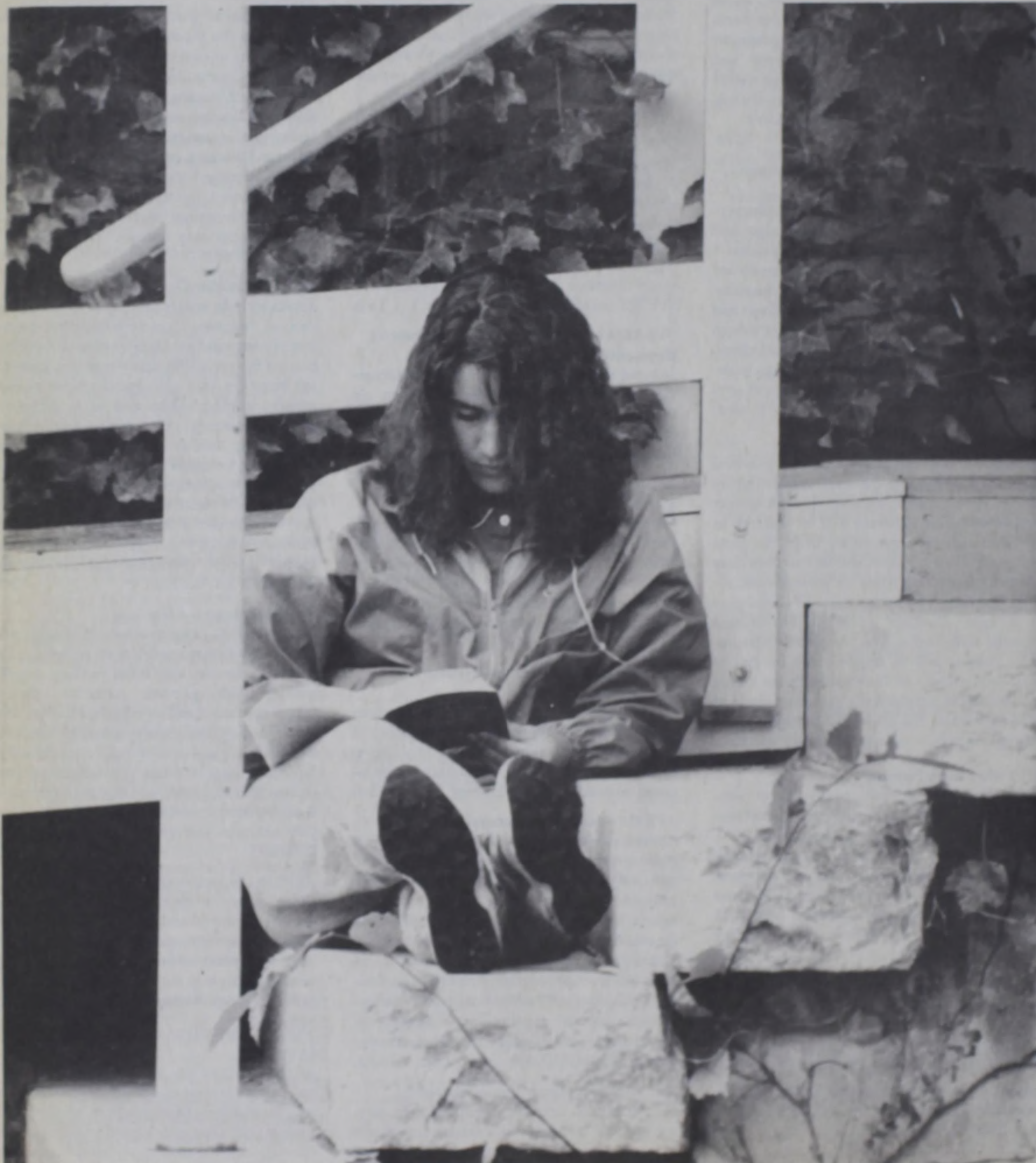
SVE 561 Advanced Adjustment Computations

Topics include: condition equation model, mixed model, generalized inverses of matrices, inner constraint solutions, multi-dimensional normal distributions and confidence regions,

generalized linear hypothesis testing; internal and external reliability of geodetic networks; blunder detection and data snooping; variance component estimation; deformation networks and analysis; large systems (banded and patterned normal matrices, reordering). Prerequisite: SVE 361, Lec 3. Cr 3.

SVE 598 Selected Studies in Surveying Engineering

Topics in surveying, photogrammetry, remote sensing, land information systems and geodesy. Content varies to suit current needs. May be repeated for credit. Cr 1-3



School of Engineering Technology

Professors McDonough (Director), Crosby, Gould, Hayes;
Associate Professors Elliott, Freeman, Furbish, Gray, Hermansen, Johnston, Metcalf;
Assistant Professors Dunning, Dvorak, Viger;
Instructor Madden;
Lecturer Newman

Engineering technology programs are offered at the Bachelor's Degree level.

Bachelor's programs are offered in bio-resource engineering technology, construction management technology, electrical and mechanical engineering technology. The programs are designed to prepare students for practical work in the application of scientific and engineering principles in the solution of practical problems. The BSCMT, BSEET, and BSMET programs are accredited by the Technology Accreditation Commission of the Accreditation Board for Engineering and Technology (TAC of ABET).

Graduation Requirements

- An accumulative average of 2.0 in all major courses (i.e., CET, EET, MET).
- An accumulative average of 2.0.
- Passing grades in all other required courses in the program of study.
- A minimum of 131 degree hours, (depending on program).

Transfer Credit

All students who transfer to the School of Engineering Technology from another institution must earn a minimum of 36 hours of Orono courses to qualify for the B.S. degree.

Degree credit will be allowed for appropriate courses in which grades of "C" or above have been received from accredited *degree* programs. Degree credit is not allowed for courses taken in certificate or diploma programs.

All students who transfer to the School of Engineering Technology B.S. programs with an appropriate Associate degree from a TAC of ABET accredited program will receive full credit for that degree.

Evaluation of all such courses and programs, or approval of degree credit and possible equivalency rests with the Director of the School of Engineering Technology.

Bachelor of Science in Bio-Resource Engineering Technology

The B.S. in Bio-Resource Engineering Technology is offered by the faculty of the Department of Bio-Resource Engineering.

The curriculum provides training in specific aspects of engineering technology together with instruction in business, economics, com-

puting and accounting. It is designed to prepare graduates for jobs in the application of equipment, systems and technologies to the production, processing, shipping, storage and handling of food and fiber products from agriculture, forestry, fisheries and aquaculture.

Graduates will find employment as managers or maintenance supervisors of production and processing facilities, technical representatives for machinery and equipment companies, and support, testing or installation personnel for manufacturers, material suppliers, processors, contractors and primary producers.

This degree requires satisfactory completion of at least 124 degree hours at an accumulative grade point average of not less than 2.0 in a course of study which conforms to the following curriculum.

Graduates of the associate degree programs in the College of Engineering who are qualified for transfer into baccalaureate programs may transfer up to 60 credits for courses in which they have received a grade of "C" or better. Two additional years will be required to complete the degree of Bachelor of Science in Bio-Resource Engineering Technology.

Construction Management Technology

The Construction Management Technology program is a blend of civil engineering technology and construction business management. The first two years of the curriculum are equivalent to an associate degree in civil engineering technology. Starting with a basic grounding in mathematics and the physical sciences, the student is concurrently and progressively taught surveying, materials testing, structural analysis and design, and highways. The program then moves into technical construction topics, such as estimating, scheduling, and heavy-highway and building methods and equipment. Subsequently, the curriculum features management courses tailored to construction industry financial and operating practices. There is extensive use of computer application programs throughout.

With a Bachelors of Science degree, graduates are prepared to initially perform technical/supervisory tasks in the field and office, and to then advance to management positions. Prospective employers include construction contractors and subcontractors, private and public construction inspection agencies and

contract administrators, and major facility owners. There may also be similar employment opportunities in other project-oriented industries, such as aircraft, aerospace, and ship-building. On the purely technical side, there are soils, foundation and building materials testing firms.

Electrical Engineering Technology

This curriculum is designed to provide a strong background in the fundamentals, and a broad exposure to a variety of subject areas in the electrical field. Based on solid preparation in circuit analysis, mathematics, physics, and computer techniques, the student will take applied courses in digital and linear electronics, communications, microprocessors, power systems and control systems. All EET courses have a strong practical orientation, and nearly all courses are supplemented with hands-on laboratory experience. Subject matter is generally similar to that covered in the electrical engineering curriculum, with less emphasis on mathematical and theoretical rigor, and a greater bent to the applied.

Electrical engineering technology graduates are intended to fill a niche between the technician and the design engineer; graduates find professional entry-level positions in the production engineering, manufacturing engineering, field engineering, test engineering, and quality control fields, as well as related areas, in such firms as public utilities, paper mills, electronics manufacturers, etc. Students enroll in a four year program leading to a Bachelor of Science degree in Electrical Engineering Technology.

Mechanical Engineering Technology

The field of mechanical engineering technology includes mechanical design, manufacturing processes, energy production and utilization, and the economics of these activities. Students also obtain a solid foundation in basic sciences, mathematics, communication skills and the humanities.

Classes emphasize applied engineering and are supplemented by extensive laboratory experience. Students enroll in a four year program leading to a Bachelor of Science degree in Mechanical Engineering Technology. Students are urged to obtain technical employment during each summer recess. Participation in an op-

Bio-Resource Engineering Technology Curriculum

First Year

Fall Semester		Spring Semester	
BRT 110 Introduction to Bio-Resource Engineering Technology	3	BRE 268 Computer Aided Design and Drafting	3
ENG 101 English Composition	3	COS 100 Introduction to Personal Computers	3
NFA 117 Issues and Opportunities	1	MAT 164A Analytical Geometry and Introductory Calculus	3
INT 110 Modern Economic Problems	3	SPC 103 Fundamentals of Public Communications	3
MAT 142A Algebra and Trigonometry	3	PHY 112 General Physics II	4
PHY 111 General Physics I	4	OR	
OR		PHY 108 Basic Physics	4
PHY 107 Basic Physics	4	TOTAL HOURS	16
TOTAL HOURS	17		

Second Year

Fall Semester		Spring Semester	
REP 138 Agribusiness Accounting I	3	EET 315 Circuits, Machines, and Electronics	3
BMB 207 Fundamentals of Chemistry	3	ENG 317 Technical Writing	3
MAT 246A Introductory Calculus	4	MET 150 Statics	3
NRC 100 Introduction to Natural Resource	3	Humanities Electives	3
TOTAL HOURS	14	Technical Electives	3
		TOTAL HOURS	16

Third Year

Fall Semester		Spring Semester	
BRT 365 [*] Water Supply and Waste Management	3	BRT 367 Power and Biomass Industries	3
BRE 281 Elementary Plane Surveying	1	BRT 364 [*] Automation and Process Control	3
MET 233 Thermodynamics	3	BRT 368 Electrification	3
MET 219 Strength of Materials	3	MET 217 Dynamics	3
Humanities Elective	3	MET 355 Materials	3
Technical Elective	3	Technical Elective	3
TOTAL HOURS	16	TOTAL HOURS	18

Fourth Year

Fall Semester		Spring Semester	
BRT 360 Processing Machinery	3	BRT 363 Buildings and Environment	3
BRT 362 Fluid Power Technology	3	BRT 369 Processing Technology	3
BRE 380 Senior Seminar	1	REP 465 Food and Fiber Marketing	3
MET 261 Design I	3	Humanities Elective	3
Technical Elective	3	Technical Elective	3
BRT 392 Senior Capstone Project	1	BRT 392 Senior Capstone Project	2
TOTAL HOURS	14	TOTAL HOURS	17

TOTAL CREDIT FOR GRADUATION: 124

*These courses are taught alternate years so may be taken in either the third or fourth years.

tional Co-op program is also encouraged. Graduates work in a wide range of careers including product development, design, testing, manufacturing, operation and maintenance, marketing, sales and administration.

Courses in Engineering Technology

CET 101 Elementary Surveying

A study of surveying instruments and their use in the measurement of angles and distances including methods and computations for control, topographic and engineering surveys.

Preparation of topographic maps, profile and cross section sheets. Corequisite: MAT142A. Lec 3, Lab 3. Cr 4.

CET 102 Advanced Surveying

Introduces photogrammetry and boundary surveying. Covers subdivision computations and layout, higher-order control surveying, state plane coordinates, construction surveying. Prerequisites: CET 101 and MAT142A. Lec 3, Lab 3. Cr 4.

CET 121 Materials Properties and Testing

The study and testing of the properties of materials (timber, steel, asphalt, concrete, and aggregates) used in civil engineering construction. Also introduces elementary statistics in the evaluation of data from tests of construction materials. Prerequisite: PHY 107 or PHY 111. Lec 3, Lab 2. Cr 4.

CET 130 Construction Drawing

A study of basic building structural systems, materials, and methods, and the graphical representation of same in the most customary forms of construction drawings as prepared by architects, engineers, and contractors. Prerequisite: MET 121. Lec 2, Lab 2. Cr 3.

CET 211 Structural Mechanics

Considers analytical solutions of force systems. Load, shear, moment and deflection values are solved for in beams, trusses, and frames under static loading. Study of stresses and strains that occur as structural members are subjected to shearing, tensile, compressive and flexural forces. Prerequisite: PHY 107 or PHY 111, COS 100 or equivalent. Lec 3, Rec 2. Cr 4.

CET 212 Structural Design

Design of wood beams and columns, steel beams, columns and tension members, and reinforced concrete beams. Covers building code requirements for loads including dead, live, snow, wind and earthquake. Prerequisite: CET 211. Lec 3, Lab 2. Cr 4.

CET 220 Selected Topics in Construction Management Technology

Topics in Engineering Technology not regularly covered in other courses. Content is varied to suit individual needs. May be repeated for credit. Prerequisite: permission. Cr 1-4.

CET 222 Construction Materials

Continued study of the properties of materials used in civil engineering construction. Emphasis on soils including index properties, classification systems, moisture, drainage, frost action, and site investigations. Prerequisite: CET 121. Lec 2, Lab 2. Cr 3.

CET 226 Principles of Construction Estimating and Scheduling

Principles and application of construction cost estimating and construction scheduling (CPM). Prerequisite: CET 130. Lec 3. Cr 3.

CET 231 Construction Technology

Considers construction technology at the production management level including equipment utilization and costs, temporary struc-

res, construction systems, formwork design and construction inspection. Prerequisite: CET 6. Prerequisite or corequisite: CET 212. Lec 3, Lab 2. Cr 3.

CET 232 Civil Works Technology

Topics related to civil engineering site work, highway engineering, drainage, heavy construction and public works including roadway design, construction, earthwork for heavy construction, hydraulics, hydrology, open channel flow, pipe flow sewers, utilities, and public works operations. Prerequisite: CET 102 or permission. Lec 2, Lab 3. Cr 3.

CET 240 Civil Management Technology

Office aspect of civil engineering management including basics of contract law, writing specifications for a contract and interpreting specifications for inspection, professional ethics, arbitration and the engineer as an expert witness, distinguishing relationships in partnerships and corporations. Lec 3. Cr 3.

CET 252 Surveying Communications

Topics include legal descriptions, surveying reports, layout plans, topographic mapping, boundary retracement plats, digitizing information, GIS/LIS, development design plans, highway plans, site plans and layout plans. Prerequisite: CET 102, MET 121. Lec 2, Lab 2. Cr 3.

CET 320 Construction Methods and Equipment

General engineering principles are applied to problems related to heavy, highway, and foundation construction. Topics include excavation, embankments, support of excavation, dewatering, pile driving, heavy lifting, mass concreting. Prerequisites: CET 212, CET 222, CET 231, CET 32. Lec 3. Cr 3.

CET 322 Computer Applications in Construction Management Lab

Microcomputers, printers, plotters, and digitizers are used to operate programs for construction management applications in scheduling, estimating, document control, spreadsheet analysis. Prerequisites: CET 226, CET 320, COS 100. Lab 6. Cr 3.

CET 394 Construction Management Technology Practice

Cooperative work experience at full-time employment for at least a continuous 10 week period. Junior or senior standing in CMT program. Summers only. (Pass/Fail grade only). Cr 3.

CET 452 Construction Documents and Administration

An advanced study of technical documents such as drawings, specifications, contracts, documents, etc., and administrative procedures which govern the work of construction projects. Lec 3. Cr 3.

CET 454 Contractor's Business Practices

A detailed study of contractor's methods for operating a construction firm at the project and headquarters levels. Topics include licensing,

Construction Management Technology Curriculum			
First Semester		Second Semester	
CET 101 Elementary Surveying	4	CET 102 Advanced Surveying	4
COS 100 Introduction to Personal Computers	3	CET 121 Materials, Properties and Testing	4
GET 121 Technical Drawing	3	CET 130 Construction Drawing	3
MAT 142A Algebra and Trigonometry	3	MAT 164A Analytical Geometry and Introductory Calculus	3
PHY 111 Technical Physics I	4	PHY 112 Technical Physics II	4
TOTAL HOURS	17	TOTAL HOURS	18
Third Semester		Fourth Semester	
CET 211 Structural Mechanics	4	CET 212 Structural Design	4
CET 222 Construction Materials	3	CET 231 Construction Technology	3
CET 226 Principles of Construction Estimating and Scheduling	3	CET 232 Civil Works Technology	3
ENG 101A Critical Written Expression	3	CET 240 Civil Management Technology	3
MAT 246A Introductory Calculus	4	SPE 101A Oral Communications	3
TOTAL HOURS	17	TOTAL HOURS	19
Fifth Semester		Sixth Semester	
BUA 201 Principles of Accounting I	3	BUA 331 Labor Management Relations	3
CET 320 Construction Methods and Equipment	3	CET 322 Computer Applications in Construction Management	1
MAT 215 Introduction to Statistics for Business and Economics	3	ENG 212 Intermediate Composition	3
POS 100 American Government	3	SOC 101 Introduction to Sociology	3
Technical Elective	3	Economics Electives	3
Technical Elective	3	TOTAL HOURS	13
TOTAL HOURS	15		
Seventh Semester		Eighth Semester	
CET 452 Construction Documents and Administration	3	CET 458 Management of Construction	3
CET 454 Contractor's Business Practices	3	MET 484 Engineering Economics	3
ENG 317 Technical Writing	3	PSY 100 General Psychology	3
SPC 257 Business and Professional Communication	3	Humanities/Social Science Elective	3
Technical Elective	3	Physical Science Elective/Lab	3
TOTAL HOURS	15	TOTAL HOURS	15
<p>TOTAL DEGREE HOURS REQUIRED FOR BACHELOR'S DEGREE: 133 STUDENT MUST SEE ADVISOR FOR APPROVAL OF ALL ELECTIVES Lists of approved Humanities/Social Science, Technical, and Economic elective are available in 221 East Annex.</p>			

bonding, financing, financial reports, estimating, bidding, contracting, subcontracting, purchasing, cost and schedule controls, and billings. Prerequisites: BUA 201, CET 240, CET 322. Lec 3. Cr 3.

CET 458 Management of Construction

This is the capstone course for Construction Management Technology. Principles of management are applied at the project, activity, and task level to examine human and mechanical factors that affect productivity. Reports and case study analyses are used to illustrate principles.

Prerequisites: BUA 331, CET 452, CET 454, ECO 121, ENG 317, SPC 257. Lec 3. Cr 3.

CET 460 Advanced Construction Estimating

A detailed study of the construction contractor's bid estimating process, including calculation of labor and equipment cost rates, crew cost rates and productivity, unit costs, and project and general overhead costs. Students prepare a complete bid estimate. Other topics include historical costs, cost indexing, processing and analysis of subcontractor quotations, and conceptual estimating. Prerequisite: CET 226. Lec 3. Cr 3.

Electrical Engineering Technology Curriculum

First Semester		Second Semester	
COS 100 Introduction to Personal Computers	3	EET 112 Circuit Analysis II	5
EET 111 Circuit Analysis I	5	GET 121 Technical Drawing	3
ENG 101A Critical Written Expression	3	MAT 164A Analytical Geometry and Introductory Calculus	3
MAT 142A Algebra and Trigonometry	3	PHY 108 Technical Physics II	4
PHY 107 Technical Physics I	4	SPE 101A Oral Communications	3
TOTAL HOURS	18	TOTAL HOURS	18
Third Semester		Fourth Semester	
COS 220 Introduction to Computer Science II(c)	3	EET 200 Electrical Engineering Technology Seminar	1
EET 241 Linear Electronics I	4	EET 242 Linear Electronics II	4
EET 271 Digital Electronics	4	EET 274 Introduction to Microcomputers	4
ENG 230A Business, Professional and Technical Writing	3	MAT 368A Ordinary Differential Equations	3
MAT 246A Introductory Calculus	4	Humanities/Social Science Elective	3
TOTAL HOURS	18	TOTAL HOURS	15
Fifth Semester		Sixth Semester	
EET 341 Analog Integrated Circuits	4	EET 312 Linear Systems I	3
EET 375 Microcomputer Applications	4	EET 321 Electrical Machinery	3
Science/Mathematics Elective	3	EET 382 Electronic Communications	3
Technical Elective	3	MAT 369A Applied Statistics for Engineering Technology	3
TOTAL HOURS	17	Humanities/Social Science Elective	3
		TOTAL HOURS	15
Seventh Semester		Eighth Semester	
EET 422 Power Systems I	3	EET 423 Power Systems II	3
EET 425 Linear Systems II	3	MET 444 Engineering Economics	3
MET 233 Thermal Science	3	Technical Elective	3
Technical Elective	3	Humanities/Social Science Elective	3
Humanities/Social Science Elective	3	Humanities/Social Science Elective	3
TOTAL HOURS	15	TOTAL HOURS	15

TOTAL CREDIT HOURS REQUIRED FOR BSEET DEGREE: 133

Lists of approved electives are available in 221 East Annex. Of the five humanities/social electives required for the BSEET degree, one three-course sequence (introductory course plus two beyond), or 2 two-course sequences (introductory plus one beyond) must be taken.

CET 462 Advanced Construction Scheduling
A detailed study of construction scheduling techniques. Topics include activity definition and duration; network design and analysis using activities on node and arrow (CPM/AON) methods; resource leveling; updating. Simulation using Monte Carlo methods is introduced. Contractual implications of scheduling are examined. A construction project is scheduled using computerized programs. Prerequisite: CET 226. Lec 3. Cr 3.

CET 498 Selected Topics in Construction Management Technology
Topics in Engineering Technology not regularly covered in other courses. Content varies to suit individual needs. May be repeated for credit. Prerequisite: junior or senior standing; consent of instructor. Cr Az.

EET 111 Circuit Analysis I
A non-calculus based introduction to elementary circuit analysis techniques as applied to d-c networks including the basic laws and theorems used in linear circuit analysis. Laboratory

work stresses the proper use of d-c instruments. Corequisite: MAT142A. Lec 2, Rec 6, Lab 3.

Cr 3

EET 112 Circuit Analysis II
Continuation of EET 111. A non-calculus introduction to a-c circuits, including the study of reactive components and the application of phasor analysis to singlephase and polyphase a-c circuits in the steady state. Prerequisite: EET 111. Corequisite: MAT164A. Lec 3, Rec 3, Lab 1. Cr 3

EET 200 Electrical Engineering Technology Seminar

Exploration of topics important to the career development of EET students, such as career opportunities, structure and organization of industry, and professional responsibilities. Prerequisite: Sophomore standing in the EET program. (Pass/Fail Grade Only). Lec 1. Cr 1.

EET 215 Electrical Circuits

Electrical concepts; steady-state analysis of DC and AC circuits; first-order transients. Prerequisites: PHY 108 or PHY 112, MAT164A. MET majors or permission. Lec 3. Cr 3

EET 241 Linear Electronics I

Topics include: principles of operation of semiconductor diodes, transistors, and FETs, applications to rectifier and filter circuits, d-c analysis and design of transistor and FET amplifiers, ac analysis and design of transistor amplifiers. Prerequisite: EET 112. Lec 3, Lab 3. Cr 6

EET 242 Linear Electronics II

A continuation of EET 241, including application. Covers amplifier frequency analysis, power amplifiers, PNP devices, linear integrated circuits, voltage regulators, feedback and oscillators. Prerequisite: EET 241. Lec 3, Lab 3. Cr 6

EET 271 Digital Electronics

A study of combinational and sequential digital logic design with SSI, MSI and programmable devices. Major topics are Boolean algebra, Karnaugh maps, variable entry maps (VEM's) and ASM charts. Lec 3, Lab 3. Cr 6

EET 274 Introduction to Microcomputers

Introduction to the programming of the microcomputer in machine and assembly language. The basic architecture of the microcomputer is introduced, including microprocessors, registers, control units, memory and I/O. Prerequisite: COS 100. Corequisite: COS 220. Lec 3, Lab 3. Cr 6

EET 282 Electronic Communications

Fundamentals of communications electronic circuits and systems, emphasizing modulation and detection, transmitters and receivers, transmission lines, multiplexing, pulse systems, and data communications. Prerequisite: EET 241. MAT246A. Lec 3, Lab 3. Cr 6

EET 312 Linear Systems I

A rigorous treatment of waveform analysis, voltage-current relationships of circuit components, the basic time domain circuit, circuit

analysis by Laplace transforms, and system considerations. Prerequisites: EET 112, MAT 368A. Lec 3. Cr 3.

EET 321 Electrical Machinery
Theory, performance characteristics and basic operational control of DC and AC machines. Including basic theory and application of power transformers. Introduction to per-phase and per-unit analysis. Prerequisite: EET 112. Corequisite: MAT 368A. Rec 3, Lab 3. Cr 4.

EET 330 Electrical Applications
Applications of interest to students in the mechanical field, such as electrical measurements and instrumentation, motors and generators and their control, feedback control systems, and programmable logic controllers. MET juniors or permission. Prerequisite: EET 215. Lec 2, Lab 2. Cr 3.

EET 341 Analog Integrated Circuits
Operational amplifiers and their characteristics and applications emphasized. Voltage regulators, active filters, A to D converters, phase-locked loops, multipliers and timers are also covered. Prerequisite: EET 242. Lec 3, Lab 3. Cr 4.

EET 372 Digital Electronics II
Theory and application of digital electronics with emphasis on sequential circuit analysis and synthesis and asynchronous and synchronous circuits. Circuits encountered in computer and other digital applications introduced. Prerequisite: EET 271. Lec 3, Lab 3. Cr 4.

EET 375 Microcomputer Applications
A continuation of EET 274. Emphasis on the application of the microcomputer to problems in engineering technology including A/D and D/A conversion, interfacing, and the problems encountered in writing supervisory programs. Prerequisites: EET 271 and EET 274. Lec 3, Lab 3. Cr 4.

EET 394 Electrical Engineering Technology Practice
Cooperative work experience at full-time employment for at least a ten-week period. May be repeated for credit. Prerequisite: Junior standing and permission. (Pass/Fail grade only). Cr 1-3.

EET 422 Power Systems I
Examines control of AC and DC motors including programmable controllers, industrial solid state electronics, including theory and application of four layer devices, and transducers used as control devices. Covers design of open loop control systems as well as three phase circuit analysis and analysis of power system networks by matrix algebra. Introduction to symmetric components. Prerequisite: EET 321. Lec 3. Cr 3.

EET 423 Power Systems II
Covers electric power systems, transmission lines, circuit constants, per-unit values, fault analysis, stability studies, principles of load flow control. Prerequisite: EET 322. Lec 3. Cr 3.

Mechanical Engineering Technology Curriculum			
First Semester		Second Semester	
COS 100 Introduction to Personal Computers	3	GET 126 Machine Drawing	3
ENG 101A Critical Written Expression	3	MAT 164A Analytical Geometry and Introductory Calculus	3
GET 121 Technical Drawing	3	MET 107 Machine Tool Laboratory I	3
MAT 142A Algebra and Trigonometry	3	MET 150 Statics	3
PHY 107 Technical Physics I	4	PHY 108 Technical Physics	4
TOTAL HOURS	16	SPE 101A Oral Communications	3
		TOTAL HOURS	19
Third Semester		Fourth Semester	
INT 211 Machine Tool Laboratory II and Welding	2	EET 215 Electrical Circuits	3
MAT 246A Introductory Calculus	4	MET 212 Machine Tool Laboratory III and Introduction to CAM	2
MET 217 Dynamics	3	MET 234 Mechanical Technology and Laboratory I	2
MET 219 Strength of Materials	3	MET 236 Thermal Applications	3
MET 233 Thermal Science	3	MET 261 Design I	3
MET 270 Manufacturing Technology	3	Humanities/Social Science Elective	3
TOTAL HOURS	18	TOTAL HOURS	16
Fifth Semester		Sixth Semester	
CHY 111 General Chemistry	4	MAT 368A Ordinary Differential Equations	3
ENG 317 Technical Writing	3	MET 325 Fluid Flow Technology	3
EET 330 Electrical Applications	3	MET 357 Kinematics of Mechanisms	3
MET 355 Engineering Materials	3	Humanities/Social Science Elective	3
Technical Elective	3	Technical Elective	3
TOTAL HOURS	16	TOTAL HOURS	15
Seventh Semester		Eighth Semester	
GET 484 Engineering Economics	3	MET 463 Design III	3
MET 462 Design II	4	Humanities/Social Science Elective	3
MET 471 Mechanical Technology Laboratory II	3	Humanities/Social Science Elective	3
Humanities/Social Science Elective	3	Technical Elective	3
Technical Elective	3	Free Elective	3
TOTAL HOURS	16	TOTAL HOURS	15
TOTAL CREDIT HOURS REQUIRED FOR BACHELOR'S DEGREE: 131 STUDENTS MUST SEE ADVISOR FOR APPROVAL OF ALL ELECTIVES. <small>20 Lists of approved electives are available in 221 East Annex.</small>			

EET 425 Linear Systems II
Analysis and design of closed-loop control systems. Emphasis on root-locus and frequency-response methods. Classical and modern design, including state-variable models. Prerequisite: EET 312. Lec 3. Cr 3.

EET 498 Selected Topics in Electrical Engineering Technology
Topics in engineering technology not regularly covered in other courses. Content varies to suit the needs of individuals. May be repeated for credit. Prerequisite: permission. Cr 1-4.

MET 107 Machine Tool Laboratory I
Theory and application of fundamental metal removing processes and basic metrology and tool nomenclature. (MET majors only). Rec 1, Lab 4. Cr 3.

MET 109 Machine Shop
Fundamental bench work and light machine work using drill presses, lathes, milling machines, shapers and surface grinders. Lab 4. Cr 2.

MET 121 Technical Drawing

An introduction to graphic symbols utilizing both manual and CADD skills applied to engineering drawings. Topics include: lettering, geometric construction, multiview drawing, sections, graphs, dimensioning, and pictorial drawing. Lec 2, Lab 2. Cr 3.

MET 126 Machine Drawing

Preparation of complete working drawings of a project for INT 211. Topics include: pictorial drawings, descriptive geometry, CADD, design process, dimensioning, tolerancing, fasteners, details, and assembly drawings. Prerequisite: MET 121. Lec and Lab 4. Cr 3.

MET 150 Statics

The study of forces acting on particles and rigid bodies in equilibrium, trusses, centroids and centers of gravity, properties of area, friction. Prerequisites: MAT142A, PHY 107 or PHY 111, MET 121. Rec 3. Cr 3.

MET 212 Machine Tool Laboratory III and Introduction to CAM

Completion and evaluation of prototype assembly. Introduction to computer aided manufacturing. Prerequisites: INT 211. Lab 3. Cr 2.

MET 217 Dynamics

A study of kinematics and kinetics of particles and rigid bodies, including work and energy, impulse and momentum. Prerequisite: MET 150 or CMT 211 and MAT164A. Cr 3.

MET 219 Strength of Materials

A study of stress and strain in materials and bodies subjected to tension, compression, torsion, and flexure as well as deflection of prismatic members, columns, combined stresses. Prerequisite: MET 150. Corequisite: MAT 246A. Rec 3. Cr 3.

MET 220 Selected Topics in Mechanical Engineering Technology I

Topics in engineering technology not regularly covered in other courses. Content varies to suit the needs of individuals. May be repeated for credit. Prerequisite: permission. Cr 1-3.

MET 233 Thermal Science

A study of elementary thermodynamics including engineering calculations relative to heat, power, work and mechanical and electrical energy. Prerequisite: PHY 108 or PHY 112. Rec 3. Cr 3.

MET 234 Mechanical Technology Laboratory I

Experimental application of solid and fluid mechanics, and thermodynamics. Covers calibration of laboratory instruments. Prerequisite: MET 233 and MET 219. Rec 1, Lab 2. Cr 2.

MET 236 Thermal Applications

Applications of fundamentals studied in MET 233 including steam and gas cycles, analysis of cycle components, steam generators, pumps, turbines, compressors, heat transfer and refrigeration systems. Prerequisite: MET 233. Rec 3. Cr 3.

MET 261 Design I

A continuation of MET 219 including theories of failure, factors of safety, and design of mechanical components including design calculations for shafts, couplings, bearings, gears, belts, clutches, brakes, springs, and bolted joints. Prerequisite: MET 219. Rec 3. Cr 3.

MET 270 Manufacturing Technology

Examines production processes and problems including process planning, automation, numerical control, quality control, specialized machine tools and current advances in the field of metal working. Prerequisites: MET 107, MET 150 and sophomore standing. Rec 3. Cr 3.

MET 318 Statics and Strength of Materials

Covers basic principles of statics and their application in strength of materials, force systems, equilibrium, trusses, and friction; stresses and deformations in axially loaded members, beams, circular shafts and columns. Prerequisite: PHY 107 or PHY 111, PHY 108 or PHY 112, Junior/Senior standing in BS/EET or permission. Rec 3. Cr 3.

MET 320 Selected Topics in Mechanical Engineering Technology II

Topics in engineering technology not regularly covered in other courses. Content varies to suit the needs of individuals. May be repeated for credit. Prerequisite: permission. Cr 1-3.

MET 325 Fluid Flow Technology

Examines fluid statics, dynamics and energy as well as flow measuring devices, fluid components and systems. Prerequisite: MAT 246A, MET 217, MET 236. Rec 3. Cr 3.

MET 351 Computer Aided Design and Drafting I

Introduction to commercial CADD systems, especially microcomputer graphics hardware and software. Application of CADD software to create graphic designs and solve graphic problems. Use of a turnkey CADD system. Prerequisite: MET 121. Lec 2, Lab 2. Cr 3.

MET 355 Engineering Materials

The study of the composition and behavior of materials used in engineering. Materials covered include metals, plastics, wood, ceramics, and concrete. The laboratory demonstrates the effect of heat treatment on the mechanical properties of steels. Corequisite: CHY 111. Prerequisites: MET 219, MET 234, MET major and junior standing. Rec 2, Lab 2. Cr 3.

MET 357 Kinematics of Mechanisms

The study of motion, instant centers and linkages in mechanisms, cams, gears, and gear trains. Prerequisites: MET 217, MET 261. Rec 3. Cr 3.

MET 360 Statistical Quality Control

The basics of statistical quality control for variables and attributes. Includes process capability, control charts, sampling plans, reliability and quality costs. In the laboratory actual parts are measured and the appropriate statistical studies and charts are made. Visits to local

plants are made to witness actual production results. Prerequisites: MET 212, MET 270 or permission. Rec 2, Lab 2. Cr 3.

MET 370 Automated Manufacturing

The study of automated manufacturing equipment and transfer machinery. Lecture topics include manufacturing economics, automated assembly, robotics, and process control. Lab experience includes factory simulation on a PC, CNC lathe and mill programming, and CAD/CAM exercises. Prerequisites: MET 121, MET 212 and MET 270 or consent of instructor. Rec 2, Lab 2. Cr 3.

MET 391 Heating, Ventilating and Air Conditioning

Determination of heating, ventilating and air conditioning loads for buildings and industrial processes. Heat transfer devices and applications to systems. Refrigeration for controlled-temperature applications. Heating, ventilating and air conditioning system layout and control systems. Prerequisite: MET 236. Rec 3. Cr 3.

MET 394 Mechanical Engineering Technology Practice

Cooperative work experience in mechanical engineering technology at full-time employment for at least a ten-week period. Prerequisite: MET 234, MET 236, MET 261. (Pass/Fail only). Cr 3.

MET 462 Design II

Analysis of mechanical elements as well as applications of mechanics of materials, stress concentration, combined stresses, fatigue, and factor of safety to the design of machine components. Prerequisite: MET 261 and senior standing. Rec 3, Comp 2. Cr 4.

MET 463 Design III

Continuation of MET 462 including drive components, welded connections, lubrication, bearings, gearing, miscellaneous machine elements and engineering materials. Prerequisite: MET 462. Rec 3. Cr 3.

MET 471 Mechanical Technology Laboratory II

A project-oriented laboratory course in which the students solve technical problems similar to those encountered by technologists in industry. Prerequisite: MET 234, EET 330 and senior standing. Corequisite: MET 325 and MET 462. Rec 1, Lab 3. Cr 3.

MET 484 Engineering Economics

A study of economic applications in engineering and industrial organizations including capitalization and amortization, planning techniques, time value of money, cost analysis, and computer modeling. Prerequisite: senior standing in SET or permission. Lec 3. Cr 3.

MET 485 Technology Management Practice

Theory and application of management principles as practiced by technical managers in industrial or institutional organizations. Emphasis on behavioral and quantitative techniques, network analysis, operations control, and social

responsibility. Prerequisite: Senior standing in T or permission. Lec 3. Cr 3.

Interdisciplinary Course

MAT 211 (BRE, MET) Machine Tool Laboratory II and Welding

Design and manufacture of prototype assembly. Covers advanced metrology, welding principles and practice including AC and DC stick welding, Oxy-fuel cutting and welding, TIG/GMA with iron, steel and aluminum. Prerequisite: MET 107, MET 126. Lab 4. Cr 2.

CHY 111 General Chemistry I

Topics include: atomic and molecular structure, states and properties of matter, stoichiometry, solutions, thermochemistry, and periodic relationships. Elementary physics and high school chemistry recommended but not required. Prerequisite: CHY 111L. Prerequisites: High school algebra and trigonometry or MAT 122. Lec 3. Cr 3.

MAT 142A Algebra and Trigonometry

Topics include factoring and fractions, exponents and radicals, linear, quadratic, and fractional equations and inequalities, graphs and functions, linear, quadratic, rational, higher degree and trigonometric functions and solutions to triangles. Prerequisite: Engineering Technology students. Cr 3.

MAT 164A Analytical Geometry and Introductory Calculus

Topics include trigonometric identities and equations, inverse trigonometric functions, exponential and logarithmic function, matrix algebra, determinants, progression, elements of analytic geometry including conic sections, polar coordinates, and introductory calculus including derivative and its applications. Prerequisite: MAT 142A. Cr 3.

MAT 246A Introductory Calculus

Introduces fundamental concepts and applications of the derivative, as well as integration and

its applications, derivatives of transcendental functions and a variety of integration techniques. Prerequisite: MAT 164A. Cr 4.

MAT 368A Ordinary Differential Equations

An introduction to ordinary differential equations and their applications. A brief introduction to partial differential equations. Prerequisite: MAT 246A. Lec 3. Cr 3.

MAT 369A Applied Statistics for Engineering Technology

Introduces basic concepts of probability and probability distributions, such as Gaussian distribution and the Poisson distribution. Emphasis on applications to engineering technology. Mathematical expectation, decision making, quality control, random processes and Monte Carlo methods discussed. Also covers inferences concerning means, variance, and proportions. Prerequisite: MAT 246A or its equivalent. Cr 3.